

KS3 Computing-Understanding Hardware and Software

In this unit students will learn about the hardware and software components that make up computers systems and how they communicate with one another. Students will also learn how to identify and fix basic problems related to computer hardware and software.

Students will use PowerPoint or Book Creator in order to produce a series of presentations based upon their research and carry out ICT tasks related to their learning. Students will embed and advance their knowledge of PowerPoint and book creator in doing so.

RRS Articles: This unit of work is linked **Article 17** of the UN Convention on the Rights of the Child.

"I have the right get information in lots of ways, so long as it's safe"

	B2P5-6	B2P7-8	B2Step 1	B2Step 2	B2Step 3
Theme-Identifying hardware and software					
<u>Subject specific knowledge</u>	<p>Is able to identify common pieces of hardware and software found within the home and school environment.</p> <p>Desktop PC (monitor, keyboard, mouse, base unit) Laptop iPad Mobile phone Smart TV Games consoles Headphones / ear buds Printer Digital cameras Google</p>	<p>Is able to identify common pieces of hardware and software found within the home and school environment.</p> <p>Desktop PC (monitor, keyboard, mouse, base unit, cd rom) Laptop iPad Mobile phone Smart TV Games consoles Headphones / ear buds Printer Digital cameras Google PowerPoint Word Publisher</p> <p>Is able to give a basic explain what each of the listed hardware and software does / is for.</p> <p>Understands the terms hardware and software.</p>	<p>Is able to identify common pieces of hardware and software found within the home and school environment.</p> <p>Desktop PC (monitor, keyboard, mouse, base unit, hard drive, CPU, fan, RAM, cd-rom, mother board) Laptop iPad Mobile phone Games consoles Smart TV Headphones / ear buds Printer Digital cameras Google PowerPoint Word Publisher</p> <p>Is able to give a basic explain what each of the listed hardware and software does / is for.</p> <p>Understands the terms hardware and software.</p>	<p>Is able to identify common pieces of hardware and software found within the home and school environment.</p> <p>Desktop PC (monitor, keyboard, mouse, base unit, hard drive, CPU, fan, RAM, cd-rom, mother board, units of measurement-KB,MB,GB,TB) Laptop iPad Mobile phone Games consoles Smart TV Headphones / ear buds Printer Digital cameras Google PowerPoint Word Publisher Operating system (Apple v Windows)</p> <p>Is able to give a basic explain what each of the listed hardware and software does / is for and common faults and reasons for them.</p> <p>Understands the terms hardware and software.</p>	<p>Is able to identify common pieces of hardware and software found within the home and school environment.</p> <p>Desktop PC (monitor, keyboard, mouse, base unit, hard drive, CPU, fan, RAM, cd-rom, mother board, units of measurement-KB,MB,GB,TB) Laptop iPad Mobile phone Games consoles Smart TV Headphones / ear buds Printer Digital cameras Google PowerPoint Word Publisher Operating system (Apple v Windows)</p> <p>Is able to give a basic explain what each of the listed hardware and software does / is for and common faults and reasons for them.</p> <p>Understands the terms hardware and software.</p>

