Lesson Plan

Course Title: Principles of Information Technology

Session Title: Peripheral Devices

Lesson Duration: Will vary from instructor to instructor

Performance Objective:

Upon completion of this assignment, the student will be able to explain the function of the peripheral devices of a personal computer.

Specific Objectives:

Students will be able to

- identify input, output, and storage peripheral devices and their functions
- identify a variety of uses of peripheral devices

Preparation

TEKS Correlations:

§130.272(c). Principles of Information Technology (One-Half to One Credit).

(1) The student demonstrates the necessary skills for career development, employability, and successful completion of course outcomes. The student is expected to
   (C) employ effective reading and writing skills;

(3) The student uses emerging technologies to exchange information. The student is expected to
   (C) demonstrate effective Internet search strategies, including keywords and Boolean logic using various available search engines;

(4) The student demonstrates knowledge of the hardware components associated with information systems. The student is expected to
   (B) identify major hardware components and their functions such as the central processor unit, input and output peripherals, and storage systems and devices.

Instructor/Trainer

References:
- http://dragon.ep.usm.edu/~it365/module/Basics/Basics.htm Communication Devices
- http://www.computermuseum.li/Testpage/Jacquard-Punched-Card-Loom.htm History of NC -- Numerical Control: Jacquard Punched Card Loom Machine (1801)
- http://marsrovers.nasa.gov/home/index.html
- http://www.defenselink.mil
- http://www.defenselink.mil/news/newsarticle.aspx?id=3041

Instructional Aids:

- Peripherals Presentation
- Peripherals Organizer (PDF)
- Peripherals Vocabulary Handout (PDF)
- Peripherals Vocabulary Presentation
- Peripherals Assignment Sheet (PDF)

- Peripherals Research Worksheet (PDF)
- Peripherals Assignment Rubric (PDF)

Materials Needed:
None

Equipment Needed:
Instructor:
- Computer with Internet connection
- Printer and access to a copy machine
- C/D projector and screen

Students:
- Pen or pencil
- Computer with Internet connection

Learner

Students should

- have a basic understanding of what is inside the computer box
- complete "Inside the PC" before this lesson (Recommended)
- review the Peripherals Vocabulary Handout (PDF) the night before the lesson

Introduction

MI	**Introduction (LSI Quadrant I):**
	Review the peripherals vocabulary terms using the Peripherals Vocabulary Presentation. Show one slide at a time. A definition of a vocabulary term will appear. Ask the class what vocabulary term is defined by that definition. After several responses, go to the next slide that will reveal the term. Repeat the process for all terms.

Outline

MI	**Outline (LSI Quadrant II):** Use the Peripherals Presentation and Peripherals Organizer (PDF) to present the following outline.	**Instructor Notes:**
	I. What is a Peripheral Device? Any item connected to a computer but is secondary in relation to the CPU. A. Internal – Operates inside the case B. External – Operates outside the case	Give each student a copy of the Peripherals Organizer (PDF) and have them fill in the blanks as the information is presented.
	II. Peripheral Devices can be used for A. Input – Used to receive data B. Output – Used to send data C. Storage – Used to store data	Ask questions throughout the presentation. Examples are below: • How does information get inside a computer?

	III. Types of Signals	• How can I tell what information I have inside a computer?

III. Types of Signals
  A. Analog – Constant stream of data that we see and hear
  B. Digital – Estimates analog data using only ones and zeros; on or off (aka the Binary System)

IV. Common Internal Devices
  A. Input – Microphone
  B. Output – Speakers
  C. Storage – Hard drive, DVD+RW

V. Common External Devices
  A. Input – Keyboard, Mouse
  B. Output – Monitor, Printer, CNC
  C. Storage – hard drive, DVD+RW

VI. Specialized Peripheral Devices
  A. ISDN – Integrated Services Digital Network: Allows computers to communicate through telephone wires (Analog ↔ Digital)
  B. CNC/NC – Computer Numeric Control: Computer programs control and monitor machines' operations
    1. Robots
    2. Mills/looms
    3. CNC machining

VII. Types of Peripheral Uses
  A. Business - A commercial enterprise or establishment
    1. Price scanners
    2. Office machines
    3. Credit card readers
    4. Security systems
    5. Others?
  B. Industry – The sector of an economy made up of manufacturing, trade and services
    1. Manufacturing
      a. CNC machining
      b. Automated or robotic welding
      c. Computer controlled warehouses
      d. Others?

