

# The Internet: Ideas, Activities, and Resources

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# **Introduction: Classroom Scenario**

Mrs. Wright is an experienced middle school Social Studies teacher whose school has recently been connected to the Internet. When this resource first became available, Mrs. Wright was overwhelmed with the possibilities for her students and was unsure how to begin. Fortunately her principal was able to suggest that she consider the National Educational Technology Standards as a framework for appropriately integrating the use of the Internet into her classroom. As Mrs. Wright began to introduce these standards into her classroom, she transformed her traditional learning environment into an integrated technology classroom.

## **What are the NETS?**

Mrs. Wright heard about the National Educational Technology Standards (NETS) Project which is an ongoing initiative of the International Society for Technology in Education (ISTE). ISTE is a nonprofit professional organization with members from all across the world who are leaders or potential leaders in educational technology. ISTE is dedicated to fostering the appropriate uses of information technology to support and improve learning, teaching, and administration in K-12 education and teacher education.

The NETS Project is developing standards for educational uses of technology that facilitate teachers incorporating these new tools into the classroom. The National Educational Technology Standards for Students are divided into six

# National Educational Technology Standards for Students

## 1. Basic operations and concepts

- Students demonstrate a sound understanding of the nature and operation of technology systems.
- Students are proficient in the use of technology.

## 2. Social, ethical, and human issues

- Students understand the ethical, cultural, and societal issues related to technology.
- Students practice responsible use of technology systems, information, and software.
- Students develop positive attitudes toward technology uses that support lifelong learning, collaboration, personal pursuits, and productivity.

## 3. Technology productivity tools

- Students use technology tools to enhance learning, increase productivity, and promote creativity.
- Students use productivity tools to collaborate in constructing technology-enhanced models, prepare publications, and produce other creative works.

## 4. Technology communications tools

- Students use telecommunications to collaborate, publish, and interact with peers, experts, and other audiences.
- Students use a variety of media and formats to communicate information and ideas effectively to multiple audiences.

## 5. Technology research tools

- Students use technology to locate, evaluate, and collect information from a variety of sources.
- Students use technology tools to process data and report results.
- Students evaluate and select new information resources and technological innovations based on the appropriateness for specific tasks.

## 6. Technology problem-solving and decision-making tools

- Students use technology resources for solving problems and making informed decisions.
- Students employ technology in the development of strategies for solving problems in the real world.

Figure 1: National Educational Technology Standards for Students  
<http://cnets.iste.org/>

broad categories (See figure 1 on the previous page). Within each category, are performance indicators that will be introduced, reinforced, and mastered by students.

## **How can the Internet be integrated into the classroom curriculum?**

Mrs. Wright has decided to organize six teaching units that build upon the NETS for Students. In addition to the performance indicators provided by the NETS, she will develop her own performance indicators, reflecting the skills the students have mastered for each unit. Mrs. Wright wants to develop a new learning environment for her class that involves collecting and organizing information, and presenting results.

The first unit will be developed around standard one – basic operations and concepts for technology. For this unit, she will introduce her students to Internet basics, such as the World Wide Web, domain names, and browsers. She will provide activities that allow students to demonstrate their understanding of the Internet and basic proficiency using technology.

The second unit will be developed around standard two – students' awareness of social and ethical issues of technology and the Internet. She will teach her students about safety and netiquette on the Internet and the global responsibilities of communicating with others through email, videoconferencing, and chat rooms.

The third unit will be developed around standard three – students' use of technology tools to enhance learning, increase productivity, and promote creativity. For this unit, she will focus on how she and her class will be able to use the Internet as a productivity tool to find resources that are available for their units of study.

The fourth unit will be developed around standard four – students’ use of the Internet as a communication tool. They will exchange emails and plan their own web page, taking advantage of multimedia resources they have created or found on the Internet.

The fifth unit will be developed around standard five – use of technology as a research tool to locate, evaluate, and collect information from a variety of sources. Mrs. Wright’s students will begin researching information on the Internet and evaluating web sites for classroom use.

The sixth unit will be developed around standard six – use of technology resources for solving problems and making informed decisions. Her students will collaborate on Internet-based projects and will develop electronic portfolios.

