2.CSY.1 Computing Systems

> *The student will describe the characteristics of computing systems including hardware, software, input, and output. (a) Describe how hardware and software work together to accomplish a task. (b) Define and categorize components as inputs and outputs. (c) Describe how a computing system receives input and provides output. (d) Discuss how computers use binary to communicate and process information.*

Understanding the Standard

A system is a group of items that work together as a whole. In computing, a system is made up of hardware and software. Hardware refers to the physical components like screens and buttons, while software provides instructions for the system. These instructions are represented in a way that computers can understand. When we use a computer, we input information using hardware devices like buttons or touch screens, and the software processes it. The system then gives us output in a form we can understand. For example, we can use a mouse (hardware) to click on a button (input) in a web browser (software) and go to a new web page, which we can see displayed (output) on a screen.

Term	Definition
Hardware	Physical components of a computing system.
Software	The programs used by a computing system.
Input	Data that is taken in by a computer for processing.
Output	Data that is produced by a computer as a result of a program.

Prerequisite Knowledge

Students should have a prior understanding of how a computing system is made up of both hardware and software, and be able to identify and describe the purpose of common computer hardware.

Integration Opportunities

English 2.RV.1b,h Provide students with sentence stems for structured conversations. Have students use the sentence stems and newly learned vocabulary to define input, output, hardware, and software and describe how they work together to accomplish a task.

Science 2.3c Students will explore inputs of heating and cooling of a substance to identify the output of the phase of matter.

Physical Education 2.5d,e Have students describe the effects of consuming food and drinks from the five food groups on their physical activity output. Then have students identify the types of food that provide healthy energy for physical activity.

Math 2.NS.1 a, b; 2.CE.1 f
Design an input/output machine that uses a skip counting rule to increase numbers by a multiple of 2, 5, or 10.

Summary of a Lesson

Explain to the students that computers are made up of different parts that work together, reviewing the concept of hardware and software. Show pictures or icons representing different software applications and explain that software provides instructions for the computer to follow. Connect the idea of input (the way information goes into a computer) to how humans collect information from the world around them (generally with their senses). Connect the idea of output (how the computer shares the result of a process) with how humans can share their ideas (through showing or telling). Show pictures or illustrations of different hardware components and briefly explain their functions. Define the concepts of input and output in computing systems and have students identify each hardware component as input or output devices. Use a card sort or interactive play to model what a computing system does.

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