

Computer Hardware

Building a Computer



Teacher's Notes

General Delivery of the Unit

For those computer whiz-kids in your class who already look up graphic cards and take their own computers apart you could probably just hand out the sheets and they'll love this. The other 90% of your class may need some persuading.

With such a technical unit, it's important to keep the work fast-paced, interesting and visual. Have an old PC ready which you can open up in front of the class and pull bits out of to pass round. Do not ask pupils to read more than a page or two without some kind of teacher input. The further I got into the unit the more pupils asked questions and began to show a genuine interest in the technical language used to describe the components and their functions.

The Tasks (some advice)

1. You may be surprised by your pupils poor ability to look up what we regard as relatively simple information (I was!). For lower ability classes you may wish to demonstrate how to find computer retailers and how to use their web pages to narrow down what you are searching for.
2. My classes loved this task. Use it to introduce the concept of a computer consisting of components which can be changed/updated. Once completed you can use the task to introduce some facts, for example, laptops are harder to upgrade simply because there is no space for additional devices.
3. The more able pupils in my class coped with this well. The poorer pupils required some pointing in the right direction.
4. This is the first task that looks at a specification. It's important to reassure the class that it's not as daunting as it looks. Once the questions have been answered, use your open PC to talk through the more technical aspects of the spec (bay sizes, difference between USB speeds, expansion slots) that will arise later in the unit.
5. Ensure you spend some time going over page 9 before your pupils attempt task 5. This will be your first indication of who's getting it and who's not. Make sure you provide good feedback to the submissions.
6. I wrote this task to give me a reason to talk about processor developments (clock speed, reduced thickness of processors to reduce heat, number of cores). There's a good short video on YouTube from Intel that shows how a processor is made.

7. This was my favourite task in the whole unit as the classes were really enthusiastic about it. When explaining the solutions or helping pupils start with the motherboard and then find compatible devices.

The answers are:

Motherboard 1	Processor 2	Memory Option 3	Case 1 or 2
Motherboard 2	Processor 3	Memory Option 1	Case 1 or 2
Motherboard 3	Processor 4	Memory Option 4	Case 3 or 4
Motherboard 4	Processor 1	Memory Option 2	Case 3 or 4

8. This task took a lot longer than I had predicted (about 30 minutes instead of 5). Some pupils may require a bit of prompting as to what to type into the search engine. I also found that most pupils looked for images rather than websites.

9. For difficult questions, these were answered relatively well. Note that many pupils completed Q1 but only sent me what the letters stood for. I replied saying this was great but they hadn't actually answered the question, "what are they?".

10. I used this short task to discuss one of the basic rules of component development, "new stuff costs more".

The Projects

I put a lot of thought into how to deliver projects that would cover the different levels of understanding demonstrated by the pupils throughout the unit.

The marks distribution (everyone gets a mark out of 60 but the project you choose limits your maximum mark) was introduced to ensure that, although the pupils have a free choice, they are encouraged to try the harder projects to gain more marks.

Encourage the pupils to stick to the suggested report layout as this will make the project easier for you to mark. A detailed marking scheme has been provided.

Curriculum for Excellence

This unit was written to cover the Scottish Level 3, Experience & Outcome: 3-08c

"Having gained knowledge and understanding of the components of a computer, I can make an informed choice when deciding on the system required for a specific purpose."

and the Level 4 Experience & Outcome: 4-08d

"Through research, I can gain knowledge of computer systems or emerging technologies to understand their differing features and consider their suitability for the world of work."

Note the whole delivery (theory and projects) took about 13 hours.

Have fun, I did.

Greg