Course: Georgia Introduction to Software Technology I Module: Computing Basics

Lesson 5.1: Internal Components

https://codehs.com/course/15529/lesson/5.1

Description	In this lesson, students will learn about the essential internal components that make up a computer. Component categories include the motherboard (system board), firmware (BIOS), CPU (processor), GPU (graphics processor), storage, cooling, and NIC (network adapter).
Objective	Students will be able to: • Explain the purpose of common internal computing components such as motherboards, BIOS, RAM, and more.
Activities	5.1.1 Video: Internal Components 5.1.2 Check for Understanding: Internal Components 5.1.3 Connection: Build a Computer 5.1.4 Free Response: Build a Computer 5.1.5 Example: Test Your Brain's RAM! 5.1.6 Free Response: Test Your Brain's RAM! 5.1.7 Connection: The Machine Instruction Cycle
Prior Knowledge	• Students do not need any prior knowledge for this lesson
Planning Notes	• Students may have varying levels of prior knowledge concerning the concepts presenting in this lesson and this module as a whole. Consider grouping students if necessary and having a range of different activities or roles to increase differentiation. • If possible, this lesson would be an excellent lead-in for a lab in which students take apart an old computer or laptop and access all of its parts. • There are Youtube videos associated with this lesson. If your school has a firewall or disabled access, an alternate link can be found in the associated activity.
Standards Addressed	
Teaching and Learning Strategies	**Lesson Opener:**

- Have students brainstorm and write down answers to the discussion questions listed below. Students can work individually or in groups/pairs. Have them share their responses. [5 mins]

Activities:

- Watch the lesson video and complete the corresponding quiz. This quiz is a quick check for understanding. [8-12 mins]
- Watch the *Build a Computer* video and complete the corresponding activity. [10 mins]
- Explore the *Test Your Brain's RAM* activity and complete the corresponding free response. [15 mins]
    - This is meant to be a fun activity to get students thinking about how their brain works in a similar way as the RAM of a computer. Let students play the game for a few minutes but ensure that they continue on to the free response activity that follows.

Lesson Closer:

- Have students reflect and discuss their responses to the end of class discussion questions. [5-15 mins]

Discussion Questions

Beginning of Class:

- In one to two sentences, explain how you think a computer works.
    - *Answers will vary. Sample response: Electricity powers the machine which turns on the monitor and all components. Users interact with the computer and the computer responds.*
- List as many computer components that you can think of.
    - *Answers will vary.*
- What important features should an ideal computer have?
    - *Sample response: A computer should have a lot of storage and fast response times.*

End of Class:

- Acronym check! What do the acronyms CPU, RAM, BIOS, SSD, NIC, and GPU stand for?
    - *Central Processing Unit, Random Access Memory, Basic Input/Output System, Solid State Drive, Network Interface Card, Graphics Processing Unit.*
- Why is a cooling system a necessary component of a computer?
    - *A computer or other components can heat up when they are being used and cooling fans are designed to prevent them from overheating.*
- Before today, which of these components were you already aware of? Name something new that you learned about one of the components.
    - *Answers will vary. Sample response: I knew that the motherboard was an important part of a computer system but learned today that it is used to connect all of the other components!*

Resources/Handouts	

Vocabulary

Term	Definition
motherboard	A circuit board with ports and sockets used to connect the main devices of a computer.
BIOS	A special kind of firmware that runs programs strictly to start up your computer.
central processing unit (CPU)	The core component of a device that accepts and executes instructions.
random access memory (RAM)	A fast type of computer memory which temporarily stores all the information your device needs right away.
solid-state drive (SSD)	A fast access storage device used in computers.
graphics processing unit (GPU)	A component designed to speed up the creation of images and output them to a display device, like a monitor.
network interface card (NIC)	A component with a built in wired network port that allows the computer to connect to a network.

Modification: Advanced	Modification: Special Education	Modification: English Language Learners
• Have students research how components differ for desktop and laptop computers. How are these components used in other devices such as mobile phones and tablets?	• Print out video slides for students to reference • Have students draw or fill in a template that labels all of the different internal components of a computer	• Print out video slides for students to reference • Have students draw or fill in a template that labels all of the different internal components of a computer