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| **Tarporley C of E Primary School Progression Document for Computing** | | | | |
| At Tarporley C of E Primary, we deliver a two-year planning cycle carefully tailored to the needs of our pupils and following our BOOKS approach. We have designed an inspiring and exciting curriculum that fosters BRAVERY, is OUTWARD-FACING, provides OPPORTUNITIES, develops the appropriate KNOWLEDGE AND SKILLS and nurtures a sense of SPIRITUALITY all with high quality books at the heart of our teaching and learning. Our aim is that all children will know, understand, do and remember more during their journey with us.  This progression document outlines the specific knowledge and skills from the National Curriculum in England (2013) which pupils are expected to learn in each phase over a two-year period. Where appropriate, we have indicated which statements refer to the substantive content of our curriculum (the specific, factual content for the subjects, which must be delivered in a careful sequence) and those relating to the disciplinary content (the action taken within a particular subject to gain knowledge i.e. how we gain substantive knowledge).  The core of computing is computer science, in which pupils are taught the principles of information and computation, how digital systems work, and how to put this knowledge to use through programming. Building on this knowledge and understanding, pupils are equipped to use information technology to create programs, systems and a range of content. Computing also ensures that pupils become digitally literate – able to use, and express themselves and develop their ideas through, information and communication technology – at a level suitable for the future workplace and as active participants in a digital world.  Our curriculum for the Early Years Foundation Stage reflects the areas of learning identified in the EYFS Statutory Framework (2021). The areas of learning are split into two different areas; prime and specific. The prime areas of learning are: Personal, Social and Emotional Development, Communication and Language and Physical Development. The specific areas include essential skills and knowledge and provide contexts for learning: Literacy, Mathematics, Understanding of the World and Expressive Arts and Design. We recognise that pupils’ learning in EYFS provides the foundations for their future, so below we have included objectives that are the building blocks for learning in Year 1 and beyond. | | | | |
| **KNOWLEDGE – SUBSTANTIVE CONTENT** | | | | |
| **Substantive knowledge** | **EYFS** | **Key Stage 1 – Years 1 and 2** | **Lower Key Stage 2 – Years 3 and 4** | **Upper Key Stage 2 – Years 5 and 6** |
| - understand what instructions are and how they lead to outcomes  - recognise what technology is around us  - use technology safely and respectfully | - understand what algorithms are; how they are implemented as programs on digital devices; and that programs execute by following precise and unambiguous instructions  - create and debug simple programs  - use logical reasoning to predict the behaviour of simple programs  - recognise common uses of information technology beyond school  - use technology purposefully to create, organise, store, manipulate and retrieve digital content  - 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. | Writes programs that accomplish specific goals -Uses sequence in programs -Works with various forms of input -Works with various forms of output  -Designs programs that accomplish specific goals -Designs and creates programs -Debugs programs that accomplish specific goals -Uses repetition in programs -Controls or simulates physical systems -Uses logical reasoning to detect and correct errors in programs  -Uses search technologies effectively -Uses a variety of software to accomplish given goals -Compares digital and non-digital devices -Collects information -Designs and creates content -Presents information  -Selects a variety of software to accomplish given goals -Selects, uses and combines internet services -Analyses and evaluates information -Collects and presents data  -Uses technology responsibly -Keeps personal information private -Identifies a range of ways to report concerns about contact/content  - Describes some of the risks of sharing too much information online. -Understands the opportunities computer networks offer for communication -Identifies a range of ways to report concerns about content -Recognises acceptable/unacceptable behaviour. | -Solves problems by decomposing them into smaller parts  -Uses selection in programs -Works with variables  -Uses logical reasoning to explain how some simple algorithms work  -Uses logical reasoning to detect and correct errors in algorithms  -Understands computer networks, including the internet  -Appreciates how search results are ranked  -Combines a variety of software to accomplish given goals  -Selects, uses and combines software on a range of digital devices -Analyses and evaluates data  -Designs and creates systems  - Describe some of the risks of sharing too much information online.  -Understands the opportunities computer networks offer for collaboration  -Is discerning in evaluating digital content |
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Computer Science Information Technology Digital Literacy

NB : Colours signify the best-fit for that unit but are not mutually exclusive.

