Standard: CS.D.01   Grade: 4

Standard CS.D.01

Describe how internal and external parts of **computing devices** function to form a system.

Essential Skills

Describe how different parts of a **computing device** interact with each other and work together.

Essential Questions

How do internal and external parts of a **computing device** work together to form a system?

How do components of a computing device rely on each other to function?

Explanation

Students will explain that **computing devices** often include various components (mouse, keyboard, monitor, game controller). The **components** may be connected physically (with wires, or as part of one device) and/or connected wirelessly to form an interconnected system. These components depend on the computer's **central processing unit (CPU)** to function. Students should be able to identify, and by 5th grade to model, how the CPU depends on the components to provide **input** and produce **output**. Input may be received from the keyboard and/or controller, mouse, touchscreen, or trackpad and output may be produced on a screen in the form of text and images and/or on speakers in the form of sound.

Think of this as similar to….

When you bake a cake you use bowls, pans, mixing spoons, flour, sugar, butter, eggs, measuring cups, an oven, oven mitts and probably other items. Each item has its own role, and all are essential to create the final product.

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

Title	Description	Link	Content Connection & Notes
I Have, Who Has?	**Grade 3**--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. **Grade 4**--Students identify the component they have as input, output, processor, or storage. Students should identify connections and potential interactions among the components.	I Have, Who Has?	This lesson also aligns with **CS CS.HS.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.HS.01.**
Input and Output	**Grade 4**--Students learn the difference between input and output devices, and they creatively invent a new device that combines input and output.		

Standard: CS.D.01 Grade: 4

These annotations are a collaboration between Maryland Center for Computing Education and the Maryland State Department of Education.