## **What are the benefits?**

By accessing the Internet as a tool for learning, Mrs. Wright can develop new teaching strategies for curriculum design, enabling her to move from a traditional learning environment to a technology rich one. She understands the importance of guiding her students to become more active learners. By integrating the curriculum and technology through Internet resources, her students will explore and experience problem-based learning.

Resources found on the Internet can provide her students with an abundance of up-to-date and constantly changing informational resources, encourage purposeful writing, increase motivation to write, and help develop friendships across cultures. Consequently, stereotypical first impressions may be avoided among students (Barron, 1997). When compared to traditional methods, telecommunications will offer her students a more realistic way to broaden individual perspectives on global and multicultural issues.

## **How does this guide work?**

*The Internet: Ideas, Activities, and Resources* is a guide for teachers to integrate the Internet into their classroom. The Internet is not an approach to teaching but rather a tool to be utilized in the classroom. As a tool, the Internet provides additional resources for teachers, such as lesson plans, teacher forums, expert advice, multimedia resources, and curriculum ideas. By using the Internet as a tool, a teacher is able to create a dynamic and active learning environment for his or her classroom.

This guide is divided into six chapters, with some chapters reflecting a unit of the NETS. Student activities, teacher activities, or links to sources of information on the given topic are located at the end of each chapter. You are encouraged to copy and use these resources in the classroom.

## Resources:

Florida Bureau of Educational Technology

<http://www.doe.firn.edu/edtech/>

Florida Center for Instructional Technology

<http://fcit.usf.edu/>

Florida Department of Education

<http://www.firn.edu/doe/>

Florida Information Resource Network

<http://www.firn.edu/>

International Society for Technology in Education

<http://www.iste.org/>

National Educational Technology Standards

<http://cnets.iste.org/>

# 1 CHAPTER ONE: **Internet Basics**

The Interstate system consists of roads that connect different states, allowing travelers to access different points across the United States. The traveler has many opportunities to enter and exit the Interstate system at any given point in time. The Internet is similar to the Interstate system since both are designed for high speed travel and have the potential for easy access and successful navigation. The intent of the Internet basics chapter is to assist you in having a more successful journey.

## **What is the Internet?**

The Internet is a worldwide telecommunications system that provides connectivity for millions of other, smaller networks; therefore, the Internet is often referred to as a network of networks. It allows computer users to communicate with each other across distances and computer platforms.

The Internet began in 1969 as the U.S. Department of Defense's Advanced Research Project Agency (ARPA) to provide immediate communication within the Department in case of war. Computers were then installed at U.S. universities with defense related projects. As scholars began to go online, this network grew to include scientific use. As ARPAnet grew, administration of the system shifted to a number of organizations, including the National Science Foundation (NSF). As a result the science oriented ARPAnet transformed into the commercially minded and funded Internet used by millions today.

The Internet acts as a pipeline to transport electronic messages from one network to another. At the heart of most networks is a server, a fast computer with large amounts of memory and storage space. The server controls the communication of information between the devices attached to a network, such as computers, printers, or other servers.

An Internet Service Provider (ISP) allows the user access to the Internet through their server. Many teachers use FIRM or a connection through a local university as their ISP because it is free. Other ISPs, such as America Online, CompuServe, Earthlink, telephone companies, or cable companies provide Internet access for their members.

To connect to an Internet server, most people use a computer, modem, and a telephone line. In some areas, cable modems or DSL are available for high speed access to the Internet.

## **What makes up the World Wide Web?**

The Internet is often confused with the World Wide Web. The misconception is that these two terms are synonymous. The Internet is a collection of the many different systems and protocols. The World Wide Web, developed in 1989, is actually one of those different protocols. As the name implies, it allows resources to be linked with great ease in an almost seamless fashion.

The World Wide Web is a vast collection of linked multimedia pages that is ever-changing. However, there are several basic components of the Web that allow computer users to communicate with each other. Below you will find selected components and their descriptions.

