# **Computing -** Progression Map

## Duddon St. Peter's CE Primary
## Computing Progression Map

| Key Stage 1 National Curriculum Expectations | Key Stage 2 National Curriculum Expectations |
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| Pupils should be taught to:<br>• understand what algorithms are; how they are implemented as programs on digitaldevices; and that programs execute by following precise and unambiguous instructions;<br>• create and debug simple programs;<br>• use logical reasoning to predict the behaviour of simple programs;<br>• use technology purposefully to create, organise, store, manipulate and retrieve digitalcontent;<br>• recognise common uses of information technology beyond school;<br>• 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 onthe internet or other online technologies. | Pupils should be taught to:<br>• design, write and debug programs that accomplish specific goals, including controllingor simulating physical systems; solve problems by decomposing them into smaller parts;<br>• use sequence, selection, and repetition in programs; work with variables and variousforms of input and output;<br>• use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs;<br>• 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;<br>• use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content;<br>• select, use and combine a variety of software (including internet services) on a rangeof 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;<br>• use technology safely, respectfully and responsibly; recognise acceptable /unacceptable behaviour; identify a range of ways to report concerns about content and contact. |

**Intent**

We offer a structured sequence of lessons, helping teachers to ensure that they have covered the skills required to meet the aims of the national curriculum. The content allows for a broad, deep understanding of computing and how it links to children's lives. It offers a range of opportunities for consolidation, challenge and variety. This allows childrento apply the fundamental principles and concepts of computer science. They develop analytical problem-solving skills and learn to evaluate and apply information technology. It also enables them to become responsible, competent, confident and creative users of information technology.

**Implementation**

Each lesson contains revision, analysis and problem-solving. Through the sequence of lessons, we intend to inspire pupils to develop a love of the digital world, see its place in their future and give teachers confidence. Cross-curricular links are also important in supporting other areas of learning. Our lesson plans and resources help children to build on prior knowledge at the same time as introducing new skills and challenges. In KS1, the focus is on developing the use of algorithms, programming and how technology can be used safely and purposefully. In KS2, lessons still focus on algorithms, programming and coding but in a more complex way and for different purposes. Children also develop their knowledge of computer networks, internet services and the safe and purposeful use of the internet and technology. Data Handling is featured more heavily in UKS2. Skills learnt through KS1 and LKS2 are used to support data presentation. Adult guides are offered, as well as end-of-unit assessments, enabling staff to feel confident in the progression of skills and knowledge and that outcomes have been met. An example of keywords has been included, showing the progression of specific language involved in children's learning so that teachers can also assess understanding and progress through vocabulary.

**Impact**

Learning in computing will be enjoyed across the school. Teachers will have high expectations and quality evidence will be presented in a variety of forms. Children will use digital and technological vocabulary accurately, alongside a progression in their technical skills. They will be confident using a range of hardware and software and will produce high-quality purposeful products. Children will see the digital world as part of their world, extending beyond school, and understand that they have choices to make. They will be confident and respectful digital citizens going on to lead happy and healthy digital lives.

**Computing Scheme of Work End points**

**Digital literacy**- the knowledge, skills and attitudes that allow children to be both safe and empowered in an increasingly digital world

**Computer Science** - learning how to code and learning about debugging, decomposition and digital data.

**Information Technology** - ability to create, retrieve, combine and manipulate digital content. The understanding of computer networks, the world-wide web and the internet and how they operate.

**Declarative/substantive knowledge in yellow**
**Procedural- skills**

| | Autumn | Spring | Summer |
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| Treetops Nursery | E Safety<br>**Information Technology**<br>Accessing a computer- Turning on<br>**-Digital Literacy**<br>I need to stay safe when using technology.<br>-tell an adult how I feel about something I see on the internet.<br>-switch on a laptop independently<br>Access tux paint/using a program<br>use simple touch technology with increasing control<br>using IWB<br>Speak to an adult about what I see.<br>**Computer Science**<br>Use a range of control toys, remote control toys. (cars, robots, old laptops)<br>Make an electronic object move | | |
| Reception<br>Coding Kapow unit- programming Bee Bots | **Information Technology**<br>use digital devices to create and store e.g taking a photo on ipad, camera. Using role play<br>using IWB to create<br>Name some uses of IT beyond the school, Roblox, online games ,Netflix, text messages.<br>**Computer Science**<br>Beebots- putting in 1 instruction at a time and clearing at the end.<br>Make predictions about what a program will do or do next. (Beebot,<br>follow a simple sequence of algorithms (jump, step, not on a computer)<br>**Digital Literacy**<br>Some information should be kept private<br>Know what to do when something upsets me online. | | |

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| Class 1<br>Year 1 | online safety<br><br>**Information Technology -**<br>Switch a laptop on and log onto laptops independently, solving problems encountered .e.g switch user<br><br>-Type words correctly using a keyboard.<br><br>-Name and identify functions on a laptop e.g backspace key.<br><br>Click using a mousepad.<br><br>-Explain rules to keep us safe when we are using technology in and beyond the home.<br><br>Launch an application by double clicking<br><br>**Digital Literacy**<br>- Know how to be kind when online and using devices | Internet<br><br>-Explain how other peoples identity online can be different to their identity in real life.<br><br>-Type words correctly using a keyboard.<br>-Name and identify functions on a laptop e.g backspace key.<br>-Explain how devices can be connected to the internet and list them<br>**Information Technology**<br>-Copy and paste images into a document.<br>-Add text to a document<br>build confidence in typing<br>combine text and images.<br>To identify the search bar<br>(Digital data )To know that work on the internet may belong to other people | Coding<br>*Kapow unit algorithms unplugged*<br><br>**Computer Science**<br>create a simple program using repeats<br>- Follow an algorithm (non computer based)<br><br>Follow 2 step instructions.<br>-Use logical reasoning to predict the behaviour of simple programs<br>-Predict the outcomes of a program<br>-Understand that instructions need to be clear.<br><br>(*Beebots using grid. Create a series of steps. Lots of unplugged activities)* |
| Year 2 | **Information Technology**<br>Be able to save their work in a file.<br>Switch between capitals using caps lock.<br><br>Use of backspace and delete.<br><br>Use precise language to search for an image | **Information Technology**<br><br>Create a PowerPoint on parts of the computer<br><br>To create slides to identify the different fonts<br><br>change the colour of the slide.<br><br>manipulate text and images | **Computer Science**<br><br>To know that loops in programming are where you set a certain instruction (or instructions) to be repeated multiple times.<br><br>understand basic programming techniques<br><br>Incorporating loops within algorithms.<br><br>follow multiple step instructions |

