BUSINESS & COMPUTER SCIENCE

PATHWAY: Computing

COURSE: Computing in the Modern World

UNIT: 4-Networking Unit Option B

INTRODUCTION

Annotation:

Grade(s):

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

Time: 20 hours

Author: Jason Naile

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: Please list the standard and elements covered.

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.

✅ 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?
- How is networking important and connected to Computing in general?

Knowledge from this Unit:

Skills from this Unit: Performance.

- Students will be able to use a web-based tool to create a Wiki.

✅ 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
	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
	__ 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

        __ 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, Vocabulary, Summarization and Creation of Wiki

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

Lesson 1

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?
- How is networking important and connected to Computing in general?

3. Identify and review the unit vocabulary.

Week 1

Network basis (terms, topologies)

Week 2

Creating a network and connecting computers

Week 3

Data transmission

Week 4

Network trends and issues

Creating a Wiki Assignment

Students will use technology to identify terms, view diagrams, research the topic, and create the end product. Students will also use a Web 2.0 software (Wikis) for creating the end product.

Attachments for Learning Experiences:

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.
- The Wiki should not be something that is "live" and published unless the local school administration has approved it. A number of the sites can be password protected and only allow students enrolled in the class to view the site. Additionally, if the local school system uses software such as Moodle, Desire2Learn, Blackboard or Angel (all course management software) or WikiSpaces teachers will be able to create Wikis within their courses in these programs. Thus, the Wikis are protected from the public.
- Teachers should set up one Wiki for every 4-5 students, depending on teacher preference. Each Wiki should only be editable by members of that group. This will require some substantial setup by the teacher before beginning the assignment.
- Additional activity suggested by Johnnie Sue Moore:
    o 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 Wiki Creation

Culminating Unit Performance Task Description/Directions/Differentiated Instruction:

This is a performance task where students will work in groups to build a Wiki that describes and summarizes everything they have learned about Wikis in this particular unit. Prior to beginning this unit, the teacher should fully explain to students what a Wiki is and some basic editing rules. It is best to establish a set of conventions that everyone should use when editing.

Students will work in groups of 4-5 members to create a Wiki that describes their knowledge of networking. This is a private Wiki that the teacher should setup ahead of time. The final Wiki should be presented to the class. One purpose of the assignment is to show how the concepts of networking are related to each and the relationship between networking and the computer as a whole.

Teachers can search for free wiki creators (such as Wikispaces.com or use course management software that allows for Wikis such as Angel, Blackboard, Desire2Learn, Moodle, etc.). Most Wikis use a common set of language rules. For the most accurate language and syntax rules please use the Help feature located within the Wiki creation program.

For teachers new to Wiki please visit this site for further information:
http://writingwiki.org/default.aspx/WritingWiki/For%20Teachers%20New%20to%20Wikis.html

A standard set of rules for Wikis can be found at http://en.wikipedia.org/wiki/Wikipedia:Cheatsheet

Rubric for Performance Task:

Networking Wiki Assignment

In this assignment you will work in a small group to create a Wiki that will describe everything you know about networking. Remember, a Wiki should be used as a guide that other people can read to learn about a chosen topic. Therefore, someone new to the world of networking should be able to use your Wiki to learn the basics of networking. Make sure you write clearly so your younger brother or sister or possibly even a grandparent could understand the basics of networking. You are the expert.

Use the grading sheet below to guide the structure and what to include in your Wiki.

Group Name:_____   Student Name:_____

Component	Possible Points	Points Earned
Navigation & Structure Wiki is easy to navigate, pictures are provided to support information, all links (internal & external) should be functional. Links are connected in a logical and efficient manner.	20	
Topics are sufficiently covered • Basic parts of a network • Connectivity of devices • Transmitting Devices • Current Networking trends and issues	20 10 10 10	
Readability Wiki is appropriate for all ages and can easily be understood.	10	
Favorable Group Evaluation Evaluation by other groups members clearly show student contributed to development of Wiki.	10	
Grammar & Spelling Wiki uses proper grammar and contains no spelling mistakes.	10	
Total	100	

Comments

Attachments for Culminating Performance Task:

Display other Wikis to students

http://cooking.wikia.com/wiki/Main_Page (Cooking)

http://gaming.wikia.com/wiki/Wikia_Gaming (Video Games)

UNIT RESOURCES

Web Resources:

Attachment(s):

Materials & Equipment:

> Computer
>
> Internet connection
>
> Wiki creation software (Wikispaces.com, within Moodle, Desire2Learn, Blackboard or Angel)
>
> 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		Desktop Publishing	X	Image File(s)
	Web Design Software		Blog	X	Video
	Animation Software	X	Wiki		Electronic Game or Puzzle Maker
	Email	x	Website		