		<p>Understands that Google is a search engine.</p> <p>Understands the terms input and output device.</p>	<p>Understands that there are lots of different search engines (i.e. Bing, Yahoo, Safe Search engines for children).</p> <p>Understands the terms input and output device.</p> <p>Understands the difference in use between Word (word processing), PowerPoint (presentation) and Publisher (graphic and text based documents)</p> <p>Understands benefits and limitations of each piece of hardware.</p>	<p>Understands that there are lots of different search engines (i.e. Bing, Yahoo, Safe Search engines for children).</p> <p>Understands the terms input and output device.</p> <p>Understands the difference in use between Word (word processing), PowerPoint (presentation) and Publisher (graphic and text based documents)</p> <p>Understands benefits and limitations of each piece of hardware.</p> <p>Is able to compare different versions of the same piece of hardware and software and states pro's and cons (i.e. a low spec laptop compared to a hi spec laptop, smart and non smart mobiles).</p> <p>Understands what an operating system is and how it relates to the hardware and software.</p>	<p>Understands that there are lots of different search engines.</p> <p>Understands the terms input and output device.</p> <p>Understands the difference in use between Word (word processing), PowerPoint (presentation) and Publisher (graphic and text based documents)</p> <p>Understands benefits and limitations of each piece of hardware.</p> <p>Is able to compare different versions of the same piece of hardware and software and states pro's and cons (i.e. a low spec laptop compared to a hi spec laptop, smart and non smart mobiles).</p> <p>Understands what an operating system is and how it relates to the hardware and software.</p> <p>Understands that Apple and Microsoft computers use different operating systems.</p>
<u>Subject specific skills</u>	<p>Is able to identify a piece/s of hardware or software highlighted within an image. I.e. picture of somebody listening to music (ear buds) on his or her phone.</p>	<p>Is able to sort equipment into hardware and software / input and output device.</p> <p>Is able to recommend appropriate pieces of hardware (with basic reason) in response to a scenario. I.e. David wants to take a computer to his friend's house in order to do some homework,</p>	<p>Is able to sort equipment into hardware and software / input and output device.</p> <p>Is able to identify errors in the use of computer software / hardware and justify decisions and suggest a suitable alternative (i.e. David has decided to take his desktop PC to his friends in</p>	<p>Is able to sort equipment into hardware and software / input and output device.</p> <p>Is able to compare hardware and software and identify the superior product and give reasons.</p> <p>Is able to give a possible solution to a hardware / software problem (i.e. the computer keeps overheating, or it is very slow to respond).</p>	

		<p>what piece/s of hardware could take?</p> <p>Is able to independently open Word, PowerPoint and Publisher.</p>	<p>order to play games, what are the potential problems with this and what might be a suitable alternative?)</p> <p>I.e. David has to write an essay on the computer, he has chosen to use PowerPoint. Has he made a good decision?</p> <p>Is able to use different search engines.</p>	<p>Is able to list hardware and software required for a specific project (i.e. create a video and text based presentation = digital camera or iPad, PowerPoint a laptop, iPad or Pc to edit).</p> <p>Is able to discuss the different types of operating systems used upon different computers.</p>
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Theme-How to identify and fix hardware and software problems

<u>Subject specific knowledge</u>	<p>Is able to independently turn on and off all hardware.</p> <p>Is able to independently access Google.</p> <p>Is able to recognise when wires are not connected or equipment plugged in.</p>	<p>Is able to independently turn on and off all hardware.</p> <p>Is able to independently access Google, PowerPoint, Word and Publisher.</p> <p>Is able to recognise when wires are not connected or equipment plugged in.</p> <p>Is able to independently connect a keyboard, mouse, base unit and monitor.</p>	<p>Is able to independently turn on and off all hardware.</p> <p>Is able to independently access Google, PowerPoint, Word and Publisher.</p> <p>Is able to recognise when wires are not connected or equipment plugged in.</p> <p>Is able to independently connect a keyboard, mouse, base unit and monitor.</p> <p>Is able to independently identify the internal components of a base unit (hardware, fan, CPU, circuit boards).</p> <p>Understands H & S practice around the use of ICT equipment.</p> <p>Understands what a computer virus is and what anti virus software is.</p>	<p>Is able to independently turn on and off all hardware.</p> <p>Is able to independently access Google, PowerPoint, Word and Publisher.</p> <p>Is able to recognise when wires are not connected or equipment plugged in.</p> <p>Is able to independently connect a keyboard, mouse, base unit and monitor.</p> <p>Is able to independently identify the internal components of a base unit (hardware, fan, CPU, circuit boards).</p> <p>Understands H & S practice around the use of ICT equipment.</p> <p>Understands what a computer virus is, what anti virus software is and common ways in which a computer becomes infected with a virus.</p> <p>Is aware of external support for fixing ICT issues (repair shops, warranties, you tube video tutorials, forums etc).</p>

