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| COMPUTING | **Pedagogical Knowledge**  **How do children learn Computing?**  • Children are natural problem solver and get excited by building, creating. They need meaningful contextualized opportunities to explore, create and manipulate a range  of digital artefacts.  **Examples include:**  • Publishing reports, stories and other material they have created  • Making and remixing multimedia objects  • Creating games, puzzles, greetings card etc.  • Controlling physical objects using digital tools  • Unplugged activities to explore computational thinking  **Computing Pedagogical Knowledge**  • Teaching children to be digitally literate needs to go beyond e-safety and cyberbullying. Critical reading of material on the internet is an important skill. Children may believe that there is an authority such a teacher curating search results. It is important that teaching disrupts these misconceptions to allow children to develop views which are more rational.  • The tinkering stage of learning is of particular importance as identifying problems and solving them mirrors the real-world practices of computer programmers.  • Unplugged activities are lessons in computational thinking that do not involve digital technology. They provide important opportunities for children to problems solve using computer science approaches without having to learn how to use a new tool. | | | | | | | | | |
| Y1&2  Cycle B | **Autumn**  **Movers & Shakers** | | | **Spring**  **Coastline** | | | **Summer**  **Magnificent Monarchs** | | | |
| + Unit | COMPUTING SYSTEMS & NETWORKS *To identify technology (Digital Literacy)* | CREATING MEDIA*Digital painting*  *(Information Technology)* | | CREATING MEDIA *Digital writing*  (*Information Technology)* | DATA & INFORMATION *Grouping data*  (*Information Technology)* | | PROGRAMMING *Moving a robot*  *(Computer Science)* | | | PROGRAMMING*Introduction to animation*  *(Computer Science)* |
| Significant Person |  |  | |  |  | |  | | |  |
| Y1 | To identify a computer and its main parts.  To use a mouse to move an object.  To use a keyboard to type.  To use the keyboard to write text.  To share rules for using technology responsibly. | To describe what different freehand tools do.  To use the shape tool and the line tools.  To make careful choices when painting a digital picture. | | To use a computer to write.  To add and remove text on a computer.  To identify that the look of text can be changed on a computer. | To label objects.  To identify that objects can be counted.  To describe objects in different ways.  To count objects with the same properties. | | To explain what a given command will do.  To act out a given word.  To combine forwards and backwards commands to make a sequence. | | | To choose a command for a given purpose.  To show that a series of commands can be joined together. |
| Y2 | To identify a computer and its main parts identifying what each part is used for.  To use a mouse in different ways.  To use a keyboard to type with increasing speed.  To use the keyboard to edit text.  To create rules for using technology responsibly. | To explain why I chose the tools I used.  To use a computer on my own to paint a picture.  To compare painting a picture on a computer and on paper. | | To make careful choices when changing text.  To explain why I used the tools that I chose.  To compare writing on a computer with writing on paper. | To compare groups of objects.  To answer questions about groups of objects. | | To combine four direction commands to make sequences.  To plan a simple program.  To find more than one solution to a problem. | | | To identify the effect of changing a value.  To explain that each sprite has its own instructions.  To design the parts of a project.  To use my algorithm to create a program. |
| Y3&4  Cycle B | **Autumn**  **Invasion** | | | **Spring**  **Misty Mountain, Winding River** | | | **Summer**  **Ancient Civilisations** | | | |
| + Unit | COMPUTING SYSTEMS & NETWORKS *Connecting computers (Digital Literacy)* | CREATING MEDIA  *Stop-frame animation (Information Technology)* | | CREATING MEDIA *Desktop publishing (Information Technology)* | DATA & INFORMATION *Branching databases*  *(Information Technology)* | | PROGRAMMING *Sequence in music (Computer Science)* | | | PROGRAMMING *Events and actions (Computer Science)* |
| Significant Person |  |  | |  |  | |  | | |  |
| Y3 | To explain how digital devices function.  To identify input and output devices.  To recognise how digital devices can change the way we work. | To explain that animation is a sequence of drawings or photographs.  To relate animated movement with a sequence of images.  To plan an animation. | | To recognise how text and images convey information.  To recognise that text and layout can be edited.  To choose appropriate page settings.  To add content to a desktop publishing publication. | To create questions with yes/no answers.  To identify the object attributes needed to collect relevant data.  To create a branching database.  To identify objects using a branching database. | | To explore a new programming environment.  I can identify that each sprite is controlled by the commands I choose.  To explain that a program has a start. | | | To explain how a sprite moves in an existing project.  To create a program to move a sprite in four directions.  To adapt a program to a new context.  To design and create a maze-based challenge  repetition. |
| Y4 | To explain how a computer network can be used to share information.  To explore how digital devices can be connected.  To recognise the physical components of a network. | To identify the need to work consistently and carefully.  To review and improve an animation.  To evaluate the impact of adding other media to an animation. | | To add content to a desktop publishing publication.  To consider how different layouts can suit different purposes.  To consider the benefits of desktop publishing. | To create a branching database.  To explain why it is helpful for a database to be well structured.  To compare the information shown in a pictogram with a branching database. | | To recognise that a sequence of commands can have an order.  To change the appearance of my project.  To create a project from a task description. | | | To adapt a program to a new context.  To develop my program by adding features.  To design and create a maze-based challenge  repetition.  To identify and fix bugs in a program. |
| Y5&6  Cycle B | **Autumn**  **Maafa** | | | **Spring**  **Frozen Kingdoms** | | | **Summer**  **Britain at War** | | | |
| + Unit | COMPUTING SYSTEMS & NETWORKS *Sharing information* | | CREATING MEDIA *Vector drawing (Information Technology)* | CREATING MEDIA *Video editing*  *(Information Technology)* | | DATA & INFORMATION  *Flat-file databases (Information Technology)* | PROGRAMMING *Variables in games (Computer Science)* | | PROGRAMMING *Selection in games (Computer Science)* | |
| Significant Person |  | |  |  | |  |  |  | | |
| Y5 | To explain that computers can be connected together to form systems.  To recognise the role of computer systems in our lives.  To recognise how information is transferred over the internet. | | To identify that drawing tools can be used to produce different outcomes.  To create a vector drawing by combining shapes.  To use tools to achieve a desired effect. | To recognise video as moving pictures, which can include audio.  To identify digital devices that can record video.  To capture video using a digital device. | | To use a form to record information.  To compare paper and computer-based databases.  To outline how grouping and then sorting data allows us to answer questions. | To define a ‘variable’ as something that is changeable.  To explain why a variable is used in a program.  To choose how to improve a game by using variables. | To explain how selection is used in computer programs.  To relate that a conditional statement connects a condition to an outcome. | | |
| Y6 | To explain how sharing information online lets people in different places work together.  To contribute to a shared project online.  To evaluate different ways of working together online. | | To create a vector drawing using tools to achieve a desired effect.  To recognise that vector drawings consist of layers.  To group objects to make them easier to work with.  To evaluate my vector drawing. | To recognise the features of an effective video.  To identify that video can be improved through reshooting and editing.  To consider the impact of the choices made when making and sharing a video. | | To outline how grouping and then sorting data allows us to answer questions.  To explain that tools can be used to select specific data.  To explain that computer programs can be used to compare data visually.  To apply my knowledge of a database to ask and answer real-world questions. | To choose how to improve a game by using variables.  To design a project that builds on a given example.  To use my design to create a project.  To evaluate my project. | To explain how selection directs the flow of a program.  To design a program which uses selection.  To create a program which uses selection and evaluate. | | |