### *TCP/IP protocols*

In order for a computer to communicate on the Internet, a set of rules or protocols computers must follow to exchange messages was developed. The two most important protocols allowing computers to transmit data on the Internet are Transmission Control Protocol (TCP) and Internet Protocol (IP). With these protocols, virtually all computers can communicate with each other. For instance, if a user is running Windows on a PC, he or she can access the Apple Learning Interchange (ALI) site. Another user operating an iMac can access the Microsoft Classroom Teacher Network.

### *Domain name system*

An Internet address has four fields with numbers that are separated by periods or dots. This type of address is known as an IP address. Rather than have the user remember long strings of numbers, the Domain Name System (DNS) was developed to translate the numerical addresses into words. For example, the address fcit.usf.edu is really 131.247.120.10.

### *URLs*

Addresses for web sites are called URLs (Uniform Resource Locators). Most of them begin with http (HyperText Transfer Protocol), followed by a colon and two slashes. For example, the URL for FIRN's web site is <http://www.firn.edu/> and the URL for the Florida Center for Instructional Technology is <http://fcit.usf.edu/>.

Some of the URL addresses include a directory path and a file name. Consequently, the addresses can become quite long. For example, the URL of a web page may be:

<http://fcit.usf.edu/holocaust/default.htm>

In this example, "default.htm" is the name of the file which is in a directory named "holocaust" on the FCIT server at the University of South Florida.

### *Top level domain*

Each part of a domain name contains certain information. The first field is the host name, identifying a single computer or organization. The last field is the top level domain, describing the type of organization and occasionally country of origin associated with the address.

Current top level domain names include:

.com.....	Commercial
.edu .....	Educational
.gov .....	US Government
.int .....	International Organization
.mil .....	US Military
.net .....	Networking Providers
.org .....	Non-profit Organizations

Current domain name country codes include, but are not limited to:

.au .....	Australia
.de .....	Germany
.fr .....	France
.nl.....	Netherlands
.uk .....	United Kingdom
.us .....	United States

Paying attention to the TLD may give you a clue as to the accuracy of the information you may find. For example, information on a “com” site can prove useful but one should always be aware that the intent of the site may be to sell a particular product or service. Likewise, the quality of information you may find on the “edu” domain may vary. Although many pages in that domain were created by the educational institutions themselves, some “edu” pages you encounter may be the private opinions of faculty and students. A common convention at many institutions is to indicate a faculty or student page with a ~ (tilde) in the address. For instance, <http://fcit.usf.edu/~kemker/default.htm> is a student’s personal web page.

## Why do I need a browser?

Once you have an account with FIRN or any other ISP, you can access the Web through a browser, such as Netscape Navigator or Microsoft Internet Explorer. The browser is the application responsible for allowing a user's computer to read and display web documents.

HyperText Markup Language (HTML) is the language used to write web pages. A browser takes the HTML and translates it into the content you see on the screen. You will notice your cursor turns into a pointing finger over some images or text on the page. This indicates a link to additional information such as web pages, email, newsgroups, audio, video, or any number of other exciting files.

For example, in figure 2 on the following page, if you were to click on Florida Department of Education, your browser would link to the Florida Department of Education home page and that web page would open on your screen.



Figure 2: Screen shot of Netscape Navigator browser

## How do I navigate on the Web?

Your browser is equipped with many useful features to assist you in navigating the Web. Some of these features are:

### *Menu bar*

The menu bar, located at the very top of the screen, can be accessed using the mouse. When you hold down the mouse button over an item in the main menu, a sub menu is “pulled down” that has a variety of options. Actions that are in black can be performed, while actions that cannot be performed will be in gray or lightened. The submenus provide keyboard shortcuts for many common actions, allowing you to implement the functions faster than using the mouse.

### *Tool bar*

The tool bar is located at the top of the browser; it contains navigational buttons for the Web. Basic functions of these buttons include:

<u>Command</u>	<u>Function</u>
Home .....	Opens or returns to starting page
Back.....	Takes you to the previous page
Forward .....	Takes you to the next page
Print .....	Prints current page
Stop .....	Stops loading a page
Reload/Refresh .....	Redisplays current page
Search .....	Accesses search engine

### *Location bar*

The location bar, below the tool bar, is a box labeled "Location," "GoTo," or "Address." You can type in a site's address, and press the Return or Enter key to open the site.