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| **SKILLS – DISCIPLINARY CONTENT** | | | | |
| **Disciplinary content** | **EYFS** | **Key Stage 1 – Years 1 and 2** | **Lower Key Stage 2 – Years 3 and 4** | **Upper Key Stage 2 – Years 5 and 6** |
| Safety – I can : explain what it means for something to be private; know who can help when I feel worried; show kindness to others, choose activities to keep me healthy.  Hardware – I can understand why having clean hands with devices is important, understand not to eta and drink when using technology, understand I need to take care with devices and plugs and wires, use devices with care.  Technology around us – I can:  identify technology at home, in school and outdoors.  Digital Literacy – I can: talk about what photos show and take photos using the ipad camera.  Computer Science – I can follow directions to make a route for a robot (beebot), I can plan and follow my own route, describing what I am doing, I can programme one or two steps of linear movement.  NB: What is not covered from the Purplemash units and is therefore picked up in KS1:  mouse and keyboard skills, paint and drawing skills, logging in and saving, making music. | * 1. **Online safety and exploring purplemash**   To log in safely. • To learn how to find saved work in the Online Work area and find teacher comments. • To learn how to search Purple Mash to find resources. • To become familiar with the icons and types of resources available in the Topics section. • To start to add pictures and text to work. • To explore the Tools and Games section of Purple Mash. • To learn how to open, save and print. • To understand the importance of logging out   * 1. **Grouping and sorting**   To sort items using a range of criteria. • To sort items on the computer using the ‘Grouping’ activities in Purple Mash.   * 1. **Pictograms**   To understand that data can be represented in picture format. • To contribute to a class pictogram. • To use a pictogram to record the results of an experiment.   * 1. **Lego Builders**   To compare the effects of adhering strictly to instructions to completing tasks without complete instructions. • To follow and create simple instructions on the computer. • To consider how the order of instructions affects the result.  **1.5 Maze Explorers**  • To understand the functionality of the direction keys. • To understand how to create and debug a set of instructions (algorithm). • To use the additional direction keys as part of an algorithm. • To understand how to change and extend the algorithm list. • To create a longer algorithm for an activity. • To set challenges for peers. • To access peer challenges set by the teacher as 2Dos.   * 1. **Animated storybooks**   To introduce e-books and the 2Create a Story tool. • To add animation to a story. • To add sound to a story, including voice recording and music the children have composed. • To work on a more complex story, including adding backgrounds and copying and pasting pages. • To share e-books on a class display board.   * 1. **Coding**   To understand what instructions are and predict what might happen when they are followed. • To use code to make a computer program. • To understand what object and actions are. • To understand what an event is. • To use an event to control an object. • To begin to understand how code executes when a program is run. • To understand what backgrounds and objects are. • To plan and make a computer program.   * 1. **Spreadsheets**   To know what a spreadsheet program looks like. • To locate 2Calculate in Purple Mash. • To enter data into spreadsheet cells. • To use 2Calculate image tools to add clipart to cells. • To use 2Calculate control tools: lock, move cell, speak and count.   * 1. **Tech outside school**   To walk around the local community and find examples of where technology is used. • To record examples of technology outside school.  **2.1 Coding**  To understand what an algorithm is. • To create a computer program using an algorithm. • To create a program using a given design. • To understand the collision detection event. • To understand that algorithms follow a sequence. • To design an algorithm that follows a timed sequence. • To understand that different objects have different properties. • To understand what different events do in code. • To understand the function of buttons in a program. • To understand and debug simple programs  **2.2 Online safety**  • To know how to refine searches using the Search tool. • To use digital technology to share work on Purple Mash to communicate and connect with others locally. • To have some knowledge and understanding about sharing more globally on the Internet. • To introduce Email as a communication tool using 2Respond simulations. • To understand how we should talk to others in an online situation. • To open and send simple online communications in the form of email. • To understand that information put online leaves a digital footprint or trail. • To identify the steps that can be taken to keep personal data and hardware secure  **2.3 Spreadsheets**  To use 2Calculate image, lock, move cell, speak and count tools to make a counting machine. • To learn how to copy and paste in 2Calculate. • To use the totalling tools. • To use a spreadsheet for money calculations. • To use the 2Calculate equals tool to check calculations. • To use 2Calculate to collect data and produce a graph.  **2.4 Questioning**  To learn about data handling tools that can give more information than pictograms. • To use yes/no questions to separate information. • To construct a binary tree to identify items. • To use 2Question (a binary tree database) to answer questions. • To use a database to answer more complex search questions. • To use the Search tool to find information.  **2.5 Effective searching**  • To understand the terminology associated with searching. • To gain a better understanding of searching on the Internet. • To create a leaflet to help someone search for information on the Internet.  **2.6 Creating pictures**  To learn the functions of the 2Paint a Picture tool. • To learn about and recreate the Impressionist style of art (Monet, Degas, Renoir). • To recreate Pointillist art and look at the work of pointillist artists such as Seurat. • To learn about the work of Piet Mondrian and recreate the style using the lines template. • To learn about the work of William Morris and recreate the style using the patterns template. • To explore surrealism and eCollage.  **2.7 Making Music**  • To make music digitally using 2Sequence. • To explore, edit and combine sounds using 2Sequence. • To edit and refine composed music. • To think about how music can be used to express feelings and create tunes which depict feelings. • To upload a sound from a bank of sounds into the Sounds section. • To record and upload environmental sounds into Purple Mash. • To use these sounds to create tunes in 2Sequence.  **2.9** To explore how a story can be presented in different ways. • To make a quiz about a story or class topic. • To make a fact file on a non-fiction topic. • To make a presentation to the class. | **3.1 Coding**  To understand what a flowchart is and how flowcharts are used in computer programming. • To understand that there are different types of timers and select the right type for purpose. • To understand how to use the repeat command. • To understand the importance of nesting. • To design and create an interactive scene.  **3.2 Online Safety**  To know what makes a safe password. • To learn methods for keeping passwords safe. • To understand how the Internet can be used in effective communication. • To understand how a blog can be used to communicate with a wider audience. • To consider the truth of the content of websites. • To learn about the meaning of age restrictions symbols on digital media and devices.  **3.3 Spreadsheets**  To use the symbols more than, less than and equal to, to compare values. • To use 2Calculate to collect data and produce a variety of graphs. • To use the advanced mode of 2Calculate to learn about cell references.  **3.4 Touch typing**  To introduce typing terminology. • To understand the correct way to sit at the keyboard. • To learn how to use the home, top and bottom row keys. • To practise typing with the left and right hand.  **3.6 Branching database**  To sort objects using just ‘yes’ or ‘no’ questions. • To complete a branching database using 2Question. • To create a branching database of the children’s choice.  **3.7 Simulation**  To consider what simulations are. • To explore a simulation. • To analyse and evaluate a simulation.  **3.8 Graphing**  To enter data into a graph and answer questions. • To solve an investigation and present the results in graphic form.  **4.1 Coding**  To begin to understand selection in computer programming. • To understand how an IF statement works. • To understand how to use co-ordinates in computer programming. • To understand the 'repeat until' command. • To understand how an IF/ELSE statement works. • To understand what a variable is in programming. • To use a number variable. • To create a playable game  **4.2 Online Safety**  To understand how children can protect themselves from online identity theft. • To understand that information put online leaves a digital footprint or trail and that this can aid identity theft. • To identify the risks and benefits of installing software including apps. • To understand that copying the work of others and presenting it as their own is called ‘plagiarism’ and to consider the consequences of plagiarism. • To identify appropriate behaviour when participating or contributing to collaborative online projects for learning. • To identify the positive and negative influences of technology on health and the environment. • To understand the importance of balancing game and screen time with other parts of their lives.  **4.3 Spreadsheets**  To format cells as currency, percentage, decimal to different decimal places or fraction. • To use the formula wizard to calculate averages. • To combine tools to make spreadsheet activities such as timed times tables tests. • To use a spreadsheet to model a reallife situation. • To add a formula to a cell to automatically make a calculation in that cell.  **4.4 Writing for different audiences**  To explore how font size and style can affect the impact of a text. • To use a simulated scenario to produce a news report. • To use a simulated scenario to write for a community campaign.  **4.6 Animation**  To discuss what makes a good animated film or cartoon. • To learn how animations are created by hand. • To find out how animation can be created in a similar way using the computer. • To learn about onion skinning in animation. • To add backgrounds and sounds to animations. • To be introduced to ‘stop motion’ animation. • To share animation on the class display board and by blogging  **4.7 Effective searching**  To locate information on the search results page. • To use search effectively to find out information. • To assess whether an information source is true and reliable.  **4.8 Hardware**  • To understand the different parts that make up a computer. • To recall the different parts that make up a computer. | **5.1 Coding**  To begin to simplify code. • To create a playable game. • To understand what a simulation is. • To program a simulation using 2Code. • To know what decomposition and abstraction are in computer science. • To a take a real-life situation, decompose it and think about the level of abstraction. • • To understand how to use friction in code. To begin to understand what a function is and how functions work in code. • To understand what the different variables types are and how they are used differently. • To understand how to create a string. • To understand what concatenation is and how it works.  **5.2 Online safety**  To gain a greater understanding of the impact that sharing digital content can have. • To review sources of support when using technology and children’s responsibility to one another in their online behaviour. • To know how to maintain secure passwords. • To understand the advantages, disadvantages, permissions and purposes of altering an image digitally and the reasons for this. • To be aware of appropriate and inappropriate text, photographs and videos and the impact of sharing these online. • To learn about how to reference sources in their work. • • To search the Internet with a consideration for the reliability of the results of sources to check validity and understand the impact of incorrect information. To ensure reliability through using different methods of communication.  **5.3 Spreadsheets**  To use formulae within a spreadsheet to convert measurements of length and distance. • To use the count tool to answer hypotheses about common letters in use. • To use a spreadsheet to model a reallife problem. • To use formulae to calculate area and perimeter of shapes. • To create formulae that use text variables  **5.4 Databases**  • To learn how to search for information in a database. • To contribute to a class database. • To create a database around a chosen topic.  **5.5 Game Creator**  To plan a game. • To design and create the game environment. • To design and create the game quest.  **5.6 3D modelling**  To be introduced to 2Design and Make and the skills of computer aided design. • To explore the effect of moving points when designing. • To design a 3D Model to fit certain criteria. • To refine and print a model.  **5.7 Concept maps**  To understand the need for visual representation when generating and discussing complex ideas. • To understand the uses of a 'concept map'. • To understand and use the correct vocabulary when creating a concept map. • To create a concept map. • To understand how a concept map can be used to retell stories and information.  **5.8 Word processing**  To know what a word processing tool is for. • To add and edit images to a word document. • To know how to use word wrap with images and text. • To change the look of text within a document. • To add features to a document to enhance its look and usability. • To use tables within MS Word to present information. • To introduce children to templates. • To consider page layout including heading and columns.  **5.9 Using external devices**  To understand how a device can be programmed to be used as a game controller. • To explore the functions available for the Purple Chip and appraise their uses. • To create a simple quiz program that can be answered using an external device. • To create a program in which an external device can be used to monitor real world conditions.  **6.1 Coding**  To design a playable game with a timer and a score. • To plan and use selection and variables. • To understand how the launch command works. • To use functions and understand why they are useful. • To understand how functions are created and called. • To use flowcharts to create and debug code. • To create a simulation of a room in which devices can be controlled. • To understand how user input can be used in a program. • To understand how 2Code can be used to make a text-adventure game.  **6.2 Online Safety**  To identify benefits and risks of mobile devices broadcasting the location of the user/device. • To identify secure sites by looking for privacy seals of approval. • To identify the benefits and risks of giving personal information. • To review the meaning of a digital footprint. • To have a clear idea of appropriate online behaviour. • To begin to understand how information online can persist. • To understand the importance of balancing game and screen time with other parts of their lives. • To identify the positive and negative influences of technology  **6.3 Spreadsheets**  To use a spreadsheet to investigate the probability of the results of throwing many dice. • To use a spreadsheet to calculate the discount and final prices in a sale. • To use a spreadsheet to plan how to spend pocket money and the effect of saving money.  **6.4 Blogging**  To identify the purpose of writing a blog. • To identify the features of a successful blog. • To plan the theme and content for a blog. • To understand how to write a blog and a blog post. • To consider the effect upon the audience of changing the visual properties of the blog. • To understand how to contribute to an existing blog. • To understand how and why blog posts are approved by the teacher. • To understand the importance of commtenting on blogs.  **6.5 Text adventures**  • To find out what a text adventure is. • To use 2Connect to plan a story adventure. • To make a story-based adventure using 2Create a Story. • To introduce an alternative model for a text adventure which has a less sequential narrative. • To use written plans to code a mapbased adventure.  **6.6 Networks**  To learn about what the Internet consists of. • To find out what a LAN and a WAN are. • To find out how the Internet is accessed in school. • To research and find out about the age of the Internet. • To think about what the future might hold.  **6.7 Quizzing**  To create a picture-based quiz for young children. • To learn how to use the question types within 2Quiz. • To explore the grammar quizzes. • To make a quiz that requires the player to search a database.  **6.8 Binary**  To examine how whole numbers are used as the basis for representing all types of data in digital systems. • To recognise that digital systems represent all types of data using number codes that ultimately are patterns of 1s and 0s (called binary digits, which is why they are called digital systems). • To understand that binary represents numbers using 1s and 0s and these represent the on/ off electrical states respectively in hardware and robotics.  **6.9 Spreadsheets**  • To know what a spreadsheet looks like. • To navigate and enter data into cells. • To introduce some basic data formulae in Excel for percentages, averages and max and min numbers. • To demonstrate how the use of Excel can save time and effort when performing calculations. • To use a spreadsheet to model a reallife situation. • To demonstrate how Excel can make complex data clear by manipulating the way it is presented. • To create a variety of graphs in Excel. • To apply spreadsheet skills to solving problems |

Should you have questions about our curriculum, please contact Miss Helen Maddocks, our Curriculum Lead, or our Subject Lead for Computing, Kerry Griffiths