

Subject Area:

Web Page Design and Webmastering

Title:

Integrating Computer Networking in our high school

Teacher:**School:**

Sulphur Springs High School

Lesson Objective(s) & Career Cluster:

Integrating Computer Networking in our high school

Activity Time: One week of 55 minute lesson plans

Concepts Taught: Installation of Networking the computer by installing all hardware, and Software required to connect a printer, copy machine and internet in business or home use.

Materials Required: Computer, Internet, printer, whiteboard, school website and access to local Internet server

Activity:

Day 1

Each student will be able to answer/discuss the following questions concerning:

1. What is computer networking?
2. What do we look for when dealing with reliable Internet sites?

Overview:

At the end of the lesson the student will be able to identify:

1. What computer networking is and what it entails.
2. What makes an Internet site reliable

Presentation:

1. Discuss computer networking and beginning of OSI model: Physical layer and what it encompasses (i.e. equipment, cables etc.). May point out on actual computer or use www.blackbox.com.
2. Discuss what makes an Internet site reliable and give worksheet

Exercise:

Teacher will demonstrate on computer where equipment is located both by computer and Internet site www.blackbox.com. Teacher will give handout on Internet reliability and then have students choose five websites to evaluate. After giving 15-20 minutes of working on the worksheet, students then stand up and give 3-5 minute presentation of one website that was evaluated.

Internet Reliability: Be a good judge of the WEB. Would you give the page a first place award?

Rate the Internet site you are using with the following scale. If it scores badly, find another place to get your information. For this exercise you must find FIVE sites to evaluate.

Trouble shooting NETWORK PROBLEMS

If you cannot get on the Internet...

§ Check to see that the network cable on your computer is securely plugged in the back of the machine and into the hub.

§ Type in a couple of rarely visited web page addresses to see if you can get to those pages. For example, type in www.swt.edu and "www.shsu.edu." If you can get to those sites, the Internet is working but the web site you were trying to get to is down.

§ Check that the hubs are turned on and that a network cable is securely plugged into a hub and that the hubs connect to each other or to a wall jack.

§ Continue to verify that the network equipment you see is turned on and has network cables linking it to the next piece of network equipment (hubs) or the wall jack. If you unplug any network cables, be certain to plug them back exactly where you found them.

§ Reset all network equipment. That means turning the equipment off for 10 seconds and then turning it back on. Some equipment may have an on/off switch but for most equipment you will unplug the power cord adapter and plug it back in. Types of equipment that you may need to plug and unplug include computers, hubs (which look like white boxes with multiple phone jacks in them), and possibly a router and a cable/DSL modem (which look like boxes with just a few phone jacks).

Day 2

Each student will be able to answer/discuss the following questions concerning:

1. What is computer networking?
2. What do we remember about the OSI layer? Especially the physical layer?
3. Ask for current technology news events. (Will begin discussion on Unit 2 about current technology events that occurring in the region and around the world).

May give tech-quiz if participation is not occurring. May also assign each student to a specific day and assign 3 events that have occurred in the day. I may show websites to use: <http://www.delphi.com/cbsbreakingnews/start/> and <http://www.usatoday.com>. Students would need to list from what website current events were taken from.

Overview:

At the end of the lesson the student will be able to identify:

1. What physical media is and what the types are (i.e. twisted pair, coaxial cable, fiber optic, guided, radio, infrared, microwave, satellite etc.).
2. What these words mean: domain name, IP address, worm, virus, byte, bit, protocols, token ring, Ethernet, routing, network, topology, error (control) etc.

Presentation:

1. Discuss in detail the OSI physical layer and media. Listing and describing each specifically. May use computer to demonstrate location and types of media or use www.blackbox.com. Encourage students to find different media Internet sites to use. May place each site on the board for quick reference or may place on school website. Allow 30 minutes for lecture and note taking.
2. Discuss vocabulary words that may appear frequently during computer networking discussions. Show the websites <http://www.webopedia.com> and <http://www.techweb.com/encyclopedia>. This may be included during note taking and lecture time.

