

2 Introduction to Computers

Content Area: **Technology**
Course(s): **Computer Systems & Networking I**
Time Period: **October**
Length: **42 class periods**
Status: **Published**

Unit Overview:

This unit introduces:

- the history of computing devices and the ethical implications of modern technology.
- the basics of how computers work, including their use of the binary number system and the encoding of digital media files.
- computer hardware components and gives you practice setting up external devices for desktop systems.
- the internal components of computer systems, including processing, storage, and memory.
- operating systems and gives you practice using the Windows user interface.
- computer file system features and gives you practice managing files and folders on Windows.
- various categories of application software and gives you practice managing Windows applications.

Essential Questions:

- How are today's computers similar to the earliest computers? How are they different?
- Which types of computer devices are most appropriate for different types of users?
- What hardware components are generally required for a desktop computing system?
- Why are ethical standards especially important for computing technology professionals?

Enduring Understandings:

- At their most basic level, computers are systems that take input from a user, process it, then display the results of the computation or store the results to be used later.
- No one type of computing device is best. The most appropriate type of computing device depends on the way it will be used.
- An increasing number of everyday objects are being built with Internet connectivity. This concept of connecting many kinds of devices to the Internet is called the Internet of Things, or IoT.

Standards/Indicators/Student Learning Objectives (SLOs):

- Students will be able to: Recall significant developments in the history of modern computing.
- Students will be able to: Identify uses of computers in today's world.

- Students will be able to: Identify the basic functions of computers.
- Students will be able to: Recommend computing devices based on user requirements.
- Students will be able to: Describe ethical considerations related to evolving forms of technology.

TECH.8.2.12.B.4	Investigate a technology used in a given period of history, e.g., stone age, industrial revolution or information age, and identify their impact and how they may have changed to meet human needs and wants.
TECH.8.2.12.B.CS4	The influence of technology on history.

Lesson Titles:

- 1.1.1 Introduction to Computers (0:13)
- 1.1.2 Computer System Facts
- 1.1.3 History of Computers (3:40)
- 1.1.4 Computer History Facts
- 1.1.5 Computing Devices (4:04)
- 1.1.6 Computing Device Facts
- 1.1.7 The Internet of Things (2:13)
- 1.1.8 Internet of Things Facts
- 1.1.9 Technology and Ethics (3:39)
- 1.1.10 Technology and Ethics Facts

- 1.2.1 Number Systems (3:48)
- 1.2.2 Number System Facts
- 1.2.3 Digital Information (4:45)
- 1.2.4 Digital Information Facts
- 1.2.5 Data Representation (2:24)
- 1.2.6 Data Representation Facts
- 1.2.7 Digital Sound & Video (5:08)
- 1.2.8 Digital Sound & Video Facts
- 1.2.9 Digital Images (3:58)
- 1.2.10 Digital Image Facts
- 1.2.11 File Compression (5:29)
- 1.2.12 File Compression Facts

- 1.3.1 Input/Output Hardware (0:13)
- 1.3.2 Input/Output Hardware Fact
- 1.3.3 External Device Interfaces (0:13)
- 1.3.4 Installing External Devices (3:05)
- 1.3.5 External Device Facts
- 1.3.6 Connect a Monitor (1:38)
- 1.3.7 Connect a Monitor
- 1.3.8 Install Peripherals (USB Devices) (2:41)
- 1.3.9 Install Peripherals (USB Devices)

- 1.4.1 Internal Computing Components (0:13)
- 1.4.2 Internal Computing Component Facts
- 1.4.3 Storage Types (0:13)
- 1.4.4 Storage Facts
- 1.4.5 CPU Types (0:13)

- 1.4.6 CPU Facts
- 1.4.7 Troubleshooting (4:37)
- 1.4.8 Troubleshooting Facts
- 1.4.9 Set Up a Computer (3:19)
- 1.4.10 Set Up a Computer

- 1.5.1 Introduction to Operating Systems (0:13)
- 1.5.2 OS Interfaces (0:13)
- 1.5.3 Operating System Facts
- 1.5.4 System Software (3:02)
- 1.5.5 System Software Facts
- 1.5.6 Windows Settings (2:56)
- 1.5.7 Windows Settings Facts
- 1.5.8 Update Drivers (1:40)
- 1.5.9 Update Drivers
- 1.5.10 Manage Applications (1:21)
- 1.5.11 Manage Applications
- 1.5.12 Change Windows Settings (0:59)
- 1.5.13 Change Windows Settings

- 1.6.1 Files and File Systems (3:50)
- 1.6.2 File System Features (1:56)
- 1.6.3 File System Facts
- 1.6.4 Windows File Management (6:05)
- 1.6.5 Windows File Management Facts
- 1.6.6 Manage Files and Folders (1:40)
- 1.6.7 Manage Files and Folders
- 1.6.8 Assign File Permissions (1:10)
- 1.6.9 Assign File Permissions

- 1.7.1 Productivity Software (0:13)
- 1.7.2 Productivity Software Facts
- 1.7.3 Collaboration Software (3:56)
- 1.7.4 Collaboration Software Facts
- 1.7.5 Business Software (0:13)
- 1.7.6 Business Software Facts
- 1.7.7 Email Etiquette (3:11)
- 1.7.8 Email Etiquette Facts
- 1.7.9 Desktop Applications (3:37)
- 1.7.10 Desktop Application Facts
- 1.7.11 Windows Printing Features (4:29)
- 1.7.12 Windows Printing Facts
- 1.7.13 Use Desktop Applications (1:52)
- 1.7.14 Use Desktop Applications
- 1.7.15 Print a Document (1:13)
- 1.7.16 Print a Document

Career Readiness, Life Literacies, & Key Skills:

WRK.K-12.P.8	Use technology to enhance productivity increase collaboration and communicate effectively.
TECH.9.4.12.TL.3	Analyze the effectiveness of the process and quality of collaborative environments.
TECH.9.4.12.TL.4	Collaborate in online learning communities or social networks or virtual worlds to analyze and propose a resolution to a real-world problem (e.g., 7.1.AL.IPERS.6).