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| | To save and to print<br><br>**Digital Literacy**<br>Make a poster on e- safety using prior skills/knowledge (copy and past from the internet, use of keyboard.)<br><br>Give examples of bullying behaviour and how it could look like online.<br><br>-Talk about how someone can/would get help about being bullied online or offline. | To organise and store by providing a name and sorting in a specific folder.<br><br>To retrieve work from saved areas.<br>To understand why to keep passwords private | Decomposition means breaking a problem into manageable chunks |
| Class 2<br>Year 3 | **Digital Literacy**<br>create a powerpoint that includes animations and Transitions effects.<br><br>-To know there are options to change the appearance of digital content.<br><br>(using format tab/artistic effects)<br>within Powerpoint:<br>-Manipulate the photo for effect<br>-To change the colour of a photograph<br>-To remove background | **Information Technology**<br>*Kapow unit- creating media, website design*<br><br>Create a clear plan for their web page and begin to create it.<br>Image and text can be combined for different effects.<br><br>create a gallery for images and effects<br><br>use tools to edit the appearance of digital content<br>Explain why it is important to be considerate and kind to people online | **Computer Science-**<br>*Kapow unit programming scratch*<br><br>An algorithm is a set of instructions<br><br>-Debugging is correcting errors in an algorithm<br><br>include at least one loop within a program<br><br>-Explain what some of the blocks do in Scratch.<br><br>Technology can affect our health, ensure healthy use of technology<br>To know how to report when we see something negative online. |
| Year 4 | **Digital Literacy**<br>**Information Technology** | - Create a webpage that includes text, images and hyperlink buttons. | **Computer Science**<br>Use sequence, selection and repetition in programs. |

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| | Combine text (fonts colours and backgrounds images, voice recordings) to create a presentation.<br>To insert a voice recording onto a powerpoint slide.<br><br>Use a timer to include a voice recording<br>To include a range of transition effects | - Create a powerpoint and record, place on as a link/embed on webpage.<br>Explain what a bot is and give different examples | Design a game and use feedback from others to make improvements<br>Create a program using a range of events/inputs to control what's happening.<br>make improvements to an algorithm by debugging<br>Include multiple loops within a program.<br>**Digital Literacy**<br>Know the importance of self regulating when using technology.<br>To know that everything we see online is not true. |
| Year 5 | **Computer Science**<br>**Digital Literacy**<br>**Information Technology**<br>research specific likes and dislikes for a target audience (to create a game using scratch)<br><br>To plan a simple game on scratch for their buddy.<br><br>Debug a game<br><br>-Using and adapting nested loops. (loops inside loops)<br><br>Describe ways in which some online content targets people to gain money/information illegally e.g scams/phishing | **Computer Science**<br>Tinker Cad (working with shapes)<br>- Work with a program to work towards a specific goal.<br>- 3d printing turns 3d designs into solid objects<br>- CAD creates objects in 2d or 3d<br>Explore how to place the objects view the objects from different perspective<br>-move and rotate the object around<br>-re size the object<br>-align different shapes.<br>-create using code blocks to create variables in a program.<br>**Digital Literacy**<br>create and use strong passwords | **Digital Literacy**<br>Access and justify when it is appropriate to use the work of others<br>Understand what copy write is.<br>social media /Its my project<br>Use a spreadsheet and understand simple formula add/subtract )<br>Understand how cells operate in Excel<br>-QR code<br>design a logo to advertise a product using graphics and text<br><br>cyberbullying is a type of bullying online and this can be through text, social media, online gaming. It can make people feel hurt and what to do about it |
| Year 6<br>kapow unit coding/python | Create a game that accomplishes a specific goal.<br><br>Pitch/Market/advertise using video the game to an audience | **Computer Science**<br>- Tinker cad (design their dream room)<br>- Use tutorial videos<br>- *Use mathematical knowledge to support. (e.g conversions)*<br>- Work with a program to work towards a specific goal | **Digital Literacy and Information Technology**<br>Use a spreadsheet and understand simple formula (using all 4 operations )<br>- Creating a spreadsheet within Excel<br>- Create a short advertising video of the product<br>- Designing and building a webpage for their product.<br>- |

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| | (advert using PowerPoint skills )<br><br>Create simple variables and understand their role within a program using coding blocks.<br><br>use logical reasoning to detect and correct errors in algorithms.<br><br>recognise their audience when creating their game.<br><br>Evaluate my content against a success criteria.<br><br>Some games are not appropriate to play<br>Explore microbits- training coming soon | - create using code blocks to create variables in a program.<br>-<br>- use a design program with accurate measures for a blueprint.<br><br>- Use a simple scale<br><br>- -Evaluate my work and others using a success criteria and make improvements accordingly.<br><br>- Know why there are restrictions on gaming and understand why there are pegi rated games | Social media has changed the way we communicate, do business, access info and share news.<br>Social media are what people are choosing to show and can be biased. |