GEORGIA | PEACH STATE PATHWAYS

Career, Technical, & Agricultural Education

COMPUTING

PATHWAY: Computer Systems and Support

COURSE: Information Technology and Support

UNIT 9: Safety & Environmental Support

INTRODUCTION

Annotation: In this lesson, students will describe the aspects and importance of safety and environmental issues. Students will also identify potential hazards in the workplace and implement proper safety procedures including ESD precautions and procedures, safe work environments, and equipment handling. Disposal and Recycling are also covered.

Grade(s):

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

Time: Fifteen 50-minute class periods

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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-ITS-21. **Students will perform preventive maintenance for computer security.**
a. Recognize social engineering and address social engineering situations.

BCS-ITS-22. **Students will identify potential hazards and implement proper safety precautions and procedures, safe work environment, and equipment handling.**
a. Identify potential hazards and proper safety procedures including power supply, display devices, and environment (e.g. trip, liquid, situational, atmospheric hazards and high voltage and moving equipment).

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.**
SCSh2 **Students will use standard safety practices for all classroom laboratory and field investigations.**
SCbSh3 **Students will identify and investigate problems scientifically.**
SCSh6 **Students will communicate scientific investigations and information clearly.**
SEV1 **Students will investigate the flow of energy and cycling of matter within an ecosystem and relate these phenomena to human society.**
SEV2 **Students will demonstrate an understanding that the Earth is one interconnected system.**
SEV3 **Students will describe stability and change in ecosystems.**
SEV4 **Students will understand and describe availability, allocation and conservation of energy and other resources**
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.**

National / Local Standards / Industry / ISTE:

ITEA – 5 **Students will develop an understanding of the effects of technology on the environment.**
ITEA – 10 **Students will develop an understanding of the role of troubleshooting, research and development, invention and innovation, and experimentation in problem solving**
ITEA – 11 **Students will develop the abilities to apply the design process.**
ITEA – 12 **Students will develop the abilities to use and maintain technological products and systems.**
ITEA – 13 **Students will develop the abilities to assess the impact of products and systems.**
ITEA – 14 **Students will develop an understanding of and be able to select and use medical technologies.**
ITEA – 15 **Students will develop an understanding of and be able to select and use agricultural and related biotechnologies.**
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 and use standard safety procedures for the proper use, maintenance, and disposal of information system equipment. Students will also recognize the environmental impact of this equipment at its "end of life", and how recycling and proper disposal can minimize those impacts.

Essential Questions:

- What are standard office safety procedures for the use of information system equipment?
- How do I protect myself and the equipment during troubleshooting or repair?
- What are the proper steps to dispose of equipment at its end of life?
- What opportunities exist for recycling old equipment?

Knowledge from this Unit:
Students will be able to:

- Identify the proper use and care for equipment.
- Describe how to properly dispose of equipment
- Safely troubleshoot malfunctioning equipment

Skills from this Unit:

- Students will be able to install, use, troubleshoot, and dispose of information system equipment.

ASSESSMENTS

Assessment Method Type:

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

_____ _X_ Whole group discussions
__ Interaction with/feedback from community members/speakers and business partners
X Constructed Responses
__ Chart good reading/writing/listening/speaking habits
_X_ Application of skills to real-life situations/scenarios
X Post-test

Assessment Attachments and / or Directions:

Anticipation Guide
Safety Scenario
Safety Poster
Recycle Research

LESSON PLANS

• LESSON 1: INTRODUCTION TO COMPUTER SAFETY

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

   BCS-ITS-21. Students will perform preventive maintenance for computer security.
   a. Recognize social engineering and address social engineering situations.

   BCS-ITS-22. Students will identify potential hazards and implement proper safety precautions and procedures, safe work environment, and equipment handling.
   a. Identify potential hazards and proper safety procedures including power supply, display devices, and environment (e.g. trip, liquid, situational, atmospheric hazards and high voltage and moving equipment).

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

   What are standard office safety procedures for the use of information system equipment?