<u>Subject specific skills</u>	<p>Is able to identify missing hardware (i.e. mouse when using a pc).</p> <p>Is able to recognise why a piece of equipment is not working (not plugged in, wire disconnected) and correct.</p>	<p>Is able to identify missing hardware (i.e. mouse when using a pc).</p> <p>Is able to recognise why a piece of equipment is not working (not plugged in, wire disconnected) and correct.</p> <p>Is able to recognise and correct multiple faults with a PC (i.e. mouse and keyboard not connected).</p>	<p>Is able to identify missing hardware (i.e. mouse when using a pc).</p> <p>Is able to recognise why a piece of equipment is not working (not plugged in, wire disconnected) and correct.</p> <p>Is able to recognise and correct multiple faults with a PC (i.e. mouse and keyboard not connected).</p> <p>Is able to identify potential H & S risks linked to the use of computer hardware / software.</p> <p>Is able to suggest a solution to software crashing.</p> <p>Is able to state one way of protecting ICT equipment from viruses.</p>	<p>Is able to identify missing hardware (i.e. mouse when using a pc).</p> <p>Is able to recognise why a piece of equipment is not working (not plugged in, wire disconnected) and correct.</p> <p>Is able to recognise and correct multiple faults with a PC (i.e. mouse and keyboard not connected).</p> <p>Is able to identify potential H & S risks linked to the use of computer hardware / software.</p> <p>Is able to suggest a solution to software crashing.</p> <p>Is able to state multiple ways of protecting ICT equipment from viruses.</p> <p>Is able to suggest an appropriate sequence of responses to an ICT issue (i.e. seek carer/parental advice, post questions on forums, research online / video tutorials, take to a PC repair shop).</p>
<u>Personal development</u>	<p><u>Problem solving-</u> Linked to resolving hard and software issues.</p> <p><u>Communication skills-</u> Asking appropriate questions and listening to responses when troubleshooting ICT issues.</p> <p><u>Self-management-</u> Linked to managing use of / repair of equipment</p> <p><u>Self-belief-</u> Never giving up if unable to resolve the issues, continue to ask, listen and try different solutions.</p>			
<u>Suggested activities</u> B2P5-8 -Matching images to hardware and definitions (worksheet / PowerPoint based). -Labelling ICT hardware being used within an image. -Completing checklist of activities / sequence of events in order to turn on / off computers and locate software.				

- Completing a sequence of troubleshooting activities.
- Snap cards – i.e. image of a person listen to music using ear buds has to be match with a pair of ear buds.
- Sorting exercises based upon hardware / software / input / output devices.

B2step 1-3

Above+

- Sorting exercises based upon matching documents to the appropriate software (PowerPoint, Word and Publisher).
- Use PowerPoint to create and deliver a presentation task based upon a specific aspect of the module (H&S, hardware, troubleshooting).
- Students take part in a series of practical scenarios based upon fixing basic hardware and software problems.
- Worksheet based test based upon all aspects of the module.
- Annotating images to highlight H & S issues / ICT issues.
- Students create infographic within PowerPoint to advise people on how to protect against a virus etc.

Online resources

<https://www.bbc.co.uk/bitesize/guides/zxb72hv/revision/1>
<http://planeta42.com/it/hardware.html>
<https://www.webopedia.com/Hardware>
<https://www.bbc.co.uk/bitesize/topics/zbhgjxs/articles/z9myvcw>
<http://www.playkidsgames.com/games/computer/default.htm#>
<https://www.instructables.com/id/Introduction-to-hardware-Learn-the-basics/>
https://www.abcya.com/games/input_output

Evidencing Work

All work / evidence sheets need to be printed off (where appropriate levelled in accordance with the rubric), students need to self assess and work needs to be put in student folders.