### *Status bar*

The status bar is located at the very bottom of the browser window. You can watch the progress of a web page download to determine if the host computer has been contacted and that text and images are being downloaded.

### *Scroll bar*

The scroll bar is the vertical bar located on the right of the browser window. You can scroll up and down a web page by placing the cursor on the slider control and holding down the mouse button.

Name \_\_\_\_\_

Class \_\_\_\_\_

# What's Hot, What's Not?

The World Wide Web gets its name from the web-like connections between computers around the world. Web users click on links, also called hotlinks. Hotlinks can launch many different actions on a web page: showing a new page, playing a sound file, displaying an image, starting an animation or movie, and others.

A hotlink may appear as colored underlined text,

or as a button,



or as an image.



To find hotlinks on a web page, move the mouse cursor

until it changes from an arrow  to a pointer hand



Sometimes the hotlink offers clues about what will happen when you click, and sometimes it's a mysterious adventure!

Look at the web page that follows and record on the chart whether each labeled spot is HOT or NOT. Then, indicate your prediction about the action that would happen if you clicked on the link.

# 1 The Hot Page of Cool Schools

Schools:

Cool School of the Week:

- 2 Elementary  
Middle  
High



3

Schools Songs & Speeches:

See Our Parade:



5

Email us about your Cool School: [mail@coolschool.edu](mailto:mail@coolschool.edu)

6

## What's Hot, What's Not?

Spot	HOT or NOT?	Action Prediction
1		
2		
3		
4		
5		
6		

Name \_\_\_\_\_

Class \_\_\_\_\_

# To Catch a Spy



Greetings Web detectives! The United States government suspects that a spy has found a way into the White House. The government needs your help to catch the spy. You must correctly identify the country of the spy. Your clues are in five Top Secret files. Begin your search at <http://www.whitehouse.gov> in the category "History & Tours." Fill in the blanks for each clue.

## CLUE #1

What is the name of the round room located between the Red Room and the Green Room at the White House?  
(Look in "Tour On-Line.")



**Room**

## CLUE #2

Who painted the landscape painting in the White House called "Landing of the Pilgrims?"  
(Look in "Art.")

**Michele**



**Corne**

CLUE #3

What was Andrew Jackson's nickname?  
(Look in "Presidents.")

— ( ) — **Hickory**

CLUE #4

What was the name of the daily newspaper column  
written by Anna Eleanor Roosevelt?  
(Look in "Past First Ladies.")

**My** — — ( )

CLUE #5

Who was the first president to live in the White House?  
(Look in "Facts.")

**John** — — ( ) — —

Now unscramble the five circled letters to find out which  
country sent the spy to the White House.

— — — — —

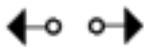
Name \_\_\_\_\_ Class \_\_\_\_\_

# National Costumes

Master the use of QuickTime Virtual Reality (QTVR) movies as you search for details in costumes from many lands. QTVR creates an immersive learning experience for students by creating an experience of standing in a real place and looking around. This activity is located on the Web at: <http://fcit.usf.edu/internet/costume.htm>



With virtual reality, it is possible to move (pan) from left to right and zoom in on details. To pan from left to right, click on the VR picture and drag in the direction you want to go. Your cursor will then change into an arrow pointing in the direction you're moving.



Some questions will require you to get close to a figure.



Use this button to zoom in.  You can zoom in by pressing the shift key on your keyboard, when the cursor is in the movie.

Use this button to zoom out.  You can also zoom out by pressing the control key on your keyboard, when the cursor is in the movie.

## QuickTime Virtual Reality Activity

Directions: Using the panning and zooming tools you just learned, answer the following questions.

1. There are currently two country domain codes for Great Britain. One of them is ".gb" and the other is hidden on King Henry's platform.

