

No Guts, No Glory Computer Building Workshop

Objective

Beginning with a description of desktop computer components and ending with a hands-on exercise where the students build a computer, this exercise aims to build students' comfort and familiarity with desktop computer components.

Materials

- slide deck on computer components
- retired computers (i.e. computers don't need to be new, we use 6-7 year old computers; one for every two students is ideal)
- Knoppix CD ([URL here](#)) for each computer
- A mouse, keyboard and display for each computer. If this is not possible, the students could bring their computer to a central display, mouse and keyboard when they want to try it out.

Preparation

Days before the Workshop

- Review slides and prepare for talk, prepare props for slides (e.g. show RAM, show hard drive, if possible show opened hard drive with platters visible)
- For each computer
 - check if it boots
 - if possible, take a picture of the computer "guts" for reference
 - label any cables you feel would be useful to label e.g. "IDE1" or "Hard Disk" or "CD"
 - Remove the components you would like the students to later install (we do hard disk, CD ROM drive, RAM and video card) and place them in a container. Label the computer and the container with the same label, so you know which parts go with which computer.

On the Day of the Workshop

Setup a station for each student which includes

- a computer case with its associated parts container.
- a disconnected mouse, keyboard, display
- a power strip for the computer to be plugged into

Procedures

1. Discuss the components of a computer. See if the students can describe what the component does before you reveal the content on the slide.
2. Talk briefly about the exercise at hand, but don't be specific about the details --leave lots of room for discovery and trial and error!
3. **Important:** Make sure the students know that the computer must be unplugged when they are installing or removing components. **Also:** Make sure the students know that completion of this exercise does NOT qualify them for taking apart any other computers! (e.g. no taking apart the home computer after school!)
4. Let the students begin building their computers, it generally works well to let the students work in pairs. Circulate from station to station. Do not build the computer for them, but guide them and ask leading questions.
5. Once the students want to try out their computer, they can power the computer on and try to boot the Knoppix CD.
 1. Beeps are often indications that something isn't seated properly in the computer. Often students are afraid to push to hard to seat a card or cable. Give them the confidence to try and firmly connect each component.
6. If the students successfully boot the computer the Knoppix operating system will boot from the CD.
7. It's now up to you to decide if you want to end the exercise here, or have them perform additional tasks with the computer they have just built.

Adaptations

If multiple computers are not available, a single computer could be built multiple times.

Discussion Questions

1. Quiz the students on what the components do.
 1. If I want something to be stored on the computer after it's powered off I'll put it on the ... (hard drive).
 2. Why might RAM be faster than a traditional hard drive? (hard drive has moving parts, while RAM does not)