 **Progression of Skills**

**In Computing**

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|  | **Year 1** | **Year 2** | **Year 3** | **Year 4** | **Year 5** | **Year 6** |
| **Technology in Our Lives** | * Recognise the way they use technology in our classroom. * Recognise ways that technology is used in their home and community. * Use links to websites to find information. * Begin to identify some of the benefits of using technology | * Tell adults why they use technology in the classroom. * Tell adults why they use technology in their home and community. * Starting to understand that other people have created the information they use. * Identify benefits of using technology including finding information, creating and communicating. * Talk about the differences between the internet and things in the physical world. | * Save and retrieve work on the internet, the school network or their own device. * Talk about the parts of a computer. * Tell adults ways to communicate with others online. * Describe the World Wide Web as the part of the internet that contains websites. * Use search tools to find and use an appropriate website. * Think about whether they can use images that they find online in their own work. * <https://www.barefootcomputing.org/resources/modelling-the-internet> | * Tell adults whether a resource they are using is on the internet, the school network or their own device. * Identify key words to use when searching safely on the World Wide Web. * Think about the reliability of information they read on the World Wide Web. * Tell adults how to check who owns photos, text and clipart. * Create a hyperlink to sources on the World Wide Web. * <https://www.barefootcomputing.org/resources/network-hunt-activity> | * Describe different parts of the internet. * Use different online communication tools for different purposes. * Use a search engine to find appropriate information and check its reliability. * Recognise and evaluate different types of information they find on the World Wide Web. * Describe the different parts of a webpage. * Find out who the information on a webpage belongs to.   <https://www.barefootcomputing.org/resources/ranking-search-activity> | * Tell adults the internet services they need to use for different purposes. * Describe how information is transported on the internet. * Select an appropriate tool to communicate and collaborate online. * Talk about the way search results are selected and ranked. * Check the reliability of a website. * Tell adults about copyright and acknowledge the sources of information that they find online |
| **PROGRAMMING**  **Computer Science** | * Give instructions to others and follow their instructions to move around. * Describe what happens when they press buttons on a robot. * Press the buttons in the correct order to make their robot do what they want.   BeeBot activities  <https://studio.code.org/s/coursea-2019> introduction to the basics | * Give instructions to others (using forward, backward and turn) and physically follow their instructions. * Program a robot or software to do a particular task. * Use programming software to make objects move.   <https://art.kano.me/challenges> - written instructions  <https://art.kano.me/challenges/basic/> sunny day art work | * Put programming commands into a sequence to achieve a specific outcome. * Use repeat commands.   <https://www.barefootcomputing.org/resources/dance-move-algorithms> with repeat commands  <https://www.barefootcomputing.org/resources/house-patterns-activity> | * Use a variety of tools to create a program. * Use a sensor to detect a change which can select an action within their program.   <https://makecode.microbit.org/#editor> making a dice with Microbit | * Refine a procedure using repeat commands to improve a program. * Change an input to a program to achieve a different output. * Talk about how a computer model can provide information about a physical system. * Use a variable to increase programming possibilities.   <https://makecode.microbit.org/#editor> - programming words  <https://www.barefootcomputing.org/resources/dance-move-algorithms> repeat, if, then, loop | * Recognise when they need to use a variable to achieve a required output. * Use a variable and operators to stop a program. * Use different inputs (including sensors) to control a device or onscreen action and predict what will happen.   <https://makecode.microbit.org/#editor> smiley face - variables  <https://www.barefootcomputing.org/resources/code-cracking> links to History, WW11, 6 week project |
