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|  | | **Whole School Overview of Computing Coverage** | | | | | | | |
|  |  | **Autumn 1** | **Autumn 2** | **Spring 1** | **Spring 2** | **Summer 1** | **Summer 2** | **E-Safety** |
| **Computing** | **Development Matters (Reception)** | **BASELINE** | Learning how to explore and tinker with  hardware to develop familiarity and introduce  relevant vocabulary.  Recognising that a range of technology is used  for different purposes. | Using a simple online paint tool to create digital art.  Following instructions as part of practical  activities and games.  Learning to give simple instructions. | Learning how to operate a camera to take  photographs of meaningful creations or  moments.  Recognising and identifying familiar letters  and numbers on a keyboard.  Developing basic mouse skills such as moving  and clicking. | Learning to debug instructions, with the help  of an adult, when things go wrong.  Programme a Bee-Bot with the help of an adult. | Representing data through sorting and  categorising objects in unplugged scenarios.  Sort information in maths. | Take part in Safer Internet Day discussions. Talk about stranger danger and staying safe online.  Ensure children know to tell a trusted adult if they see something that makes them feel uncomfortable online. |
| **Year 1** | **Technology in our Lives**  Computing systems and networks.  Logging in and out and saving work on their own account.  Understanding how to interact safely with others online. | **Programming**  Algorithms Unplugged  Learning how to explore and tinker with hardware  to find out how it works.  Learning where keys are located on the keyboard. | **Creating Media**  Painting images  Developing control of the mouse through dragging,  clicking and resizing of images to create different effects. | **Creating Media**  Digital Imagery  Learning how to operate a camera or tablet to take  photos and videos.  Edit photos using a digital app on the tablet – change colour, size and add effects.  Use the photos to tell a story. | **Programming**  Bee-Bots  Programming a Floor robot to follow a planned  route.  Learning to debug instructions when things go  wrong.  Learning to debug an algorithm in an unplugged  scenario. | **Multimedia**  Skills Showcase (laptops)  Developing understanding of different software tools.  Adding images and text using Word. | **E-Safety**  When using the internet to search for images,  learning what to do if they come across  something online that worries them or makes  them feel uncomfortable.  Understanding how to interact safely with  others online. |
| **Year 2** | **Programming**  Scratch Jnr.  Explaining what an algorithm is.  Following an algorithm.  Creating a clear and precise algorithm. | **Programming**  Algorithms and debugging  Articulating what decomposition is.  Decomposing a game to predict the algorithms used  to create it.  Learning that there are different levels of  abstraction. | **Data Handling**  International Space Station  Collecting and inputting data into a spreadsheet.  Interpreting data from a spreadsheet. | **Creating Media**  Stop Motion Animation  Using software (and unplugged means) to create story  animations. | **Multimedia**  Word Processing  Developing confidence with the keyboard and the basics of touch typing.  Using word processing software to type and reformat  text.  Creating and labelling images. | **Technology in our Lives**  What is a computer?  Understanding what a computer is and that it’s  made up of different components.  Recognising that buttons cause effects and that  technology follows instructions.  Learning how we know that technology is doing  what we want it to do via its output. | **E-Safety**  Learning how to create a strong password.  Understanding how to stay safe when talking to people online and what to do if they see or hear  something online that makes them feel upset or uncomfortable  Identifying whether information is safe or unsafe to be shared online.  Learning to be respectful of others when sharing online and ask for their permission before sharing  content.  Learning strategies for checking if something they read online is true. |
| **Year 3** | **Technology in our Lives**  Online Safety  Recognising how social media platforms are used to interact. Recognising how social media platforms are used to interact.   * Recognising that different information is shared online, including facts, beliefs and opinions. * Learning how to identify reliable information when searching online. * Learning how to stay safe on social media. * Considering the impact technology can have on mood. | **Technology in our Lives**  Networks  Understanding the role of the key  components of a network.  Identifying the key components within a  network, including whether they are  wired or wireless.  Understanding that websites and videos  are files that are shared from one  computer to another.  Learning about the role of packets.  Understanding how networks work and  their purpose.  Recognising links between networks and the internet.  Learning how data is transferred. | **Programming**  Scratch  Using logical thinking to explore more complex software; predicting, testing and explaining what it does.  