

Unit 1: Introduction to Computing & Digital Literacy

Unit Length: 1.5 weeks

Unit Introduction

This unit introduces students to the foundational concepts of computing and digital literacy. Students explore the role of algorithms, the evolution of computing, hardware and software components, and the interplay between users and technology. By engaging in collaborative projects, hands-on tasks, and discussion-based activities, students will begin to see the relevance of computer science in their daily lives and the world around them.

Unit Objective

Students will understand what computing is, why it matters, and how the foundational building blocks of computing—including algorithms, hardware, and software—impact the digital systems they use every day.

Standards Covered

- 4565.D1.2: Define algorithms and explain what algorithms are used for.
 - 4565.D1.4: Explain why/how sequence matters in an algorithm.
 - 4565.D3.1: Demonstrate awareness of the history of computing.
 - 4565.D4.2: Identify various types of hardware (including components) and software (including operating systems), and explore the security practices, functionality, cost, accessibility, and aesthetics of a variety of hardware and software. (Partially addressed)
 - 4565.D4.4: Explain how an operating system, other software, and hardware work together.
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Word Bytes

Students will build a personal "Word Bytes" digital dictionary throughout the unit. Key terms include:

- Algorithm – A step-by-step set of instructions a computer follows to solve a problem or complete a task.
- Process – A running program or a task being executed by the operating system.
- Computer Science – The study of computers and algorithmic processes, including their principles, hardware and software designs, applications, and impact on society.
- Hardware – The physical components of a computer system.
- Motherboard – The central board that connects and allows communication between all hardware components.
- Input Device – Hardware used to send data into a computer (e.g., keyboard, mouse).
- Output Device – Hardware that receives and displays results from the computer (e.g., monitor, speakers).
- Central Processing Unit (CPU) – The main chip in a computer that performs most of the processing by following instructions.
- Graphics Processing Unit (GPU) – A specialized processor designed to render images and video and handle parallel processing tasks.
- Storage Device – Hardware used to store digital data (e.g., hard drives, SSDs, flash drives).
- Power Supply Unit (PSU) – The component that converts electrical power from an outlet into usable power for the internal parts of a computer.
- Software – Programs and other operating information used by a computer.
- Operating System (OS) – Software that manages computer hardware and software resources and provides services for application programs.
- Application Software – Programs designed to help the user perform specific tasks (e.g., word processing, browsing).
- Utility Software – Tools that help manage, maintain, or optimize a computer system (e.g., antivirus, backup tools).

Daily Breakdown

Day 1: Welcome & Word Bytes Introduction

Objective: Students will get to know each other, the class structure, rules, and create their personal Word Bytes digital dictionary.

Materials Needed: Classroom rules, First Day poster template (Google Classroom), Word Bytes dictionary template

Activities:

- Teacher and student introductions
- Classroom expectations overview
- Set up Word Bytes digital dictionary
- Create First Day poster (get-to-know-you or icebreaker activity)

Day 2: The Why and History of Computing

Objective: Students will explore the reasons behind learning CS and understand how computing has evolved.

Materials Needed: Computing Knowledge pre-test (optional), "Who Likes To" slides, Then & Now game cards

Activities:

- Optional: Computing pre-test
- "Who Likes To..." activity linking interests to CS fields
- Then & Now matching game
- Class discussion on how technology has changed

Day 3: What Are Algorithms?

Objective: Students will understand the concept of algorithms through hands-on and collaborative activities.

Materials Needed: PBJ supplies, blindfolds, candy/trinket prizes, Word Bytes dictionary

Activities:

- PBJ algorithm writing challenge and demo
- Blindfold navigation challenge (Captain Algorithm & Robo Walker)
- Discussion: How algorithms guide daily routines

Day 4: Hardware Trading Cards – Introduction

Objective: Students will begin a group project to research and design a trading card for a hardware component.

Materials Needed: Computer hardware video, card templates, partner list, rubric, component draw box

Activities:

- Watch video overview
- Assign partners and hardware components
- Begin research and design planning

Day 5: Hardware Trading Cards – Work Time

Objective: Students will continue building their hardware trading cards using research and visuals.

Materials Needed: Devices, card templates

Activities:

- Partner work time
- Peer feedback as needed

Day 6: Hardware Trading Cards – Presentations

Objective: Students will present their trading cards and explain the function of each component.

Materials Needed: Finalized cards, rubric

Activities:

- Partner presentations
- Class feedback and discussion

Day 7: Computer Hardware Exploration

Objective: Students will identify real computer components and describe their functions.

Materials Needed: Openable PCs/Macs/iPads, tools

Activities:

- Students explore internal hardware
- Identify parts and explain their function

Day 8: Software Sorting Challenge

Objective: Students will differentiate between operating systems, application software, and utility software.

Materials Needed: Devices, Kahoot, optional extension research instructions

Activities:

- Vocabulary review
- Kahoot software sorting game
- Optional: Software research mini-project

Day 9: Post-Test (Optional)

Objective: Students will demonstrate their understanding of key unit concepts.

Materials Needed: Post-test

Activities:

- Unit post-test (optional)

Unit Wrap-Up Objective

Students will be able to identify key components of computing systems, explain the role of algorithms and software, and describe how these elements work together to enable modern digital tools.