PATHWAY: Computing

COURSE: Computing in the Modern World

UNIT: 4-Networking Unit

INTRODUCTION

Annotation:

Grade(s):

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

Time: 20 hours (4weeks)

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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-CMW-8 Students will demonstrate knowledge of basic components of computer networks.
a. Define key terms: servers, file protection, routing protocols, spoolers, transmission types, LANS, WANS, queues, shared resources, fault/tolerance, and IP addresses.
b. List the types of network topology: ring, star, and peer to peer.
c. Compare and contrast types of networks, including LANs versus WANs and wireless versus wired.
d. Compare and contrast network protocols: http, https, and ftp.
e. Identify some of the security issues when using a network.

BCS-CMW-9 Students will demonstrate knowledge of the issues involved in connecting a computer to a network.
a. State hardware requirements.
b. List the steps involved in connecting a computer to a network.

BCS-CMW-10 Students will demonstrate an understanding of key issues in data transmission.
a. Demonstrate knowledge of how data is passed in packets.
b. Create a data collision.
c. Explore ways to deal with network failure.
d. Explain hierarchical addressing schemes.

BCS-CMW-11 Students will demonstrate knowledge of networking trends and issues.
a. List reasons for installing a network.
b. List important events in the evolution of networks.
c. Analyze current trends and developments.

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.

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

ELA10W2 The student demonstrates competence in a variety of genres.

ELA10W3 The student uses research and technology to support writing.

National Standards:

UNDERSTANDINGS & GOALS

Enduring Understandings:

- Students will understand the basics of a computer network, including the process for setting up and connecting a computer to the network. Students will be able to discuss the issues pertaining to working on a network and should be able to explain how data is transmitted on a network.

Essential Questions:

- What are the basics of a computer network?
- What are the issues that pertain to working on a network?

Knowledge from this Unit:

- Students will understand the basics of a computer network, including the process for setting up and connecting a computer to the network. Students will be able to discuss the issues pertaining to working on a network and should be able to explain how data is transmitted on a network.

Skills from this Unit:

- Students will be able write directions to complete a process.

ASSESSMENT(S)

Assessment Method Type: Select one or more of the following. Please consider the type(s) of differentiated instruction you will be using in the classroom.

_____ Pre-test
_____ Objective assessment - multiple-choice, true- false, etc.
__ Quizzes/Tests
__ Unit test
_____ Group project
_x_ Individual project
_____ 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
__ Academic prompts
__ Practice quizzes/tests
_____ Subjective assessment/Informal observations
__ Essay tests
__ 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
__ Partner and small group discussions
_x_ 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:

Informal checks and Vocabulary

Assessment(s) Description/Directions:

A number of terms and concepts are associated with networks. Students should be assessed both formally and informally through quizzes/tests throughout the unit.

Attachments for Assessment(s):

Web Resources Title: Cisco Glossary

Web Resource Description: A glossary of networking terminology and features.

Web Resource: http://www.cisco.com/en/US/docs/internetworking/terms_acronyms/R12.html

LEARNING EXPERIENCES

Instructional planning: Include lessons, activities and other learning experiences in this section with a brief description of the activities to ensure student acquisition of the knowledge and skills addressed in the standards. Complete the sequence of instruction for each lesson/task in the unit.

Sequence of Instruction

1. **Identify the Standards. Standards should be posted in the classroom for each lesson.**

   BCS-CMW-8 Students will demonstrate knowledge of basic components of computer networks.

   BCS-CMW-9 Students will demonstrate knowledge of the issues involved in connecting a computer to a network.

   BCS-CMW-10 Students will demonstrate an understanding of key issues in data transmission.

   BCS-CMW-11 Students will demonstrate knowledge of networking trends and issues.

2. **Review Essential Questions.**
   - What are the basics of a computer network?
   - What are the issues that pertain to working on a network?
3. **Identify and review the unit vocabulary.**

4. Assessment Activity.

Sequence of Instruction
(Based on a 50 minute period)

Week 1
Network basis (terms, topologies)

Week 2
Creating a network and connecting computers

Week 3
Data transmission

Week 4
Network trends and issues
Profile a network assignment

Technology Connection/Integration
Students will use technology to identify terms, view diagrams, research the topic, and create the end product.

Attachments for Learning Experiences: Please list.

Notes & Reflections:

- This unit is very flexible, and the teachers can decide the standards that will act as the focal point. A great resource is the school's network technician who can be used as a guest speaker.
- Additional activity suggested by Johnnie Sue Moore:
    - Choose a type of network system and create a mobile demonstrating the proper connectivity and structure.

CULMINATING PERFORMANCE TASK (Optional)

Culminating Unit Performance Task Title:

Networking Field Trip

Culminating Unit Performance Task Description/Directions/Differentiated Instruction:

This is a performance task where students profile a home, business, or school network. The end product is a PowerPoint with information about their chosen network.

Attachments for Culminating Performance Task:

Describe a Network Assignment

Time for a personal field trip!

Using a school, business, or personal network and the knowledge you gained from the readings and discussions, identify the general layout/topology of network.

Make sure to point out things like…..how many devices are connected? How do they connect? What topology is being used?

Create a PowerPoint that demonstrates the topology of the network, the basic connections, and the type of network. Design this to be instructional, to teach what you saw. You might want to have the person in charge of the network review it with you. Be sure to include at least one diagram.

Component	Possible Points	Points Earned
Network identified and purpose described	2	
Number of devices connected	2	
How devices are connected is explained	2	
Network Topology Identified	2	
Diagrams/Visuals aids used	2	
Total	10	

Comments

UNIT RESOURCES

Web Resources:

Attachment(s):

The Network Student Examples PowerPoint

(This is an example of the end product of the unit assessment where students profile a network.)

Materials & Equipment:

Computer

Internet connection

Microsoft PowerPoint

Router

Ethernet Cable

What 21st Century Technology was used in this unit:

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