

Standard:CS.HS.01 Grade: 4

Standard .4.CS.HS.01

Identify and describe a variety of ways computer **hardware** and **software** work together as a system to accomplish a task, using appropriate technical terminology (e.g., **input**, **output**, **processors**, **sensors**, storage).

Essential Skills

Describe the different types of **input** that a computing system may receive and the **components** that could be involved (e.g., mouse, keyboard, **sensors**)

Identify the **processor** as the component which manipulates input into **output** and describe the different ways in which a **computing system** may produce output and the components that could be involved (e.g., monitor, printer, speaker)

Essential Questions

How do the **components** of a **computing device** work together to receive **inputs** and create **outputs**?

Explanation

Accomplishing almost any task with a **computing device** involves **hardware** and **software**. Students should trace the basic elements in a system from **input** and **sensors** to **processors** and storage to **output**. Students should be able to explain the interactions between hardware and software. For example: the keyboard (hardware) detects a key press, which the **operating system** and word processing **application** (software) displays as a new character that has been inserted into the document and is visible on the monitor (hardware).

Think of this as similar to....

Your eyes and ears are sensors. When you see and hear an audience clapping after your performance, your brain processes the input you see and hear as positive feedback and decides how to respond. Your brain tells your muscles to bend at the waist to produce the output, which is a bow.

Implementation Examples—What would this look like in the classroom?

Title	Description	Link	Content Connection & Notes
I Have, Who Has?	Grade 4 --Students are given a card with one component of a computing device, and a question about a different part of a device. A student has to find the card which answers the question they have, as well as the card which they have the answer to. Students identify the component they have as input, output, processor, or storage. Students identify connections and potential interactions among the components.	I Have, Who Has?	This lesson also aligns with CS CS.D.01
How Computers Work	Grade 4 -Students think through what a computer is, what the parts of a computing device are, and how they work together to perform tasks. They explore inputs, outputs, processors and storage and the way they interact. Students who are ready can also explore binary and circuits and logic.	How Computers Work	This lesson also aligns with CS CS.D.01
Inside your Computer	Grade 4 --Students follow the steps a computer takes with every click of the mouse. They explore the roles of the critical components of a computer-- the peripherals (including the mouse, monitor, etc.), the input/output subsystem (which controls what and how much information comes in and out), and the central processing unit (the brains), as well as human-written programs and memory.	Inside your Computer	

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