    2. Law Enforcement
      A. Bomb/explosives handlers (robots)
      B. Others?
    3. Military

Questions (right column):

• How can I tell what information I have inside a computer?

• My grandfather owned an analog wristwatch. Describe what it might look like.

• What else could I use instead of speakers?

• If you could create a robot, what would it be able to do?

• What are some of the new machines used to process a credit or debit card purchase?

• What are some of the ways that computer controlled robots are used in manufacturing, that you are already aware of?

• Give me some examples of computers or robots that have been included in movies (fictional or non-fictional).

• How many computers do you have in your home?

A. Computer-controlled surveillance aircraft
B. Others?
4. Science
A. Space – Robots travel on the surfaces of moons or planets, take pictures, collect samples, etc.
B. Medical – Computer-controlled robotic surgery, Digital X-ray screens
C. Others?

C. Personal
1. Home computer
2. Security systems
3. Utility control

VIII. Summary
Use a variety of the following questions to guide class discussion of the material presented:
A. What do you think is the most interesting peripheral device?
B. What do you think is the most essential peripheral device?
C. What do you think is the least interesting peripheral device?
D. What do you think is the least essential peripheral device?
E. Which peripheral devices are mostly used by
- The business sector?
- Industry?
- The private sector (individuals)?
F. Which peripheral devices are used by all 3 sectors?
G. Which peripheral devices do you think that a computer could run without?
H. Which peripheral devices can be removed and substituted with another device?
I. What do you think is the most interesting peripheral device?

J. What do you think is the most essential peripheral device?
K. What do you think is the least interesting peripheral device?
L. What do you think is the least

At the end of the presentation, introduce the Peripherals Assignment Sheet (PDF) and review the Assignment Sheet Rubric.

	essential peripheral device?
	M. Which peripheral devices are mostly used by: • The business sector? • Industry? • The private sector (individuals)? N. Which peripheral devices are used by all 3 sectors? O. Which peripheral devices do you think that a computer could run without? P. Which peripheral devices can be removed and substituted with another device?

Application	
MI	**Guided Practice (LSI Quadrant III):**
	Students will take notes during the presentation. Students will participate in class discussions during the presentation.
MI	**Independent Practice (LSI Quadrant III):**
	Students will complete the Peripherals Assignment Sheet (PDF) and Peripherals Research Worksheet (PDF).

Summary	
MI	**Review (LSI Quadrants I and IV):**
	Use the questions included in the outline Summary section (VIII) to review material presented.

Evaluation	
MI	**Informal Assessment (LSI Quadrant III):**
	1. Teacher will observe students and ask questions during the guided practice to assess whether students understand the information. Revise/reteach as needed before moving to the Independent Practice portion of the lesson. 2. Teacher will circulate through the class as students complete the Peripherals Assignment Sheet (PDF) to redirect/reteach as necessary.
MI	**Formal Assessment (LSI Quadrant III, IV):**
	Instructor will grade the Peripherals Assignment Sheet (PDF) using the Peripherals Assignment Rubric (PDF).

Extension	
MI	**Extension/Enrichment (LSI Quadrant IV):**
	1. Technology Student Association (TSA) members can look up Texas and National TSA requirements for CNC, imaging technology, computer maintenance, and/or electronics related competitive events.

