



GEORGIA

PEACH STATE PATHWAYS

Career, Technical, & Agricultural Education

BUSINESS & COMPUTER SCIENCE

PATHWAY: Computer Systems and Support
COURSE: Information Technology Essentials
UNIT 6: Introduction to Printers

INTRODUCTION

Annotation:

In this lesson, students will receive an overview of printers: how they operate, advantages and disadvantages, and troubleshooting / maintenance techniques.

Grade(s):

X	9 th
X	10 th
X	11 th
X	12 th

Time:

14 hours

Author:

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Additional Author(s):

Students with Disabilities:

For students with disabilities, the instructor should refer to the student's IEP to be sure that the accommodations specified are being provided. Instructors should also familiarize themselves with the provisions of Behavior Intervention Plans that may be part of a student's IEP. Frequent consultation with a student's special education instructor will be beneficial in providing appropriate differentiation.

FOCUS STANDARDS

GPS Focus Standards:

BCS-ITE-4. Students will perform preventive maintenance on personal computer components.

- a) Identify and apply basic aspects of preventive maintenance theory.

BCS-ITE-13. Students will identify the fundamental principles of using printers and scanners.

- a) Identify differences between types of printer and scanner technologies (e.g. laser, inkjet, thermal, solid ink, impact).
- b) Identify names, purposes, and characteristics of printer and scanner components: memory, driver, firmware, and consumables (e.g. toner, ink cartridge, paper).
- c) Identify the names, purposes, and characteristics of interfaces used by printers and scanners including port and cable types.

BCS-ITE-14. Students will identify basic concepts of installing, configuring, optimizing, and upgrading printers and scanners.

- a) Install and configure printers/scanners.
- b) Optimize printer performance (for example - printer settings such as tray switching, print spool settings, device calibration, media types, and paper orientation).

BCS-ITE-15. Students will identify tools and diagnostic procedures to troubleshoot printers and scanners.

- a) Gather information about printer/scanner problems.
- b) Review and analyze collected data.
- c) Identify solutions to identified printer/scanner problems.

GPS Academic Standards:

ELA10RL5 The student understands and acquires new vocabulary and uses it correctly in reading and writing.

ELA10RC3 The student acquires new vocabulary in each content area and uses it correctly.

ELA10RC4 The student establishes a context for information acquired by reading across subject areas.

ELA10LSV1 The student participates in student-to-teacher, student-to-student, and group verbal interactions.

SCSH3 Students will identify and investigate problems scientifically. **SCSH7** Students will analyze how scientific knowledge is developed.

SCSh3 Students will identify and investigate problems scientifically.

SCSh6 Students will communicate scientific investigations and information clearly.

SEV5 Students will recognize that human beings are part of the global ecosystem and will evaluate the effects of human activities and technology on ecosystems.

SP3 Students will evaluate the forms and transformations of energy.

SPS10 Students will investigate the properties of electricity and magnetism.

MM3P3 Students will communicate mathematically.

MM3P4 Students will make connections among mathematical ideas and to other disciplines.

SSEMI2 The student will explain how the Law of Demand, the Law of Supply, prices, and profits work to determine production and distribution in a market economy.

SSEMI3 The student will explain how markets, prices, and competition influence economic behavior.

National / Local Standards / Industry / ISTE:

ITEA - 5. Students will develop an understanding of the effects of technology on the environment.

ITEA - 8. Students will develop an understanding of the attributes of design.

ITEA - 12. Students will develop the abilities to use and maintain technological products and systems.

ITEA - 17. Students will develop an understanding of and be able to select and use information and communication technologies.

UNDERSTANDINGS & GOALS

Enduring Understandings:

Students will be able to identify the fundamental principles of printers. Students will be able to demonstrate installation, configuration, optimization, and upgrades of printers. Students will demonstrate tool identification, diagnostic procedures, and troubleshooting techniques for printers, as well as perform preventive maintenance on printers.

Essential Questions:

- What is the best printer for the type of printing I desire?
- How do I install my printer?
- What are the proper maintenance steps to keep my printer operating correctly?
- What are the troubleshooting steps I should take if I experience printer problems?
- What are scanners and how do they work?

Knowledge from this Unit:

- Students will be able to identify the major types of printers available.
- Students will be able to describe the similarities and differences in laser, inkjet, and dot matrix printer operations.

Skills from this Unit:

- Students will be able to install, use, and troubleshoot local printers.