3. Students will review prior knowledge using Anticipation Guide. (See Attachment: **Anticipation Guide.doc**)
   Review basic safety considerations when working with computers. Topics should include:
   - Physical safety, such as proper methods of lifting and moving heavy equipment, tripping hazards, etc.
   - Electrical safety, such as frayed electrical cords, not working on equipment while it is turned on, multiple extension cords, overloaded circuits, etc.
   - Network security, such as passwords, proper online procedures, etc.

• LESSON 2: DEMONSTRATE PROPER SAFETY MEASURES

1. Review Essential Questions. Post Essential Questions in the classroom.

   - How do I protect myself and the equipment during troubleshooting or repair?

2. Demonstrate proper safety procedures while troubleshooting and working within computer cases. (See Attachment: **Safety Scenario.doc**)

• LESSON 3: CREATE SAFETY POSTERS

1. Review Essential Questions. Post Essential Questions in the classroom.

   - What are standard office safety procedures for the use of information system equipment?
   - How do I protect myself and the equipment during troubleshooting or repair?

2. Create Safety posters related to computer repair. If opportunities exist, create a PSA to be shown on the school media channel. (See Attachment: **Safety Poster.doc**)

• LESSON 4: ENVIRONMENTAL CONCERNS

1. Review Essential Questions. Post Essential Questions in the classroom.

   - What are the proper steps to dispose of equipment at its end of life?

2. Discuss environmental concerns with information technology wastes. What can be done to minimize this waste and the impact it has on the environment?

• LESSON 5: ENVIRONMENTAL RECYCLING

1. Review Essential Questions. Post Essential Questions in the classroom.

   - What opportunities exist for recycling old equipment?

2. Review the recycling plan developed for your school in the Essentials Class. How can it be improved or expanded? Create a new advertising program that will bring this issue back to the attention of the school, students, and the community at large. (See Attachment: **Recycling Project.doc** & **Recycling Research.doc**)

• ATTACHMENTS FOR LESSON PLANS

Anticipation Guide
Safety Scenario
Safety Poster
Recycling Project
Recycling Research

• NOTES & REFLECTION:

Visits to recycling centers make very good field trips. Other fieldtrips of value during this unit could be a trip to any construction or manufacturing firm where safety is valued and practiced.

Posters, PSA's, etc. may be adjusted to meet school and community resources. Some schools do a morning announcement show where video would be very appropriate. Other schools may have a continuous PowerPoint scrolling set of announcements where that format may be applied.

If no recycling program is presently operating in your school, this would be a good project for the class to start. If such programs already exist, do they include recycling information systems waste as well as the standard recyclables? Promotion of these programs, if already in existence, would certainly be appreciated by those who are currently running them.

CULMINATING PERFORMANCE TASK

Culminating Unit Performance Task Title:

Research School Recycling Program

Culminating Unit Performance Task Description/Directions/Differentiated Instruction:

Research current recycling program to determine the effectiveness of the program, or create a new program addressing the waste created by the information systems equipment owned at the school, district, and within the community. Present findings.

Attachments for Culminating Performance Task:

Recycling Research

UNIT RESOURCES

Web Resources:

http://www.howstuffworks.com/recycle-one-thing.htm
http://science.howstuffworks.com/landfill-quiz.htm
http://science.howstuffworks.com/e-waste-recycling-law.htm
http://electronics.howstuffworks.com/e-waste.htm
http://videos.howstuffworks.com/dell/675-dell-shows-how-to-recycle-pcs-video.htm
http://computer.howstuffworks.com/discarded-old-computer.htm
http://electronics.howstuffworks.com/how-to-tech/how-to-donate-computer.htm
http://electronics.howstuffworks.com/electronics-recycling.htm
http://www.epa.gov/waste/conserve/materials/ecycling/donate.htm
http://www.crc.org/
http://earth911.com/electronics/computers/
http://www.epa.gov/epawaste/index.htm
http://www.cristina.org/
http://www.eco-action.net/pollution.html

Materials & Equipment:

21st Century Technology Used:

X	Slide Show Software		Graphing Software		Audio File(s)
	Interactive Whiteboard		Calculator		Graphic Organizer
	Student Response System		Desktop Publishing	X	Image File(s)
	Web Design Software		Blog		Video
	Animation Software		Wiki	X	Electronic Game or Puzzle Maker
	Email	X	Website		