| **PROGRAMMING**  **Computational Thinking** | * Describe what actions they will need to do to make something happen and begin to use the word ‘algorithm’. * Begin to predict what will happen for a short sequence of instructions.   <https://www.barefootcomputing.org/resources/crazy-character-algorithms>  <https://www.barefootcomputing.org/resources/getting-ready-for-school-decomposition-activity> | * Tell adults the order they need to do things to make something happen and talk about this as an algorithm. * Look at other’s programs and tell them what will happen.   <https://www.barefootcomputing.org/resources/crazy-character-algorithms> plus addition of making the algorithm clear and concise. | * Break an open‐ended problem up into smaller parts. * Describe the algorithm they will need for a simple task.   <https://www.barefootcomputing.org/resources/decomposition-unplugged-activity-ks1>  <https://art.kano.me/challenges/basic/> - flags | * Use logical thinking to solve an open‐ended problem by breaking it up into smaller parts. * Recognise that an algorithm will help them sequence more complex programs. * Use an efficient procedure to simplify a program. * Recognise that using algorithms will also help solve problems in other learning such as maths, science and design technology   <https://www.barefootcomputing.org/resources/fossil-formation-animation> | * Decompose a problem into smaller parts to design an algorithm for a specific outcome and use this to write a program. * Use ‘if’ and ‘then’ commands to select an action. * Use logical thinking, imagination and creativity to extend a program.   <https://arcade.makecode.com/#editor> - creating an arcade game.  <https://projects.raspberrypi.org/en/projects/fortune-teller>  <https://art.kano.me/challenge/mischiefweek2015/skull> - directional coding | * Deconstruct a problem into smaller steps, recognising similarities to solutions used before. * Explain and program each of the steps in their algorithm.   <https://www.barefootcomputing.org/resources/code-cracking> links to History, WW11, 6 week project |
| **PROGRAMMING**  **Evaluation** | * Use the word ‘debug’ when they correct mistakes when they program.   <https://www.barefootcomputing.org/resources/crazy-character-algorithms> | * Watch a program execute and spot where it goes wrong so that they can debug it.   <https://www.barefootcomputing.org/resources/bee-bot-route-decomposition-activity> | * Detect a problem in an algorithm which could result in a mistake to occur. * Keep testing their programs and can recognise when they need to debug it.   Food tech activity, give wrong instructions for a recipe, children create – where did it go wrong? Debug and make algorithm clearer | * Recognise an error in a program and debug it. * Know that they need to keep testing their programs while they are putting it together   <https://minecraft.makecode.com/#editor> chicken Minecraft | * Use logical reasoning to detect and debug mistakes in a program.   <https://www.barefootcomputing.org/resources/2d-shape-drawing-debugging> | * Evaluate the effectiveness and efficiency of their algorithm while they continually test the programming of that algorithm. * Use logical reasoning to detect and correct errors in algorithms   <https://www.barefootcomputing.org/resources/classroom-sound-monitor> (links to science) |
| **Online Safety and Online Sense** | * Keep a password private * Explain what personal information is * Know when to tell an adult when they see something unexpected or worrying online * Able to talk about why it is important to be kind and polite * Recognise an age appropriate website * Agree and follow sensible safety rules | * Explain why we need to keep my password and personal information private. * Describe the things that happen online that they must tell an adult about. * Talk about why they should go online for a short amount of time. * Talk about why it is important to be kind and polite online and in real life. * Know that not everyone is who they say they are on the internet. | * Talk about what makes a secure password and why they are important. * Protect personal information when they do different things online. * Use the safety features of websites as well as reporting concerns to an adult. * Recognise websites and games appropriate for my age. * Make good choices about how long they spend online. * Ask an adult before downloading files and games from the internet. * Post positive comments online.   <https://www.barefootcomputing.org/resources/stop-think-do-i-consent> | * Choose a secure password when they are using a website. * Talk about the ways they can protect themselves and others from harm online. * Use the safety features of websites as well as reporting concerns to an adult. * Know that anything they post online can be seen by others. * Choose websites and games that are appropriate for their age. * Help their friends make good choices about the time they spend online. * Talk about why they need to ask a trusted adult before downloading files and games from the internet. * Comment positively and respectfully online. | * Protect their password and other personal information. * Explain why they need to protect themselves and their friends and the best ways to do this, including reporting concerns to an adult. * Know that anything they post online can be seen, used and may affect others. * Talk about the dangers of spending too long online or playing a game. * Explain the importance of communicating kindly and respectfully. * Discuss the importance of choosing an age‐ appropriate website or game. * Explain why they need to protect their computer or device from harm. * Know which resources on the internet they can download and use | * Protect their password and other personal information. * Explain the consequences of sharing too much information about themselves online. * Support their friends to protect themselves and make good choices online, including reporting concerns to an adult. * Explain the consequences of spending too much time online or on a game. * Explain the consequences to themselves and others of not communicating kindly and respectfully. * Protect their computer or device from harm on the internet. |
