Storage Devices

Teacher's Notes

Lesson Plan

Length	60 mins	Specification Link	2.1.2/U	Storage devices
Learning objective		Select suitable storage devices and storage media for a given application Justify their choice using characteristics such as capacity, portability, reliability, speed and durability Investigation of practical uses of storage technology in mobile phones, games consoles, tablet computers, network client computer and server technologies, data centres Raspberry Pi		

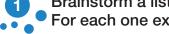| Time (min)	Activity	Further Notes
5	Introduce the topic. Show students the link to the specification. Explain the purpose and objectives of the lesson.	A starter to excite and engage students. Perhaps by bringing in a range of storage media and asking them to identify each one and share what they know. Or short clips of technology currently being developed – enabled by the evolution of memory, for example, IllumiRoom. (http://www.cambridgegcsecomputing.org/weblink16)
5	Show the set of videos.	
15	Pupils work through the interactive animated activity independently.	
5	Q&A with teacher to assess understanding. Use questioning techniques to gauge how much pupils have understood so far. Some questions that could be asked include: • What are the three main types of secondary storage? • How do CD's and magnetic medium differ in how they store data? • What is the capacity of… (select device)?	Ensure that all students have understood the key aspects of the topic, including the different factors for consideration when selecting a storage device.
15	**Worksheet 1** Pupils work through Worksheet 1.	The time given to this task depends on how the teacher decides Question 3 on the sheet is to be completed. If the task is to be completed in class, either in groups or individually, then an appropriate amount of extended time will need to be given to this. However, if the teacher decides that the write up will be done as homework, then the time indicated should be ample.

OCR CAMBRIDGE UNIVERSITY PRESS RaspberryPi

Time (min)	Activity	Further Notes
10	**Worksheet 2** Worksheet 2 to be completed by individual students. Test style conditions – no access to alternative resources?	11 marks in total are available for all the questions on the sheet. If students are told to answer the questions in test conditions then this will need to be timed and therefore 10 mins should be appropriate.
5	**Plenary** Summarise learning that took place. Outline homework. Pupils rate their confidence in their understanding of the lesson out of 10 and write this on a post-it note. On their way out of the class they can stick the post-it note in an area designated by the teacher.	It will be useful for the teacher to collate the post-it notes at the end of the lesson and look through the ratings. A quick glance should enable the teacher to get a good feel about the level of understanding that the class has at the end of the lesson. A rating of 10 being the highest, most confident and no need to revisit, with 1 representing being completely confused. The teacher can modify this as they wish, asking pupils to add their name, or keep it anonymous or asking them to add a statement about what they struggled with.

WORKSHEET 1 ANSWERS

1 Brainstorm a list of some computing devices that are available on today's market. For each one explain the main secondary storage device/method used.
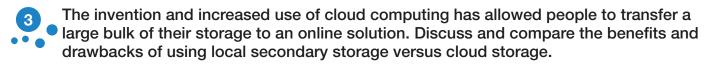
Answers may include:

Tablets, cameras, phones use solid state.

Laptops use HDD and newer ones also use solid state.

2 Complete the table below.

Device	Capacity	Speed of access	Portable?	Durable?
USB Memory Stick				
HDD - Hard Disk Drive	Contents of this table will vary depending on the technology available at the time this task is completed. The main point is to ensure students compare these factors for the range of devices given.			
CD				
DVD				
Memory Card				
SSD - Solid State Drive				

3 The invention and increased use of cloud computing has allowed people to transfer a large bulk of their storage to an online solution. Discuss and compare the benefits and drawbacks of using local secondary storage versus cloud storage.

This is intended to be a long discussion style answer. It is up to teachers how they wish to be completed. Some options are:

Individuals complete in class as extended answer question.
Individuals research and complete as homework.
Group discussion and research in class.
Group work in class, individual write-up at home.

Points to include:

Cloud computing such as Google Docs, Skydrive, Dropbox & Bitcasa allow:

- Limited storage depending on type of account.
- Files available wherever there is internet access.
- Services like Dropbox and Bitcasa appear as an additional drive on the computer so it's easy to transfer your files.

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Local secondary storage devices include:

- A range of medium and size capacities available.

- Bandwidth is not an issue.

- No internet access is needed.

- Portable mediums available for fi le transfer.

Having Cloud storage means that your local storage.

The general OCR GCSE COMPUTING HIGH/MEDIUM/LOW mark band scheme for extended answers can be applied here. However, pupils who are awarded higher marks will be those who discuss both benefi ts and drawbacks equally and in depth. They should be able to make a point and elaborate upon it with examples, use technical terminology effectively and write in prose. Their answer should fl ow and end with a proper conclusion.

WORKSHEET 2 ANSWERS

1 **Suggest an appropriate storage device for each of the following applications. (4)**

a. Store a high definition movie

DVD, BLU-RAY

b. Distribute some software that you've written

CD (and variations i.e. CD-R, CD-RW), DVD

c. Transfer GCSE Media coursework between home and school

USB Memory stick

d. Storage area on a college network

HDD

2 **Describe _two_ factors that should be considered when selecting a suitable storage medium to use in a given situation. (4)**

Capacity
Speed
Durability
Portability
Reliability
1 mark for each point mentioned. Additional mark for explanation

3 **Name _one_ device that makes use of solid state memory storage. (1)**

Memory cards, USB memory sticks, SSD

4 **Describe _one_ benefit of using a magnetic storage device like a HDD compared to a solid state device, such as an SSD for storing files on a network. (2)**

Capacity - HDD have much larger capacity.