	2. Students can investigate careers in computer networking, assembly, maintenance, robotics, sales, and repair.

Icon	MI	Teaching Strategies	Personal Development Strategies
	Verbal/ Linguistic	Lecture, discussion, journal writing, cooperative learning, word origins	Reading, highlighting, outlining, teaching others, reciting information
	Logical/ Mathematical	Problem solving, number games, critical thinking, classifying and organizing, Socratic questioning	Organizing material logically, explaining things sequentially, finding patterns, developing systems, outlining, charting, graphing, analyzing information
	Visual/Spatial	Mind-mapping, reflective time, graphic organizers, color-coding systems, drawings, designs, video, DVD, charts, maps	Developing graphic organizers, mind-mapping, charting, graphing, organizing with color, mental imagery (drawing in the mind's eye)
	Musical/ Rhythmic	Use music, compose songs or raps, use musical language or metaphors	Creating rhythms out of words, creating rhythms with instruments, playing an instrument, putting words to existing songs
	Bodily/ Kinesthetic	Use manipulatives, hand signals, pantomime, real life situations, puzzles and board games, activities, role-playing, action problems	Moving while learning, pacing while reciting, acting out scripts of material, designing games, moving fingers under words while reading
	Intrapersonal	Reflective teaching, interviews, reflective listening, KWL charts	Reflecting on personal meaning of information, studying in quiet settings, imagining experiments, visualizing information, journaling
	Interpersonal	Cooperative learning, role-playing, group brainstorming, cross-cultural interactions	Studying in a group, discussing information, using flash cards with other, teaching others
	Naturalist	Natural objects as manipulatives and as background for learning	Connecting with nature, forming study groups with like-minded people
	Existentialist	Socratic questions, real life situations, global problems/questions	Considering personal relationship to larger context

Peripheral Devices Organizer

I. What is a peripheral device?

Any item connect to a computer, but _____ in relation to the CPU.

   A. Internal – Operates _____ the case

   B. External – Operates _____ the case

II. Peripheral devices can be used for

   A. Input – Used to _____ data

   B. Output – Used to _____ data

   C. Storage – Used to _____ data

III. Types of Signals

   A. Analog – constant stream of data that we _____ and _____.

   B. Digital – estimates analog data using only _____ and _____; on or off (aka the **Binary System**).

IV. Common Internal Devices

   A. Input – _____

   B. Output – _____

   C. Storage – Hard drive, _____

V. Common External Devices

   A. Input – Keyboard, _____

   B. Output – Monitor, Printer, _____

   C. Storage – hard drive, _____

VI. Specialized Peripheral Devices

    A. ISDN – Integrated Services Digital Network: Allows computers to communicate

       through _____ _____ (Analog ↔ Digital)

    B. CNC/NC – Computer Numeric Control: Computer programs control and monitor

       machines' operations.

       4. _____

       5. Mills/looms

       6. CNC _____

VII.   Types of Peripheral Uses

    A. Business - A _____ enterprise or establishment

       6. Price scanners

       7. Office machines

       8. Credit card readers

       9. Security systems

       10. Others?

          _____

          _____

          _____

    B. Industry – The _____ of an economy made up of manufacturing, trade and

       _____.

       5. Manufacturing

         A. CNC machining

         B. Automated or _____ welding_____

         C. Computer controlled _____

         D. Others?

           _____

           _____

           _____

6. Law Enforcement

    A. Bomb/explosives handlers (robots)

    B. Others?

    _____

    _____

    _____

7. Military

    A. Computer-controlled surveillance aircraft

    B. Others?

    _____

    _____

    _____

8. Science

    A. Space – Robots travel on the surfaces of moons or planets, take pictures, collect samples, etc.

    B. Medical – Computer-controlled robotic surgery, Digital X-ray screens

    C. Others?

    _____

    _____

    _____

9. Personal

1. Home computer

2. Security systems

3. Utility control

4. Others?

    _____

    _____

    _____

Vocabulary-Peripheral Devices

1. **Peripheral Devices:** Any item connected to a computer but is secondary in relation to the central processing unit.