| **Multimedia** | * Be creative with different technology tools. * Use technology to create and present their ideas. * Use the keyboard or a word bank on their device to enter text. * Save information in a special place and retrieve it again | * Use technology to organise and present their ideas in different ways. * Use the keyboard on their device to add, delete and space text for others to read. * Tell adults about an online tool that will help them to share their ideas with other people. * Save and open files on the device they use. | * Create different effects with different technology tools. * Combine a mixture of text, graphics and sound to share their ideas and learning. * Use appropriate keyboard commands to amend text on their device, including making use of a spellchecker. * Evaluate their work and improve its effectiveness. * Use an appropriate tool to share their work online. | * Use photos, video and sound to create an atmosphere when presenting to different audiences. * Be confident to explore new media to extend what they can achieve. * Change the appearance of text to increase its effectiveness. * Create, modify and present documents for a particular purpose. * Use a keyboard confidently and make use of a spellchecker to write and review their work. * Use an appropriate tool to share their work and collaborate online. * Give constructive feedback to others to help them improve their work and refine their own work. | * Use text, photo, sound and video editing tools to refine their work. * Use the skills they have already developed to create content using unfamiliar technology. * Select, use and combine the appropriate technology tools to create effects that will have an impact on others. * Select an appropriate online or offline tool to create and share ideas. * Review and improve their work and support others to improve their work. | * Talk about audience, atmosphere and structure when planning a particular outcome. * Confidently identify the potential of unfamiliar technology to increase their creativity. * Combine a range of media, recognising the contribution of each to achieve a particular outcome. * Tell adults why they select a particular online tool for a specific purpose. * Be digitally discerning when evaluating the effectiveness of their work and the work of others   <https://www.barefootcomputing.org/resources/code-cracking> links to History, WW11, 6 week project - (Flipgrid, OneNote, Sway)  <https://projects.raspberrypi.org/en/projects/blender-rocket> |
| **Handling Data**  **These aspects will taught in other curriculum areas (Science, geography and maths)** | * Talk about the different ways in which information can be shown. * Use technology to collect information, including photos, video and sound. * Sort different kinds of information and present it to others. * Add information to a pictograph and talk to adults about what they have found out. | * Talk about the different ways they use technology to collect information, including a camera, microscope or sound recorder. * Make and save a chart or graph using the data they collect. * Talk about the data that is shown in their chart or graph. * Starting to understand a branching database. * Tell adults what kind of information they could use to help investigate a question. | * Talk about the different ways data can be organised. * Search a ready‐made database to answer questions. * Collect data to help them answer a question. * Add to a database. * Make a branching database. Use a data logger to monitor changes and can talk about the information collected. | * Organise data in different ways. * Collect data and identify where it could be inaccurate. * Plan, create and search a database to answer questions. * Choose the best way to present data to others. * Use a data logger to record and share readings with others. | * Use a spreadsheet and database to collect and record data. * Choose an appropriate tool to help them collect data. * Present data in an appropriate way. * Search a database using different operators to refine their search. * Talk about mistakes in data and suggest how it could be checked. | * Plan the process needed to investigate the world around them. * Select the most effective tool to collect data for their investigation. * Check the data they collect for accuracy and plausibility. * Interpret the data they collect. * Present the data they collect in an appropriate way. * Use the skills they have developed to interrogate a database. |