What is the second country code for Great Britain? \_\_\_\_\_

2. Marva is wearing her favorite light blue dress with palm trees on it. Where is Marva from? \_\_\_\_\_

(Hint: her country's domain code is ".bb")

3. Monsieur Pierre always signs his paintings in red paint using the country code for France.

What is the country domain code for his homeland? \_\_\_\_\_

4. Hank, the cowboy, recently had his saddle branded with the country domain code for America.

What is the country domain code for the U.S.A.? \_\_\_\_\_

5. Marcus and Elizabeth love the sound of their new yellow steel drum.

What is the country domain code for Jamaica? \_\_\_\_\_

6. Hans and Heidi each have one letter of Austria's country domain code embroidered on their clothing.

What is Austria's country domain code? \_\_\_\_\_

# Answers: Chapter 1 Activities

## *What's Hot? What's Not?*

<u>Answer</u>	<u>Reason</u>
1 Not	No action
2 Hot	Links to other schools
3 Hot	Links to cool school
4 Hot	Links to sounds
5 Hot	Links to movie
6 Hot	Launches email message

## *To Catch a Spy*

1. **B**lue Room
2. Michele Felice Corne
3. O**I**d Hickory
4. "My Day"
5. John Ad**a**ms

Scramble Answer: Libya

## *National Costumes*

- |             |        |        |
|-------------|--------|--------|
| 1) .uk      | 3) .fr | 5) .jm |
| 2) Barbados | 4) .us | 6) .at |

## CHAPTER TWO: **Becoming Good Netizens**

One of the most exciting educational aspects of using the Internet lies in its ability to open the classroom to the world. Learning about different countries and cultures becomes even more meaningful when students can easily communicate with people internationally. Communication via the Internet can occur in many different ways including email and chat rooms. Although the diverse nature of topics available on the Internet can enhance the learning experience, students need to be aware of safety issues when interacting with others online.

This chapter discusses the social nature of the Internet, focusing on topics such as Internet etiquette, confidentiality, and safety. It is important for students and teachers to be informed of these issues when using the Internet for telecommunications.

### **Guidelines for Internet safety**

Although a valuable instructional tool in the classroom, the Internet comes with some real dangers. Keeping in mind a few simple precautions will help protect students from potential dangers. (See figure 3 on the following page.) It is important to supervise the students as they begin their journey on the Internet. One way to facilitate the learning process is to provide safe and valuable sites. Emphasize to

students that information on the Internet is posted by both reliable and unreliable sources.

## **Safety Tips for Kids on the Internet**

- Never give your name, address, phone number, photo, or password to someone you meet over the Internet.
- Never respond to email messages that are suggestive, obscene, belligerent, threatening, or make you feel uncomfortable.
- Report any email that makes you feel uncomfortable.
- Be careful when someone offers you something for nothing.
- Tell your teacher or parent right away if you come across any information that makes you feel uncomfortable.
- Never arrange a face-to-face meeting with someone you met on the Internet.
- Remember that people online may not be who they seem.
- Get to know your “online friends” just as you get to know all of your other friends.

Figure 3: Provided by the Federal Bureau of Investigation  
[www.fbi.gov/kids/crimepre/internet/internet.htm](http://www.fbi.gov/kids/crimepre/internet/internet.htm)

## Acceptable use policy

It is important to develop a clear set of standards and expectations for use of the Internet in the classroom. You should first check with your district or school to see if there is an Acceptable Use Policy (AUP) already in place. If an AUP is not in place, then you should develop one in collaboration with students, other faculty, parents, and administrators. An AUP makes the school community aware of the responsibilities involved in using the Internet.

The National Education Association (NEA) suggests that an effective AUP contain the following six elements:

- **Preamble** explains the process involved in determining the goals of the AUP.
- **Definition of the Goals** of the AUP and key words used in the AUP.
- **Policy Statement** tells what computer services are covered by the AUP and the circumstances under which students can use computer services.
- **Acceptable Use** defines appropriate student use of the computer network.
- **Unacceptable Use** gives clear and specific examples of what constitutes unacceptable student use.
- **Violations/Sanctions** establish procedures for the reporting and handling of policy violations.

## Collaborating outside of the classroom

Internet learning communities are designed to facilitate conversations in multiple directions. Through email, videoconferencing, and chat room conversations, students

connect and communicate with multiple audiences. Students now have the opportunity to reach fellow students and mentors throughout the world. Collaboration with fellow students, faculty, and experts of all nations can become an everyday experience.

### *Introduction to email*

One form of communication beyond the classroom is electronic messages. These messages can be sent from computers that are connected to the Internet. These electronic mail messages are known as email. Email messages can be addressed to an individual, a group, or an entire organization.