Inter-Disciplinary Connections:

LA.RH.9-10.3	Analyze in detail a series of events described in a text; draw connections between the events, to determine whether earlier events caused later ones or simply preceded them.
LA.RST.9-10.4	Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to grades 9-10 texts and topics.
LA.RST.9-10.7	Translate quantitative or technical information expressed in words in a text into visual form (e.g., a table or chart) and translate information expressed visually or mathematically (e.g., in an equation) into words.

Equity Considerations

Asian American Pacific Islander Mandate

See Topic 1.

Climate Change

CS.9-12.8.1.12.DA.1	Create interactive data visualizations using software tools to help others better understand real world phenomena, including climate change.
TECH.9.4.12.DC.8	Explain how increased network connectivity and computing capabilities of everyday objects allow for innovative technological approaches to climate protection.

Holocaust Mandate

See Topic 1.

LGBTQ and Disabilities Mandate

Topic: A brief guide to the devices, software and equipment that disabled people use to navigate the web.

Materials Used: Tuke, H., Richardson, E., Muasya, Z., & *, N. (2021, February 18). Assistive technology devices: How disabled people use the web. The Big Hack. Retrieved July 20, 2022, from <https://bighack.org/assistive-technology-devices-definitions-how-disabled-people-use-the-web/>

Addresses the Following Component of the Mandate:

- Bias, Biogtry, Prejudice

Resources & Materials:

- Video lessons

Instructional Strategies, Learning Activities, and Levels of Blooms/DOK:

Learning Activities:

- 1.1.11 Activity: Research Computing Devices
- 1.2.13 Activity: Compare Digital Media
- 1.3.7 Lab: Connect a Monitor
- 1.3.9 Lab: Install Peripherals
- 1.4.10 Set Up a Computer
- 1.5.9 Update Drivers
- 1.5.11 Manage Applications
- 1.5.13 Change Windows Settings
- 1.6.7 Manage Files and Folders
- 1.6.9 Assign File Permissions
- 1.7.14 Use Desktop Applications
- 1.7.16 Print a Document

Instructional Strategies:

- Summarizing & Note Taking
- Direct Instruction
- Provide opportunities for student practice
- KWL Chart
- Chapter study guide
- Large group discussion

Blooms/DOK:

- Level 1: recall/remember vocabulary
- Level 2: categorize computer hardware into input vs output
- Level 3: compare and contrast various components and how they work together
- Level 4: students apply the concepts of input vs output by building a computer and getting it to run

Summative Assessment:

- Labs (performance tests)
- Quiz on Application Software
- Quiz on File Management
- Quiz on How Computers Work
- Quiz on Operating Systems
- Quiz on Peripheral Devices
- Quiz on Processing and Storage Hardware
- Quiz on The Information Age

Formative Assessment:

- Anticipatory set
- Closure
- Exit tickets
- Graphic organizers
- Pop-quizzes (not graded)
- Questioning
- Think-pair-share
- Warm-up

Benchmark Assessments

Skills-based assessment

Reading response

Writing prompt

Lab practical

Alternative Assessments

Performance tasks

Project-based assignments

Problem-based assignments

Presentations

Reflective pieces

Concept maps

Modifications

ELL Modifications:

- Allow alternate responses
- Frequent breaks
- Give advanced notes
- Give extended time
- Model instructions
- Simplify instructions

IEP & 504 Modifications:

- Additional time as needed
- Pair with other students
- Preferential seating
- Print out the text in hardcopy
- Read instructions aloud

G&T Modifications:

- Competitions and collaborative projects
- Curriculum acceleration
- Enrichment activities
- Extracurricular activities
- High expectations
- Independent projects
- Multi-level differentiated curriculum
- Set individual goals
- Special projects (e.g. newsletter)

At Risk Modifications

- Continue to repeat and rephrase the major point(s) of the unit or lesson
- Elicit prior knowledge
- Give very basic introduction
- Include hands-on experiences and manipulatives whenever possible
- Insert meanings of vocabulary continuously throughout the lesson
- Offer copies of lecture notes
- Provide study guides for tests well in advance
- Schedule field trips at the beginning of the unit
- Use graphic organizers

Technology Materials and Standards:

- <http://www.testout.com>
- <https://www.computerhistory.org/timeline/computers/>
- <https://www.livescience.com/20718-computer-history.html>

TECH.8.2.12.E.1	Demonstrate an understanding of the problem-solving capacity of computers in our world.
TECH.8.2.12.E.2	Analyze the relationships between internal and external computer components.
TECH.8.2.12.E.4	Use appropriate terms in conversation (e.g., troubleshooting, peripherals, diagnostic software, GUI, abstraction, variables, data types and conditional statements).

Computer Science and Design Thinking Standards:

TECH.8.1.12.A.CS1	Understand and use technology systems.
TECH.8.1.12.A.CS2	Select and use applications effectively and productively.
TECH.8.2.12.A	The Nature of Technology: Creativity and Innovation: Technology systems impact every aspect of the world in which we live.
TECH.8.2.12.A.CS2	The core concepts of technology.
TECH.8.2.12.A.CS3	The relationships among technologies and the connections between technology and other fields of study.
TECH.8.2.12.B.CS2	The effects of technology on the environment.
TECH.8.2.12.B.CS4	The influence of technology on history.
TECH.8.2.12.D.4	Assess the impacts of emerging technologies on developing countries.