ASSESSMENTS

Assessment Method Type:

- | | |
|--------------|---|
| <u> X </u> | Pre-test |
| <u> X </u> | Objective assessment - multiple-choice, true- false, etc. |
| <u> </u> | <u> X </u> Quizzes/Tests |
| <u> </u> | <u> </u> Unit test |
| <u> </u> | Group project |
| <u> </u> | Individual project |
| <u> X </u> | Self-assessment - May include practice quizzes, games, simulations, checklists, etc. |
| <u> </u> | <u> </u> Self-check rubrics |
| <u> </u> | <u> </u> Self-check during writing/planning process |
| <u> </u> | <u> </u> Journal reflections on concepts, personal experiences and impact on one's life |
| <u> </u> | <u> </u> Reflect on evaluations of work from teachers, business partners, and competition judges |
| <u> </u> | <u> X </u> Academic prompts |
| <u> </u> | <u> </u> Practice quizzes/tests |
| <u> X </u> | Subjective assessment/Informal observations |
| <u> </u> | <u> </u> Essay tests |
| <u> </u> | <u> X </u> Observe students working with partners |
| <u> </u> | <u> </u> Observe students role playing |
| <u> </u> | Peer-assessment |
| <u> </u> | <u> </u> Peer editing & commentary of products/projects/presentations using rubrics |
| <u> </u> | <u> </u> Peer editing and/or critiquing |
| <u> X </u> | Dialogue and Discussion |

- ___ Student/teacher conferences
- ☒ Partner and small group discussions
- ☒ Whole group discussions
- ___ Interaction with/feedback from community members/speakers and business partners
- ☒ Constructed Responses
- ___ Chart good reading/writing/listening/speaking habits
- ☒ Application of skills to real-life situations/scenarios
- ☒ Post-test

Assessment(s) Title:

Printer Project

Assessment(s) Description/Directions:

Using an available local printer, set up system to print. Answer questions regarding the process.

Attachments for Assessment(s):

Printer Project



LESSON PLANS

• LESSON 1: INTRODUCTION TO PRINTERS

1. Identify the standards. Standards should be posted in the classroom.

BCS-ITE-13. Students will identify the fundamental principles of using printers and scanners.

- a) Identify differences between types of printer and scanner technologies (e.g. laser, inkjet, thermal, solid ink, impact).
- b) Identify names, purposes, and characteristics of printer and scanner components: memory, driver, firmware, and consumables (e.g. toner, ink cartridge, paper).
- c) **Identify the names, purposes, and characteristics of interfaces used by printers and scanners including port and cable types.**

2. Review Essential Question(s). Post Essential Questions in the classroom.

- What is the best printer for the type of printing I desire?

3. Identify and review the unit vocabulary. Terms may be posted on word wall.

- See Printer Vocabulary

4. Interest approach – Mental set

Ask students what is more important, quality of print or cost? Color capabilities or large number of copies, initial cost of the printer, or the extended cost of the toner or ink cartridges?

- 5.

Activity 1:	1. Teacher will have students fill out the Anticipation Guide to determine what they know
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	prior to completing the unit. (See Attachment: Anticipation Guide.doc)
Activity 2:	2. Presentation on Printers (See Attachment: Intro to Printers.ppt) Discuss various types of printers and their attributes.
Activity 3:	3. Introduce vocabulary words for this unit. (See Attachment: Printer Vocabulary.doc)
Activity 4:	4. Discuss advantages and disadvantages of different types of printers. Topics may cover cost, ease of use, maintenance, quality, quantity of output, mess involved, etc. (See Attachment: Printer Advantages vs. Disadvantages.doc)
Activity 5:	5. Have students go online to "How Stuff Works". Using the handout, have them research how inkjet printers operate. (See Attachment: HSW-Inkjet.doc)

• LESSON 2: INSTALLING PRINTERS

1. Identify the standards. Standards should be posted in the classroom.

BCS-ITE-14. Students will identify basic concepts of installing, configuring, optimizing, and upgrading printers and scanners.

- a) Install and configure printers/scanners.
 - b) Optimize printer performance (for example - printer settings such as tray switching, print spool settings, device calibration, media types, and paper orientation).
2. Review Essential Questions. Post Essential Questions in the classroom.
 - How do I install my printer?
 3. Ask students if they have installed a printer in their own home.
 - What procedures did you follow?
 - Did you have any problems?
 - All things considered, would you chose a different printer now?
 4. Presentation on Printer Installation (See Attachment: [Printer Installation.ppt](#))
 5. Have students use the equipment in class to install a local printer using the installation disks.
 6. Review all materials covered with the Printer Crossword puzzle. (See Attachment: [Printer Crossword.pdf](#))

• LESSON 3: PRINTER MAINTENANCE

1. Review Essential Questions. Post Essential Questions in the classroom.
 - What are the proper maintenance steps to keep my printer operating correctly?
2. Discuss printer maintenance procedures.