An email address is comprised of two parts. The first part is the unique username of a person. This is the part of the address on the left hand side of the @ (at) symbol. The second part of the address is on the right hand side. This tells the address of the system that is responsible for that individual's email. It can be seen as:

mail\_user@particular-system.edu

A FIRN email address generally consists of your last name (up to 10 characters), an underscore line, and your first initial, followed by @firn.edu. For example, the Internet address for Ann Barron is: barron\_a@firn.edu

Email plays an important role as a vehicle of communication with cultures and communities. Students can communicate instantly through email and receive prompt feedback on how well their messages are understood. They need not wait for a penpal's letter to cross an ocean or for the potential visit of an international student to their classroom. The content of an email is usually text, but can also include images, audio, video, and program files as attachments.

### *Video conferencing*

Another form of communication on the Internet is video conferencing. This form of communication enables you to view, talk, and chat live with new friends from around the world. Initially, video conferencing involved communication between only two computer users, but there are now programs available that allow you to connect multiple participants.

Video conferencing is a very attractive form of communication. However, in a school district it can be very difficult to use because it requires high bandwidth to be effective. Bandwidth is the rate the data is transferred over a connection. Although low bandwidth connections will often result in a less satisfactory experience, they still can be used productively in a classroom.

### *Chat groups*

Chat groups are a more dynamic form of communication than email. Persons involved in a chat group can simultaneously participate in a discussion over a particular “channel,” or even multiple channels. To participate in a chat group, you simply log into the chat room, then begin conversing by typing messages that can be seen by other users. The main advantage of a chat group is that it takes place in real time, requiring active participation. Although chat rooms can offer tremendous opportunities for a classroom, they must be closely monitored.

## **Netiquette**

As the Internet includes a global community, students need to be aware of behavioral standards. Proper Internet etiquette is often referred to as Netiquette. Students and teachers can avoid embarrassing situations by adhering to some simple guidelines for electronic communication.

The following is a list of standards for Netiquette:

- Always identify yourself and keep your messages brief and to the point.
- Avoid “flaming” (inflammatory or antagonistic criticism) or sending insulting, abusive, or threatening remarks. There is no “*unsend*” option in email.
- Avoid using all capital letters in a message. This is perceived as SHOUTING and may cause hard feelings.
- Do not assume that your intentions will be understood; remember there is no body language, facial expressions, or tone to indicate your intentions.
- You may wish to use “emoticons” to help get your point across:

:-) ..... Happy  
:-( ..... Sad  
;-) ..... Winking  
:-o ..... Surprised  
:-@ ..... Screaming  
:-I ..... Indifferent  
:-e ..... Disappointed  
:-< ..... Mad  
:-D ..... Laughing

- Remember that email is not necessarily private. Your messages can be forwarded to many people without your knowledge. Before sending a message, read it over, double check the recipient(s) and make sure it will not become an embarrassment if it were forwarded to others not on your recipient list.
- Do not spam others. Spam is the practice of sending unsolicited email messages in bulk or overloading someone’s mailbox or server with messages.
- When sending or posting to multiple mailing lists or newsgroups, indicate the lists you have posted to in your message. Example: “This message cross-posted to [names of mailing lists].”

## **Children's Online Privacy Protection Act (COPPA)**

In October 1998, Congress passed the Children's Online Privacy Protection Act (COPPA), with the requirement that the Federal Trade Commission address and enforce rules concerning children's online privacy. The law went into effect on April 21, 2000. For more information on the COPPA see <http://coppa.org> or visit <http://www.kidsprivacy.org/>.

Below are some of the provisions of COPPA:

- Personal information cannot be collected on the Web from children under age 13 without permission from a parent or legal guardian.
- Parents have the right to know what personal information their children are being asked for and how it is to be used.
- Permission from parents and guardians, in most instances, must be verifiable.
- Children cannot be required to give out more information than is reasonably necessary to participate in web site activities such as games and contests.
- Web sites and online services must prominently post a clear privacy policy.

