

STEAM Year 8 Knowledge Unit

Completion date:

You will learn about:

- What actually makes a computer
- How a computer works
- How a computer can store information and data
- How computers communicate

STEAM SKILLS

- Analysis
- Logical Reasoning
- Understanding of tools

<p>Lesson Overview</p> <p>1 What is a computer. Where and what computers are used for.</p> <p>2 Input and output devices. How computers communicate and do things.</p> <p>3 Computer Hardware. Learn about the various parts inside a computer.</p> <p>4 Programming How can we instruct computers and make them perform tasks.</p> <p>5 Networking. How computers can talk to each other.</p>	<p>Key Words</p> <p>Binary: base 2 number system that uses 1s and 0s only.</p> <p>Bits and bytes: the measurement of storage capacity on a computer.</p> <p>Computer: combination of hardware and software working together.</p> <p>Embedded System: a basic computer installed into a device to perform a specific purpose ie a washing machine.</p> <p>Hardware: Physical components used in or attached to a computer.</p> <p>Hub: Connects computers and peripherals to a local network and sends data to all devices.</p> <p>IP Address: Internet Protocol, a unique address which identifies the device and its location.</p> <p>LAN: Local Area Network, how computers and peripherals at home or school connect.</p> <p>Network: 2 or more computers or peripherals linked together.</p> <p>Operating System: The program which runs the computer.</p> <p>Router: A device which connects to a minimum of 2 networks, which forwards data between them.</p> <p>Software: Programs that are stored in memory for the computer to work.</p> <p>Network Switch: Like a hub but records IP and MAC addresses and sends data to a specific device.</p> <p>Transistor: microscopic electronic switch in a silicon chip.</p> <p>WAN: Wide Area Network, how computers and peripherals around the world connect.</p> <p>WIFI: Wireless network which allows electronic devices to communicate with each other.</p>
<p>Suggested reading or support available</p> <p>https://www.bbc.com/bitesize/guides/zxb72hv/revision/1</p> <p>https://www.bbc.co.uk/bitesize/guides/zc6rcdm/revision/1</p>	<p>Cross curricular</p> <p>Maths - number systems, measurements.</p> <p>SMSC – Technology in society, benefits, and risks.</p> <p>Literacy links</p> <p>....</p>

SUCCESS CRITERIA

Highlight your starting point for each skill in **PINK**, at the end of the project highlight where you think you got to in **BLUE**.

Grade Range	Analysis	Understanding of tools	Logical reasoning
0	I presented no work.	I presented no work.	I presented no work.
1	<p>WWW: I can say what the task to be solved was.</p> <p>EBI: I need to understand the problem in more detail.</p>	<p>WWW: I know which tools or software to select and can use them for basic tasks safely (with hand tools or computer software).</p> <p>EBI: I need to be able to choose the correct tools (hand tools or software) and understand the risks.</p>	<p>WWW: I understand some of the cause and effect in my work.</p> <p>EBI: I need to try to work out what the other possible choices and results could be in the task.</p>
4	<p>WWW: I can identify the task and individual problems to be solved with some help.</p> <p>EBI: I need to break the problem down into parts and describe how the parts are linked.</p>	<p>WWW: I can select the correct tools (hand tools or software) and know the risks of that tool.</p> <p>EBI: I need to expand my knowledge and features of different tools (hand and software).</p>	<p>WWW: I clearly understand cause and effect and use them as I work. I make predictions whether something will or will not work and test my hypothesis out.</p> <p>EBI: I need to ensure that I cover more\all possibilities when I test or try to solve my problem..</p>
6	<p>WWW: I can independently and accurately identify the various problems within the overall task.</p> <p>EBI: I need to make sure that I have carefully and in detail examined all possible parts of the problem.</p>	<p>WWW: I can make good choices in my selection of tools (hand tools and software) for safe and efficient use. I have a good understanding of their purpose.</p> <p>EBI: I need to expand my knowledge and purpose of a wider range of tools and equipment so I can work more effectively.</p>	<p>WWW: I can apply clear logic thinking as part of my problem solving and regularly rely upon this to know whether something is likely to work or not. I can identify faults effectively.</p> <p>EBI: I should make sure that I work out the logical opposites to my work and use them to aid testing and fault finding.</p>
8	<p>WWW: I can analyse the problem(s) thoroughly and can give a comprehensive and accurate description of each problem to be solved within the overall task.</p>	<p>WWW: I know the pros and cons of different tools (hand tools and software) and can make clear decisions on which to use for safety and efficiency. I have an excellent understanding of how they work and their capabilities.</p> <p>EBI: I can expand my knowledge and understanding of tools (hand\machine and software tools) that are used in the real world.</p>	<p>WWW: I use logical processes and arguments to confidently ensure an efficient solution is found. I use logic for fault finding frequently and successfully. I understand that inverse operations are used for checking and proof.</p> <p>EBI: Make use of logic tables to prove and test more advanced ideas or concepts.</p>