Incorporating loops to make code more  efficient.  Continuing existing code.  Using decomposition to explore the  code behind an animation.  Using repetition in programs.  Using logical reasoning to explain how simple algorithms work.  Explaining the purpose of an algorithm.  Forming algorithms independently. | **Data Handling**  Comparison cards and databases   * Using logical thinking to explore more complex software; predicting, testing and explaining what it does. * Understanding the vocabulary associated with databases: field, record, data. * Learning about the pros and cons of digital versus paper databases. * Sorting and filtering databases to easily retrieve information. * Creating and interpreting charts and graphs to understand data. | **Multimedia**  Video Trailers  Taking photographs and recording  video to tell a story.  Using software to edit and enhance  their video adding music, sounds and  text on screen with transitions. | **Technology in our Lives**  Emailing   * Log in and out of email. * Send a simple email with a subject plus ‘To’ and ‘From’ in the body of the text. * Edit an email. * Type in the email address correctly and send the email. * Recognise when an email may be fake and explain how they know. | **E-Safety**  Recognising that different information is shared online including facts, beliefs and  opinions.  Learning how to identify reliable information  when searching online.  Learning how to stay safe on social media.  Considering the impact technology can have on  mood.  Learning about cyberbullying.  Learning that not all emails are genuine,  recognising when an email might be fake and what to do about it. |
| **Year 4** | **Technology in our Lives**  Computing systems and networks  Understanding that computer networks provide multiple  services, such as the World Wide Web, and opportunities for communication and collaboration. | **Creating media**  Website design   * Building a web page and creating content for it. * Designing and creating a webpage for a given purpose. * Using software to work collaboratively with others. | **Creating Media**  Touch typing/presenting work  Use Word and Powerpoint to type, edit and import images to create a presentation linked to our topics. | **Data Handling**  Investigating weather  Using tablets or digital cameras to  film a weather forecast.  Understanding that weather stations use sensors to gather and record data which predicts the  weather. | **Programming**  Further with Scratch  Creating algorithms for a specific purpose.  Coding a simple game.  Using abstraction and pattern recognition to modify code.  Incorporating variables to make code more efficient. | **Programming**  Computational Thinking  Using decomposition to solve a problem  by finding out what code was used.  Using decomposition to understand the  purpose of a script of code.  Identifying patterns through unplugged  activities.  Using abstraction to identify the  important parts when completing both plugged and unplugged activities. | **E-Safety**  Recognising that information on the internet  might not be true or correct and that some  sources are more trustworthy than others.  Learning to make judgements about the  accuracy of online searches.  Identifying forms of advertising online.  Recognising what appropriate behaviour is  when collaborating with others online.  Reflecting on the positives and negatives of  time spent online.  Identifying respectful and disrespectful online  behaviour. |
| **Year 5** | **Multimedia**  Stop Motion   * Create a toy with simple images with a single movement. * Create a short stop motion with small changes between images. * Think of a simple story idea for their animation then decompose it into smaller parts to create a storyboard with simple characters. * Make small changes to the models to ensure a smooth animation and delete unnecessary frames. * Add effects such as extending parts and titles. * Provide helpful feedback to other groups about their animations. | **Programming**  **Micro-Bits**   * Clip blocks together and predict what will happen. Make connections with previous programming interfaces they’ve used, e.g. Scratch. * Create their own images to make the animation and recognise the difference between ‘on start’ and ‘forever’. * Recognise blocks they’ve used previously, identifying inputs and outputs used and make predictions about how variables work. * Break a program down into smaller steps, suggesting appropriate blocks and match the algorithm to the program. | **Data Handling**  Excel  Learning the vocabulary associated with  data: data and transmit.  Recognising that computers transfer data in binary and understanding simple binary  addition.  Learning that messages can be sent by binary code, reading binary up to eight characters and carrying out binary  calculations. | **Technology in our Lives**  Search Engines   * Explain what a search engine is, suggesting several search engines to use and explain how to use them to find websites and information. * Suggest that things online aren’t always true and recognise what to check for. * Explain why keywords are important and what TASK stands for, using these strategies to search effectively. * Recognise the terms ‘copyright’ and ‘fair use’ and combine text and images in a poster. * Make parallels between book searching and internet searching. | **Programming**  Dash The Robot & Blockly  Decomposing animations into a series of images.  