

Year Five: Autumn 1

Topic title:

Computer systems and networks -Search engines and Data Handling -Mars rover 1

Skills used: Computer science (CS) Information Technology (IT) Digital Literacy (DL)

Big question: Search Engines, How do search engines work? Mars Rover, What is a mars rover used for?

Prior learning:

- Collaborative learning- search engines.
- Investigating weather - mars rover.

Knowledge:

Search engines-

To know how search engines work.
 To understand that anyone can create a website and therefore we should take steps to check the validity of websites.
 To know that web crawlers are computer programs that crawl through the internet.
 To understand what copyright is.

Mars Rover-

To know that Mars Rover is a motor vehicle that collects data from space by taking photos and examining samples of rock.
 To know what numbers using binary code look like and be able to identify how messages can be sent in this format.
 To know what simple operations can be used to calculate bit patterns.

Skills:

Search engines-

Developing searching skills to help find relevant information on the internet. (IT)
 Learning how to use search engines effectively to find information, focussing on keyword searches and evaluating search returns. (IT)
 Learn about different forms of communication that have developed with the use of technology. (IT)
 Recognising that information on the Internet might not be true or correct and learning ways of checking validity. (DL)

Mars Rover-

Learning that external devices can be programmed by a separate computer. (CS)
 Learning the vocabulary associated with data: data and transmit. (CS)
 Recognising that computers transfer data in binary and understanding simple binary addition. (CS)
 Relating binary signals (Boolean) to the simple character-based language, ASCII. (CS)
 Learning that messages can be sent by binary code, reading binary up to eight characters and carrying out binary calculations. (CS)
 Understanding how data is collected in remote or dangerous places. (IT)
 Understanding how data might be used to tell us about a location. (IT)
 Learn about different forms of communication that have developed with the use of technology. (IT)

Critical Content Statements:

Search engines:

Algorithm -A sequence of instructions which, when followed, solve a problem.
Company logo- A symbol or motif, used to represent an organisation, so that it can be identified quickly and easily in a busy environment online or in the real world.
Data leak- When information is released without approval from the owner or creator.
Data privacy- The right to keep information private and away from those you do not wish to have access.
Fake news -False and inaccurate information that is shared in a convincing way, usually on social media and in websites.
Keywords (internet)-A set of words used to define and produce an accurate search engine result.
Network- When more than one electronic device is connected in a network through the internet or a local connection in order to share files and information.
Online- When a person is accessing the internet through an electronic device.
Page rank- Web pages are sorted in an order to give the user the most suitable results at the top of the list, the first result could be considered rank one.
Search engine- A way for a user to search the internet's database of information.
TASK - Title, Author, Summary, Kids
Website-A series of web pages and other content, which can be discovered and read through an internet browser, that all belong to a single domain name. For example, Google. The main place where particular web pages can be viewed or accessed.
WWW -The acronym used to express the 'World Wide Web'. It is found at the beginning of website addresses e.g. www.kapowprimary.com

Mars rover:

Algorithm- A sequence of instructions which, when followed, solve a problem.
Binary image- An image where the pixels are made up of only two colours, such as black and white.
Bit -One unit of data, that either has a value 1 or 0. A bit is also known as a 'binary digit'.
Bit pattern- A sequence of binary digits.
CPU -(Central Processing Units) are the brains of a computer and deal with all of the data it receives from input and output devices, as well as programs ran within the computer.
Data- Information used for a specific purpose or investigation.
Digital image- Formed by a series of programmed pixels.
Encode- To convert something into a different code, for someone or something else to understand it.
Image- A picture of people or objects.
JPEG- Joint Photographic Experts Group. A popular image compression format.
Memory computer- Any hardware device that is able to store data or information.
Operating system- The base software needed on a computer for it to manage basic commands, hardware and software and provide a user-friendly interface.
Pixels -A screen is made up of a grid of pixels, each pixel is programmed to display a certain colour which when put together form an image.
RGB -Red, Green, Blue. A colour mode,that uses these three hues combined to create a spectrum of colours.

Year Five : Spring 1

Topic title: E-safety- Online protection **And** Online bullying
programming- Music

Skills used: Computer science (CS) Information Technology (IT) Digital Literacy (DL)

Big question: How do I program music?

<p>Prior learning:</p> <ul style="list-style-type: none"> • Further coding with scratch - music • Year 4 E-safety- E-safety 	<p>E-safety Skills:</p> <p>Identifying possible dangers online and learning how to stay safe. (DL)</p> <p>Evaluating the pros and cons of online communication. (DL)</p> <p>Recognising that information on the Internet might not be true or correct and learning ways of checking validity. (DL)</p> <p>Learning what to do if they experience bullying online. (DL)</p> <p>Learning to use an online community safely. (DL)</p> <p>E-safety Knowledge:</p> <p>To know different ways we can communicate online.</p> <p>To understand how online information can be used to form judgements.</p> <p>To understand some ways to deal with online bullying.</p> <p>To know that apps require permission to access private information and that you can alter the permissions.</p> <p>To know where I can go for support if I am being bullied online or feel that my health is being affected by time online.</p>	<p>Knowledge:</p> <p>To know that a soundtrack is music for a film/video and that one way of composing these is on programming software.</p> <p>To understand that using loops can make the process of writing music simpler and more effective.</p> <p>To know how to adapt their music while performing.</p>	<p>Skills:</p> <p>Predicting how software will work based on previous experience. (CS)</p> <p>Writing more complex algorithms for a purpose. (CS)</p> <p>Iterating and developing their programming as they work. (CS)</p> <p>Confidently using loops in their programming. (CS)</p> <p>Using a more systematic approach to debugging code, justifying what is wrong and how it can be corrected. (CS)</p> <p>Writing code to create a desired effect. (CS)</p> <p>Using a range of programming commands. (CS)</p> <p>Using repetition within a program. (CS)</p> <p>Amending code within a live scenario.(CS)</p> <p>Using logical thinking to explore software more independently, making predictions based on their previous experience. (IT)</p> <p>Using a software programme (Sonic Pi/Scratch) to create music. (IT)</p> <p>Identify ways to improve and edit programs, videos, images etc. (IT)</p>
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Critical Content Statements:

<p>E-safety:</p> <p>App- Shortened word for 'Application'. An application (app) - a type of computer program typically found on smartphones and tablets.</p> <p>Bullying -The deliberate act of harming, intimidating or threatening someone else to cause them physical or emotional distress. Bullying can occur both online and offline.</p> <p>Health- The mental and physical condition of a person or living thing.</p> <p>Judgement- To come to a sensible conclusion about a matter or a person.</p> <p>Memes- An image (photo, video, text) with some (usually humorous) writing added to it.</p> <p>Online communication -The way people communicate (share and receive information) with each other over a computer network, such as the internet.</p> <p>Permission- The action of allowing something to happen.</p> <p>Wellbeing - The state of your mind, health</p>	<p>Music:</p> <p>Code (verb) - To write in programming language (code).</p> <p>Code block - A visual representation for a section of code that performs a certain job. They can be snapped together to build a program.</p> <p>Computer code - A set of instructions written in programming language, to tell a computer what to do.</p> <p>Live loop - Like loops, but instead of repeating a number of times, they go on forever. You can also have multiple running at the same time.</p> <p>Sprites - This is what characters or objects are called in Scratch.</p> <p>Tempo (music) - A musical term which refers to the speed of the music.</p> <p>Rhythm - A musical term that refers to the 'pattern' of long and short notes.</p>
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Year five: Summer 1

**Topic title: E-safety -
programming - Micro:bit**

Skills used: Computer science (CS) Information Technology (IT) Digital Literacy (DL)

Big question: What is micro:bit? How does it work?

<p>Prior learning:</p> <ul style="list-style-type: none"> ● Programming music - scratch ● Year 4 - Esafety <p>Future learning:</p> <ul style="list-style-type: none"> ● Programming intro into Python 	<p>E-safety Skills:</p> <p>Identifying possible dangers online and learning how to stay safe. (DL)</p> <p>Evaluating the pros and cons of online communication. (DL)</p> <p>Recognising that information on the Internet might not be true or correct and learning ways of checking validity. (DL)</p> <p>Learning what to do if they experience bullying online. (DL)</p> <p>Learning to use an online community safely. (DL)</p> <p>E-safety Knowledge:</p> <p>To know different ways we can communicate online.</p> <p>To understand how online information can be used to form judgements.</p> <p>To understand some ways to deal with online bullying.</p> <p>To know that apps require permission to access private information and that you can alter the permissions.</p> <p>To know where I can go for support if I am being bullied online or feel that my health is being affected by time online.</p>	<p>Knowledge:</p> <p>To know that a Micro:bit is a programmable device.</p> <p>To know that Micro:bit uses a block coding language similar to Scratch.</p> <p>To understand and recognise coding structures including variables.</p> <p>To know what techniques to use to create a program for a specific purpose (including decomposition).</p>	<p>Skills:</p> <p>Decomposing a program without support.</p> <p>Predicting how software will work based on previous experience. (CS)</p> <p>Writing more complex algorithms for a purpose. (CS)</p> <p>Programming an animation. (CS)</p> <p>Iterating and developing their programming as they work. (CS)</p> <p>Confidently using loops in their programming. (CS)</p> <p>Writing code to create a desired effect. (CS)</p> <p>Using a more systematic approach to debugging code, justifying what is wrong and how it can be corrected. (CS)</p> <p>Using a range of programming commands. (CS)</p> <p>Using repetition within a program. (CS)</p> <p>Using logical thinking to explore software more independently, making predictions based on their previous experience. (IT)</p> <p>Identify ways to improve and edit programs, videos, images etc. (IT)</p>
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Critical Content Statements:

<p>E-safety:</p> <p>App- Shortened word for 'Application'. An application (app) - a type of computer program typically found on smartphones and tablets.</p> <p>Bullying -The deliberate act of harming, intimidating or threatening someone else to cause them physical or emotional distress. Bullying can occur both online and offline.</p> <p>Health- The mental and physical condition of a person or living thing.</p> <p>Judgement- To come to a sensible conclusion about a matter or a person.</p> <p>Memes- An image (photo, video, text) with some (usually humorous) writing added to it.</p> <p>Online communication -The way people communicate (share and receive information) with each other over a computer network, such as the internet.</p> <p>Permission- The action of allowing something to happen.</p> <p>Wellbeing - The state of your mind, health</p>	<p>Micro:bit:</p> <p>Hex File- A file type, that carries binary information.</p> <p>Zip File - Multiple files that are bound together as a single file, to use less digital storage space.</p> <p>Bluetooth - Device to device connectivity, for example sharing images between two smart phones.</p> <p>Emulator - A program or machine that is built to copy the way another computer system works.</p> <p>Feature - Distinctive characteristics of something.</p> <p>Micro:bit - Created by the BBC, a small compact computer that you can code.</p> <p>Variable - This could be a number or text, that can change each time the program is run and often in combination with selection to change the end result of the program.</p> <p>Systematic - Doing something in an ordered way to achieve a specified goal.</p> <p>Predict - To make an educated guess, as to what might happen or occur as the result of something in the future.</p>
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