Computer Hardware Basics- Lesson Plan

Preparation
This lesson plan provides a basic overview of computer hardware. It discusses the components that perform the basic functions of a computer. These functions include inputting information into the PC, processing the information, storing the information, outputting the information, and sharing the information through networking and communications.

Students will need to become very familiar with a variety of external connectors that are used on PCs to connect common peripherals to standard ports. They should also be able to recognize by sight the internal components of a PC such as the power supply, motherboard, CPU, expansion slots, and storage devices.

Objectives

- Identify the fundamental principles of using personal computers
- Explore the inside of a computer.
  - Identify the names, purposes and characteristics of storage devices
  - Identify the names, purposes and characteristics of input devices for example: mouse, keyboard, bar code reader, multimedia (e.g. web and digital cameras, MIDI, microphones), biometric devices, touch screen.
  - Identify the names, purposes and characteristics of the major components inside a computer (memory, motherboard, storage devices, CPU, power supply).

Lecture Focus Questions:

- What is the difference between hardware, software, and firmware?
- What types of devices use USB ports?
- What are common input and output devices?
- What is the definition of processing?
- What are the most common types of storage devices?
- What are the major components inside a computer?

Assessment
Students will be tested on all the principles and components of the personal computer.
Revised - Computer Hardware Basics- Lesson Plan

Objectives

- Students will identify and label actual computer parts.
- Students will map out and disassemble the PC.
- By using hands on approach students will become familiar with the components and the architecture of the PC.
- Their map of the PC will be used in the reassembly of the PC. This activity will familiarize students with the organization of the computer system.

Lab Focus

Students will explore the inside of a non-operational computer, viewing labeled components in the laboratory. They will work in groups of three to five to examine the internal parts located in the computer. Groups will identify parts. Every group will build disassembled computer parts on board to display relationships of the parts. After parts are displayed and the relationship noted, the students will reassemble the computer and make sure it is operational.

ACTIVITIES

Teacher

1. Teacher labels the internal parts of the computer prior to student’s arrival.
2. Separate students into workgroups of two or three.
3. One group at a time looks at computer inside and observes pre-labeled computer parts.
4. The first group will lay out the computer parts from a box full of parts onto a board. Then have the groups make paper labels and arrows to indicate the descriptions and relationships of these parts.
5. Meanwhile, 2nd group is looking at the pre-labeled computer.
6. After 1st group completes their group assembly on the board, teacher takes a digital photo of their work.
7. Have the first group then disassemble their board and put the parts back into the box of parts.
8. Then have 2nd group repeat the process of laying out the parts and labeling them.
9. Repeat this entire process till all groups have looked at the labeled computer and laid out the parts on the board.
10. Have groups reassemble their computers with all the parts and confirm that the computer is operational.
Student

1. All groups will work together to look at the internal computer components that are labeled in the computer case. One student will be chosen by the group to be the recorder.
2. Students will take off the computer cover and draw a detailed map as to how the computer is put together. All the components must be described and sketched before the students can proceed.
3. After looking at the computer, the group takes the box full of computer parts and the piece of plywood. They work together to lay out parts on the board.
4. Individuals make paper labels of the part names and paper arrows to indicate the relationships using their notes and knowledge from the previous lesson.
5. Group works together to make their best representation of an exploded view of the insides of the computer.
6. After the photo is taken, the group immediately disassembles their board so that the next group can start from the beginning.
7. Whole class works together to view each group's photo of their board and find any problems and best points of each group's work.
8. Students will reassemble their computers will all the parts and confirm that the computer is operational upon assembly.

MATERIALS

An entire computer assembled with outer case removed, tools, flags to label parts inside the computer case, board, construction paper, colored marker pens, labels, camera (digital recommended)

METHOD OF ASSESSMENT

Teacher will assess each group's assembly on the criteria of:

1) organization
2) proper labeling
3) relationship of components
4) Ability to reassemble the computer
5) Functionality of computer after it is assembled.
Lesson Plan Comparison

For my lesson plan activity I choose to take an existing lesson plan on computer hardware basics and revise it based on some of the new learning theories that have been discussed in our lesson modules.

The first lesson plan presented followed a classic model for objectivism. Objectivists believe that knowledge is transmitted to people and it is stored in their minds. These directed methods are based on behavioral, cognitive-behavioral, and information processing theories. This falls in line with the first lesson plan which was teacher-centered. The lesson was based on the teacher lecturing to the whole class thereby transmitting his or her knowledge to the students. The students worked individually as opposed to in groups. The students were being assessed by a traditional multiple choice standardized test with specific expected responses.

For my newly designed lesson plan I choose to base it on a more Constructivist approach. Constructivists believe humans construct knowledge based on experiences and hands-on activities. It is based on cognitive, developmental, and generative/discovery theories. The lesson is less teacher-directed and more hands-on, student-centered. Instead of the students working individually the students are put into groups to work collaboratively. This hands-on approach will allow students to generate their own knowledge through real-life experiences. This lesson will allow students to learn through problem-oriented activities, promote critical thinking, problem solving, and higher-order learning skills. The assessment for this lesson will not follow the traditional assessment method of a standard test but will be graded using self-report instruments based on their hand-on project of assembling a computer.