Common utility programs

Teacher's Notes

Lesson Plan

Length	60 mins	Specification Link	2.1.3/b	
Learning objective		Describe the purpose and use of common utility programs for computer security, (anti-virus, spyware protection and firewalls), disk organisation (system information and diagnosis, system clean-up tools, automatic updating)		

Time (min)	Activity	Further Notes
5	Spray table/tray and wipe it. Ask students why it is necessary to do such cleaning at home. Explain that keeping a computer running at its best requires various 'housekeeping' tasks to be done regularly, much like running a real home. Explain that anti-virus software stops malicious virtual organisms taking hold and destroying your data, just like antibacterial spray kills real-life germs to stop them making you ill.	Requires: Dirty tray/table, cloth, antibacterial spray. Elicit from students that anti-bacterial surface spray kills germs and stops them multiplying and making you ill.
15	**Worksheet 1** Housekeeping real-life vs computer. Show worksheet on screen (or give out sheets). Discuss the sheet and what the consequences (in real life and on the computer) would be of NOT performing the housekeeping tasks shown on the sheet? Students can now complete the activity in pairs.	Explain similar/different columns using anti-virus, and that students should feel free to add their own examples. Differentiation: more able students could have a sheet with the 'home' column missing, to see if they can come up with their own ideas.
5	Watch the set of videos.	
5	Check students' understanding of the videos by asking for definitions of key terms such as: • anti-virus • firewall • spyware detection • automatic updating • system clean-up tools • defragmenting	Antivirus software scans for malicious files and then removes them from your computer. Firewalls act as a two way filter which is based on a set of rules. Spyware detection searches for and removes malicious software which can do things like display irritating advertising messages or collect your personal data.
20	Remind students that defragmenters reorganize files so that the files are put together, which frees up memory space. Interactive: Defragging game (http://www.cambridgegcsecomputing.org/weblink17) Show the game on an IWB. Point out that the physical disk (coloured circle top left) is made up of tracks (concentric circles) split into sectors. Share the rules of the game. Run through this with students to clarify – once students are aware of how it works, they will be able to work quickly. After the game, summarize what the defragmenter is doing and why.	Teacher can use this opportunity to circulate amongst the students and assess their understanding; to support them if they struggle and extend them if they are of a higher ability.

Time (min)	Activity	Further Notes
10	**Worksheet 2** Pupils answer the exam style questions individually.	Examiner's notes state that the process of defragmentation was poorly understood by students, so the interactive game should have helped them get a solid grip on the concepts and mechanisms involved.
	Homework Talk to a parent/grandparent/carer about the admin tasks that are performed on their computer and use the house analogy to help them understand. Are there any other housekeeping tasks they can think of? Is there a computer equivalent?	Students may have to think 'underneath' the activities and they may map to ones already covered. For example laundry (washing, drying & ironing) removes dirt from clothing, i.e. removing unwanted 'bits' from the big 'wanted' part. This is similar to what an antivirus app does - searching for 'unwanted' code and deleting it from the body of 'wanted' code. Same goes for washing dishes and cleaning windows. Cooking is transforming raw materials into a form that feeds our hunger and looks appealing. This is similar to the whole 'input/process/output' model of computing as a whole. Changing the wallpaper on your desktop (manually or automatically every 30 seconds) serves no more purpose than wallpapering your lounge or putting up Christmas decorations. Use the feedback from the class at the start of the next lesson. This should also act as a recap of today's utilities.
5	**Plenary** Class discussion of any misunderstandings, or clarifications required.	

WORKSHEET 1 ANSWERS

	Computer	House	*Similar because …*
Security	Anti-virus	Using soap, bleach washing powder & anti-bacterial kitchen surface cleaner.	Kills things that would make you get sick.
	Firewall	Lock doors & windows, prevent unauthorised access to the building.	It keeps harmful things out.
	ISpyware detection	Close the curtains to stop people staring in to see you working on your laptop/iPad.	It stops other people looking at what you are doing.
File Organisation	Archiving, backup & restore	Tidying your bedroom (putting books back on shelves, clothes away in drawers). Putting boxes of old toys in the garage, putting Christmas	It helps you to organise things and put away things you don't need so that you are able to find the things you do need more easily and give you more space.
Clean-up	Delete tmp, cache, internet files, downloads & installers, recycle bin	Empty all bins in house on 'bin day'. Throwing away or recycling packaging, wrappers, tin cans, post-it notes, wipe chores from chalkboard.	It helps you to clear out things that you don't use to make space for things that you do.
Diagnostics	Task manager, disk usage viewer	Calendar, chalk board? Chores list on fridge? Monthly family meeting?	Helps you monitor what you need to do.
Customisation & Add-ons	Eye-candy: change the appearance of an app without changing its functionality Helper apps, add new features to existing apps, make them faster/easier	Ornaments, paint, wallpaper Kitchen gadgets	They make things more attractive and easier to use.

WORKSHEET 2 ANSWERS

Exam question (OCR, May 2011)

1 **Describe the following types of common utility programs:**

(a) Antivirus (2)

Antivirus software is used to prevent malware getting onto your computer and also to detect and remove it. Malware includes viruses, worms, and trojan horses.

(b) Disk defragmenter (2)

Disk defragmenters reorganise the structure of files so that all the files are together and all the free space is together. This can help the computer run faster.