Decomposing a story to be able to plan a program to tell a story.  Predicting how software will work based on previous experience.  Writing more complex algorithms for a purpose.  Confidently using loops in their  programming.  Using a more systematic approach to debugging code, justifying what is wrong  and how it can be corrected.  Writing code to create a desired effect.  Using a range of programming  commands.  Using repetition within a program. | **Technology in our Lives**  Mars Rover 1   * Create a pixel picture, explaining that a pixel is the smallest element of a digital image and that binary is used to code and transfer this data. * Save a JPEG as a bitmap and recognise the difference in file size as well as explaining how pixels are used to transfer image data. * Explain the ‘fetch, decode, execute’ cycle in relation to real-world situations. * Create a profile with a safe and suitable username and password and begin to use 3D design tools. | **E-Safety**  Identifying possible dangers online and learning  how to stay safe.  Evaluating the pros and cons of online  communication.  Recognising that information on the internet  might not be true or correct and learning ways  of checking validity.  Learning what to do if they experience bullying  online.  Learning to use an online community safely. |
| **Year 6** | **Technology in our Lives**  Online Safety   * Discuss various issues online that can leave pupils feeling sad, frightened, worried or uncomfortable and can describe numerous ways to get help. * Explain how sharing online can have both positive and negative impacts. * Be aware of how to seek consent from others before sharing material online and describe how content can still be shared online even if it is set to private. * Explain what a digital reputation is and what it can consist of. | **Programming**  Kodu   * Iterate ideas, testing and changing throughout the lesson and explain what their program does. * Use nested loops in their designs, explaining why they need two repeats. * Alter the house drawing using Kodu commands; use comments to show a level of understanding around what their code does. * Use loops in Kodu and explain what the parts of a loop do. * Recognise that computers can choose random numbers; decompose the program into an algorithm and modify a program to personalise it. | **Data Handling**  Big Data p.1   * Understand why barcodes and QR codes were created. * Create (and scan) their own QR code using a QR code generator website. * Explain how infrared can be used to transmit a Boolean type signal. * Explain how RFID works, recall a use of RFID chips, and type formulas into spreadsheets. * Take real-time data and enter it effectively into a spreadsheet. * Presenting the data collected as an answer to a question. * Recognising the value of analysing real-time data. | **Data Handling**  Big Data p.2   * Recognise that data can become corrupted within a network and that data sent in packets is more robust, as well as identify the need to update devices and software. * Recognise differences between mobile data and WiFi and use a spreadsheet to compare and identify high-use data activities and low-use data activities. * Make links between the Internet of Things and Big Data and give a basic example of how data analysis/analytics can lead to improvement in town planning. | **Programming**  Bletchley Park(code breaking & password hacking)   * Explain that codes can be used for a number of different reasons and decode messages. * Explain how to ensure a password is secure and how this works. * Create a simple website with information about Bletchley Park including the need to build electronic thinking machines to solve cipher codes. * Explain the importance of historical figures and their contribution towards computer science. * Present information about their historical figure in an interesting and engaging manner. | **Creating Media**  History of Computers   * Explain how to record sounds and add in sound effects over the top. * Produce a simple radio play with some special effects and simple edits which demonstrate an understanding of how to use the software. * Create a document that includes correct date information and facts about the computers and how they made a difference. * Describe all of the features that we’d expect a computer to have including RAM, ROM, hard drive and processor, but of a higher specification than currently available. | **E-Safety**  Learning about the positive and negative  impacts of sharing online.  Learning strategies to create a positive online reputation.  Understanding the importance of secure passwords and how to create them.  Learning strategies to capture evidence of online bullying in order to seek help.  Using search engines safely and effectively.  Recognising that updated software can help to prevent data corruption and hacking. |