3. Review printer fundamentals with the Printer Wordsearch (See Attachment: [Printer Wordsearch.pdf](#))

• **LESSON 4: PRINTER TROUBLESHOOTING.**

1. Review Essential Questions. Post Essential Questions in the classroom.
 - What are the troubleshooting steps I should take if I experience printer problems?
2. Discuss troubleshooting procedures for various types of printers. Emphasis should be placed on safety.
3. Show PowerPoint on troubleshooting. (See Attachment: [Troubleshooting.ppt](#))

• **LESSON 5: SCANNERS**

1. Review Essential Questions. Post Essential Questions in the classroom.
 - What are scanners and how do they work?
2. Discuss scanner types and the scanning process.
3. Show PowerPoint presentation on scanners. (See Attachment: [Scanners.ppt](#))
4. Have students read the RFID article. Have them research RFID online, and determine if it is a good thing for business, or an invasion of privacy. (See Attachment: [RFID.doc](#))

• **ATTACHMENTS FOR LESSON PLANS**

[Anticipation Guide.doc](#)

[Intro to Printers.ppt](#)

[Printer Vocabulary.doc](#)

[Printer Vocabulary Answers.doc](#)

[Printer Advantages and Disadvantages.doc](#)

[HSW-inkjets.doc](#)

[Printer Installation.ppt](#)

[Printer Crossword.pdf](#)

[Printer Crossword Answers.pdf](#)

[Printer Project.doc](#)

[Printer Wordsearch.pdf](#)

[Printer Wordsearch Answers.pdf](#)

[Troubleshooting.ppt](#)

[Scanners.ppt](#)

[RFID.doc](#)

Notes & Reflections:

Even non-working printers might install properly, but not print. Businesses who upgrade printers may be willing to donate printers. While inkjet printers are cheaper, toner will not dry out like ink will. Having a small laser to install will eliminate the dry ink problems. Early USB printers often would not install properly if connected before installing the software. Ensure the proper procedures are followed for the printer being used.



CULMINATING PERFORMANCE TASK

Culminating Unit Performance Task Title:

Printer Project

Culminating Unit Performance Task Description/Directions/Differentiated Instruction:

Using available local printer, set up system to print. Answer questions regarding process.

Attachments for Culminating Performance Task:

Printer Project.doc



UNIT RESOURCES

Web Resources:

- <http://www.pcmag.com/encyclopedia/>
- <http://www.computerhope.com/jargon.htm>
- <http://www.techterms.com>
- <http://computer.howstuffworks.com/printers-scanners-channel.htm>
- <http://mimech.com/printers/>
- <http://computer.howstuffworks.com/inkjet-printer.htm>
- <http://computer.howstuffworks.com/laser-printer.htm>
- <http://www.howitworks.net/how-printers-work.html>
- <http://computer.howstuffworks.com/scanner.htm>
- <http://science.discovery.com/videos/deconstructed-how-inkjet-printers-work.html>
- <http://science.discovery.com/videos/deconstructed-laser-printer.html>
- <http://science.discovery.com/videos/its-all-geek-to-me-shorts-options-for-printing-digita.html>
- <http://www.butterscotch.com/show/Get-Printing-Choosing-The-Right-Printer-For-Your-Needs?q=printers>

Materials & Equipment:

Local printers, software, & cables

What 21st Century Technology was used in this unit:

<input checked="" type="checkbox"/>	Slide Show Software	<input type="checkbox"/>	Graphing Software	<input type="checkbox"/>	Audio File(s)
<input type="checkbox"/>	Interactive Whiteboard	<input type="checkbox"/>	Calculator	<input type="checkbox"/>	Graphic Organizer
<input type="checkbox"/>	Student Response System	<input type="checkbox"/>	Desktop Publishing	<input checked="" type="checkbox"/>	Image File(s)
<input type="checkbox"/>	Web Design Software	<input type="checkbox"/>	Blog	<input checked="" type="checkbox"/>	Video
<input type="checkbox"/>	Animation Software	<input type="checkbox"/>	Wiki	<input checked="" type="checkbox"/>	Electronic Game or Puzzle Maker
<input type="checkbox"/>	Email	<input checked="" type="checkbox"/>	Website		