## Chapter 2 Resources

### Resources for email activities

*Highlights TeacherNet*

<http://www.teachernet.com/>

*Classroom Connect*

<http://www.classroomconnect.com/>

*Space Day 2002*

<http://www.spaceday.com/>

*Achievers International*

<http://www.achieversinternational.org/>

*ePALS Classroom Exchange*

<http://www.epals.com/>

### Resources for video teleconferencing

*CUSeeMe*

<http://www.cuseeme.com/>

*NetMeeting*

<http://www.microsoft.com/windows/netmeeting/>

*iVisit*

<http://ivisit.com/>

*Timbuktu*

<http://www.netopia.com/software/>

# 3 CHAPTER THREE: **Productivity Tools**

There are extensive resources on the Internet that allow teachers and students to increase productivity in the classroom. Resources for teachers include learning communities, lesson plans, subject area specific sites, online learning, and mailing lists. Resources that are available for students focus on homework help, study guides, and learning communities. In addition, there are multimedia resources available, such as clip art, sound files, and movies. These resource tools allow teachers to enhance their students' learning, increase productivity, and promote creativity.

## **Resources for teachers**

The productivity tools and resources available on the Internet for teachers allow for collaboration in constructing technology enhanced curriculum. The web addresses for selected productivity tools can be found at the end of the chapter.

### *Florida Information Resource Network*

The Florida Information Resource Network (FIRN) provides access to a variety of computing resources which serve public education. FIRN's primary mission is to provide electronic pathways and procedures enabling user access to computing services for Florida's public educational community. Through FIRN, teachers are able to access resources like the Encyclopedia Britannica, Grolier Online, Microsoft Encarta, and a searchable database of over fifty online journals.

### *Learning communities for teachers*

A teacher learning community web site provides a place to gather and share ideas. These virtual communities also offer a community feel for teachers as they bring together diverse backgrounds of experts, teachers, administrators, and university faculty. A community web site offers something for everyone. Often these web sites contain guidelines for the “best of the Web” resources and lessons. Learning communities on the Internet are designed for teaching, learning, research, and collaboration.

### *Lesson plans*

Lesson plan web sites provide opportunities for teachers to request, submit, and exchange lesson plans. Teachers work together to share ideas, success stories, and lessons learned. The lesson plans or Units of Practice (UOP) provided by teachers at these sites, often place an emphasis on integrating technology into the classroom. Some of the lesson plans match state standards or the NETS for Students.

### *Subject area specific sites*

Subject area specific web sites provide resources for a specific subject or content area, such as social studies, math, or science. A content specific web site will often include quizzes, word games, puzzles, lesson plans, and other resources to be used in the curriculum of a specific subject. In many cases, these sites are designed specifically for teachers by teachers and include links to professional organizations.

### *Online courses*

Online courses provide teachers with opportunities for professional development. These web sites foster changes in teachers’ practices, providing new strategies for effective methods of using technology to engage students. Some of

the courses offered are free of charge, while others require a fee. Most courses provide the opportunity for continuing education credit. The online delivery method allows teachers to learn at their own pace after the regular school day.

### *Mail lists*

A mail list is an automatic message service. The user must subscribe to the list and will automatically receive all of the messages from other members. There are numerous lists available on almost every topic imaginable. They provide an excellent way to obtain information on upcoming projects, events, and funding sources.

## **Resources for students**

Tools and resources are provided through the Internet for students to use beyond their classroom. Although a site may be designed for students, it is strongly suggested that teachers or parents guide the students in the use of these sites.

### *Learning communities for students*

Student learning web sites provide resources for students in an interactive learning environment. These web sites include tutorials, games, puzzles, and activities for online learning opportunities outside the classroom. Educators, volunteers, and experts assist students in completing their homework assignments. Lessons are provided to improve study skills, class notes, time management, and test preparation.

Some student sites are commercial and while they do provide valuable content, students are also exposed to targeted advertising. Universities, professional centers, and non-profit organizations also offer topic specific web sites for students. While free of advertising, sites sponsored by advocacy organizations are usually created to forward the

group's agenda. Keeping this in mind will allow students to evaluate the appropriateness of content.

### *Reference*

Reference web sites include a variety of reference resources for students. Online virtual libraries provide students access to dictionaries, encyclopedias, thesauri, atlases, almanacs, and other valuable reference materials.

