



TECHNOLOGY CAMP

DAY 5 : HANDS-ON WITH HARDWARE

Introduction to Hardware

Session 1



YELLOW CIRCLE INC
PO Box 2383
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Teacher Lesson Plan

Introduction to Hardware

Session Name:

Introduction to Hardware

Summary:

Hardware Components are the individual parts, with specific jobs, that when combined produce Compiled Hardware, the devices we use every day.

Time Allotment:

65 minutes

Learning Objectives:

- *Define technology hardware*
- *Describe purpose of technology hardware*
- *Identify server components*
- *Discuss differences between laptop & desktop components*
- *Describe Networking components*
- *Compare & Contrast gaming consoles with other hardware*

Supplies:

- *Scrap paper / notepad to take notes*

Learning Activities:

- **(3 minutes) - Teacher Introduction**

Introduce yourself to students. Provide your name, industry experience, current job, fun activities you do, and something awesome about cyber security. This is session one, and a very good place to define some ground rules.

- **(4 minutes) - Volunteers Introduction**



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Introduce volunteers that are present in the classroom. Teachers will be provided with a quick bio of each volunteer who are helping in the classroom.

- **(3 minutes) - Session overview**

In this session students learn about technology hardware, describe purpose of technology hardware, identify server components, discuss differences between laptop & desktop components, describe Networking components, and compare & contrast gaming consoles with other hardware.

- **(5 minutes) - What is Technology Hardware?**

Hardware (H/W), in the context of technology, refers to the physical elements that make up a computer or electronic system and everything else involved that is physically tangible. This includes the monitor, hard drive, memory and the CPU. Hardware works hand-in-hand with firmware and software to make a computer function. – techopedia.com

<https://www.techopedia.com/definition/2210/hardware-hw>

Discuss how hardware has 2 meanings, the components that make up devices and the devices themselves.

- **(5 minutes) – Hardware Components & Compiled Hardware**

Hardware Components are the individual parts, with specific jobs, that when combined produce Compiled Hardware, the devices we use every day.

Discuss how the purpose and requirements of compiled hardware may determine the components that are used to build it

Discuss how the quality of a piece of compiled hardware depends not only on the quality of the hardware components, but also on how well the components work together.

- **(15 minutes) – Activity : Examples of Compiled Hardware Items**

List as many Compiled Hardware Items as you can. Examples:

- *Desktops*



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- Laptops
- Servers
- Gaming Consoles
- Network Switches
- Smartphones
- Tablets
- Smart TVs
- Tesla Cars
- Digital Cameras
- Digital Readers (e.g. Kindle)
- Can you name more?

Have Students discuss similarities and differences between compiled hardware devices.

Do they all have something in common? Motherboard? Memory?

- **(15 minutes) – Demonstration : Server Components**

As you list the server components, hold up any examples you have available and provide a brief explanation of their function

- Motherboard
- CPUs
- Memory Chips
- Hard-Drives
- Network Cards



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- *Storage controllers*

As students if they can think of any other components, and ask them to describe the function of any components mentioned.

- **(5 minutes) – Networking Hardware**

Explain that Networking has its own specific compiled hardware devices designed specifically for connecting other compiled devices

- *Switches*
- *Routers*
- *WiFi Access Points*
- *IP Cameras*
- *IoT Devices*

As students if they can think of any other pieces of network hardware (e.g. gateway, modem), and ask them to describe the function of any components mentioned.

- **(5 minutes) - Gaming Consoles vs. Desktops & Laptops**

Gaming Consoles

- *Specialized for a few limited tasks (e.g.) gaming, streaming content*
- *Hardware components selected to optimize performance for specific tasks*

Desktops & Laptops

- *Designed to perform a wide variety of different tasks*
- *Hardware not necessarily optimized for a specific task (but can be as in gaming PCs)*



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Ask students if they can think of any other similarities and differences? Which would they choose or do they prefer and why?

- **(5 minutes) - Video : The Secret Lives of Hackers & Discussion**

<https://www.youtube.com/watch?v=DKzi5CYNFAg>

Get students engaged by asking questions about the video.

- **(5 minutes) Closing / Wrap-up**

Define technology hardware

Describe purpose of technology hardware

Identify server components

Discuss differences between laptop & desktop components

Describe Networking components

Compare & Contrast gaming consoles with other hardware.

- **(1 minutes) - What's next?**

Inform students to head back to the cafeteria for snacks / break, and remind them to use the restroom before next session starts.



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