Exercise:

Teacher will hand out worksheet that includes a word search for vocabulary words and also definitions to keep in notebooks for future reference. To create a

word search the following website may be used <http://www.edhelper.com>

Using the following vocabulary words:

1. Byte -- equal to 8 bits
2. Bit -- smallest unit of information
3. NIC -- Network interface card
4. Worm -- replicates self through disk & memory
5. Virus -- software used to infect computer
6. Error control -- testing for accurate transmission of data
7. Fiberoptics -- made of light
8. Infra red -- invisible band of radiation
9. Physical layer -- provide transmission of bits over network medium
10. Protocol -- rules governing the transmission and receiving of data
11. Ethernet -- most widely used LAN
12. Routing -- forwards data to transmission
13. Topology -- pattern of interconnection
14. Domain -- all resources under the control of a single computer system
15. Address -- the number of a particular memory
16. Microwave -- vibrates at 1 Ghz and above
17. Twisted pair -- commonly used for telephone cabling
18. Technology -- implies the use of computers
19. Internet -- made up of over 65 million computers
20. FEC -- forward error control

Teacher will give an incentive for first student to find information on various websites when asked to recall vocabulary words throughout the unit.

Day 3

Review:

1. Student assigned with current events will present findings.

Overview:

At the end of the lesson the student will be able to identify:

1. What "ping" is and be able to demonstrate.
2. What trace route is and be able to demonstrate.

Presentation:

1. Discuss in detail the OSI data link layer. Listing and describing each specifically. Encourage students to find Internet sites to use to help in understanding material. May place each site on the board for quick reference or may place on school website. Allow 30 minutes for lecture and note taking.
2. Demonstrate how to use ping and trace route on MSDos and then copy to word.

Exercise:

Teacher will demonstrate ping and trace route and then give websites to ping and trace route to students. Five of each will be required to be handed in for completion of task.

Day 4

Review:

1. Student assigned with current events will present findings.

Overview:

At the end of the lesson the student will be able to identify:

1. What the network layer of the OSI model does and be able to compare & contract with the first two layers of the OSI mode.

2. Participate in discussion with school computer coordinator about school computer network.

Presentation:

1. Discuss in detail the OSI network layer. Listing and describing each specifically. Encourage students to find Internet sites to use to help in understanding material. May place each site on the board for quick reference or may place on school website. Allow 15 minutes for lecture and note taking.
2. Have guest lecturer (computer coordinator of school) talk briefly about the experience of setting up and maintaining the school computer networking system.
3. Students will be expected to write a two-paragraph reflection on the information gained by the computer coordinator. Two websites will be expected to maintain that students are using the computer for frequent reference.

Day 5

Review:

1. Student assigned with current events will present findings.
2. Each student will participate in discussion of last unit 4.

Overview:

At the end of the lesson the student will be able to identify:

1. What the advantages and disadvantages of running a large network entails.
2. Participate in discussion with local network employees

Presentation:

1. Students and teacher will be taking a field trip to a local Internet networking business. Students will fill out and return a waiver prior to class and will be expected to follow all school rules and respect local business. Students following field trip will be expected to update school web page and then give a five minute presentation on highlights and information learned from the field trip.

Evaluation:

Grading Rubric, Oral reports, Worksheets & quizzes
Hands on hookup that successfully works, and Tests

Extension/Modification and/or Instructional Methodology:

Student will be required to hook up and install all hardware and software along with downloading current drivers to run their installations.

SCAN Skills:

Information, teamwork, technology, reading, writing, decision-making, problem solving, & reasoning,

Cooperative Learning Ideas, TAAS, TEKS Competencies:

- (A) Identify employment opportunities, including entrepreneurship, and preparation requirements in the field of computer networking;
- (B) Demonstrate the principles of group participation and leadership related to citizenship and career preparation;

- (C) Identify employer's expectations and appropriate work habits;
- (D) Apply the competencies related to resources, information, interpersonal, systems, and technology in appropriate settings and situations;
- (E) Demonstrate knowledge of the concepts and skills related to health and safety in the workplace, as specified by appropriate government regulations.
- (F) demonstrate effective oral and written communication skills with individuals from varied cultures, including fellow workers, management, and customers;
- (G) successfully complete repair and installation work orders and related paperwork;
- (H) estimate supplies, materials, and labor costs on installation, maintenance, and repair work orders; and
- (I) read and interpret appropriate schematics, drawings, charts, diagrams, and technical manuals and bulletins.

Team Project, Guest Speaker, or Field Trip:

1. Students and teacher will be taking a field trip to a local Internet networking business. Students will fill out and return a waiver prior to class and will be expected to follow all school rules and respect local business. Students, following the field trip will be expected to update school web page and then give a five minute presentation on highlights and information learned from the field trip.
2. Have our District Technology Web page director, Brent Baker, come out and speak to the class on Networking Fundamentals.

Resources:

<http://www.webopedia.com>

<http://www.techweb.com/encyclopedia>

www.blackbox.com

The Ask ERIC Website:

http://ericir.syr.edu/Virtual/Lessons/Ed_Tech/EDT0006.html

Other various web sites found by students found on the internet.

PowerPoint presentations on networking skills.