2. **Analog Devices:** Everything we see and hear is a continuous transmission of information to our senses. This continuous stream is what defines analog data**.**

3. **CNC Devices:** (**C**omputer-**N**umerical-**C**ontrol): Manufacturing process in which a computer program controls and monitors machines' operations (robots, mills, lathes…)

4. **Communication Devices**: Connect a computer to the Internet or another computer.

5. **Digital Devices:** Estimates analog data using only ones and zeros – on or off (also known as the **Binary System**).

6. **External Devices:** Operate outside the computer case.

7. **Input Devices**: Used to receive data (keyboard, mouse, scanner, camera, …)

8. **Internal Devices:** Operate inside the computer case.

9. **ISDN Devices:** (**I**ntegrated **S**ervices **D**igital **N**etwork): Involves the digitization of the telephone network, which permits voice, data, text, graphics, music, video, and other source material to be transmitted over existing telephone wires.

10. **NC Devices:** (**N**umerical-**C**ontrol) – A punch card around a drum controls machine operations (early automated weaving looms).

11. **Output Devices**: Used to send data (monitor, printer, …)

12. **Storage devices:** Used to store data (hard drive, floppy drive, tape drive …)

Peripherals Assignment Sheet

I. Use the Internet to find the following information:

    A. Ten (10) examples of peripheral devices:
        1. At least two (2) devices must be primarily used by industry
        2. *e.g.,* CNC equipment (Mill, Router, Lathe, Industrial Robot…)
    B. Identify device available as
        1. An internal device only
        2. An external device only
        3. Either an internal or external device
    C. Identify if device is primarily used for
        1. Input
        2. Output
        3. Storage
    D. **M**anufacture's **S**uggested **R**etail **P**rice (**MSRP**) of each device:
        1. Find price for one brand and model only
        2. Look for name brand devices and models known for quality
        3. Best to use manufacturer's web site
        4. Round price to the nearest dollar
    E. If device would mostly used by (see "D" below for criteria):
        1. Business only
        2. Industry only
        3. Personal (individual, family, home use) only
        4. Any combination of the above

II. Fill in the "**Peripheral Assignment Worksheet**" using the information found above.

III. Turn in the worksheet, PPT notes, and vocabulary.

IV. Criteria to use for **A-5** categories:
    A. Business: A commercial enterprise or establishment (other than industry):
        1. Government, education, bank, realtor, insurance, restaurant, retail store, communication, transportation, warehouses
    B. Industry: The sector of an economy made up of manufacturing enterprises
        1. Manufacturing, oil & gas, utilities, machining, construction…
    C. Personal: Home or private use:
        1. May include small home businesses and personal education uses

Research Worksheet – Peripheral Devices

1. List ten (10) specific peripheral devices (brand name & model number) in the "Device" column.
   - At least 2 devices must be primarily used by Industry, *e.g.*, a CNC Mill, Router, Lathe, Robot, etc.

2. Fill in the rest of the chart by inserting the appropriate underscored letter in the column heading or price.

Note: MSRP = Manufacturer's Suggested Retail Price – **Round price to the nearest dollar**

Device (w/brand & model number)	Internal/External or Both	Input/Output/ Storage	Business/Industry/ Personal/Combo	MSRP (to nearest $)
1.				$
2.				$
3.				$
4.				$
5.				$
6.				$
7.				$
8.				$
9.				$
10.				$

IT: [Principles of IT]: [Peripherals] Plan

Peripherals Assignment Rubric

Item	Points	Total	
		Available	Earned
Device (with brand and model number)	2 points for each of 10 items	20	
Internal/External or both	2 points for each of 10 items	20	
Input/Output/Storage	2 points for each of 10 items	20	
Business/Industry/Personal or Combination	2 points for each of 10 items	20	
MSRP (to the nearest $)	2 points for each of 10 items	20	
	Total	100	_____