### *Government sites for students*

Government web sites for students are designed especially for students to explore and gain information about governmental agencies. These kid-safe educational sites include facts, games, tutorials, and quizzes. US government web sites do not collect or share personal information about their visitors.

## **Multimedia resources**

The multimedia products displayed on the Internet can be used by both teachers and students to enhance productivity as the classroom moves towards a greater use of multimedia. When students find a specific resource they would like to use, they should check the site's "terms and conditions" to determine what is allowable.

### *Clip art*

Clip art web sites allow users to download various graphic images.

### *Stock photos*

Stock photography web sites provide users with the opportunity to download and use digital photos.

### *Audio*

Audio web sites include links to digitized audio archives, such as sound, music, and voice clips. These resources can be downloaded and used to enhance multimedia projects.

### *Video*

Video web sites provide users with the opportunity to download archived video clips. Sometimes clips are large in size and can take a while to download.

## **Virtual field trips**

Virtual field trips allow students to visit areas that would normally be inaccessible to them. The following examples illustrate the exciting learning opportunities that can occur because of multimedia tools.

### *Virtual tours*

Virtual tour web sites give students the opportunity to visit remote locations around the world. These sites include museums, exhibits, cities, countries, and other points of special interest. The tours may include videos, photos, sound clips, and virtual reality movies. The VR movie allows the student to move around and through a virtual environment.

### *Electronic field trips*

Electronic field trip web sites give students the opportunity to take an active role in the learning process. These web sites usually have three components: a teacher's guide, an instructional video, and special Internet activities. An electronic field trip allows for interactivity by having the user participate in the collection of data.

### *Online simulations*

Online simulation web sites allow students to conduct and perform actual experiments. The goal of online simulations is to enhance lab projects, not to replace them. Online simulations allow students to perform experiments, study samples, and make further inquiries.

## **Software resources**

Classroom productivity can also be enhanced through the use of specific computer application programs widely available on the Internet.

### *Freeware*

Freeware is exactly what it says, free. These are fully working programs that are free to the user. In most cases, the author retains all the rights to the programs so they cannot be altered, renamed, or sold to a third party.

### *Shareware*

Shareware is a copyrighted program that is freely distributed. Typically, it may be used for a limited period of time as described in the accompanying readme file. When the trial period is over, the user must either delete the program or pay the modest registration fee.

### *Public domain*

The goal of public domain sites is to make information available to the general public. Once a work, such as a book, becomes public domain, anyone can use it. These reference web sites help the user identify public domain resources, such as instrumental and choral music, writings, and images.

### *Software trial versions*

Some software companies provide demonstration versions of their products. Trial versions of software allow you to evaluate programs before you purchase them. There are limitations to the trial version programs. Some allow only a limited time period for usage, while others disable certain features of the program, such as the save command. This is a wonderful opportunity for the user to preview and evaluate a program.

# Index of web resources

## Resources for teachers

### Learning communities

Apple Learning Interchange

<http://ali.apple.com/>

Classroom Connect

<http://www.classroom.net/>

Teachers Net

<http://www.teachers.net/>

### Lesson plans

K-12 Lesson Plans

<http://teams.lacoe.edu/documentation/places/lessons.html>

Teachers First

<http://www.teachersfirst.com/>

### Subject area specific

Math Archives

<http://archives.math.utk.edu/>

Tennessee Bob's Famous French Links

<http://www.utm.edu/departments/french/french.html>

### Professional development

Tapped In

<http://www.tappedin.org/>

Education World

[http://www.education-world.com/pro\\_dev/](http://www.education-world.com/pro_dev/)

### Mailing lists

CLN: Educational Listservs

<http://www.cln.org/lists/>

K-12 Listservs and Keypals by Gina Otto

<http://www.ginaotto.com/listservs.html>

## **Resources for students**

### **Learning communities**

CYFERNet Kid's Space

<http://www.aces.uiuc.edu/~kidspace/>

School Notes

<http://www.schoolnotes.com/>

Classroom Exchange

<http://www.epals.com/>

Kids Domain

<http://www.kidsdomain.com/>

### **Ask an expert**

Ask An Expert

<http://askanexpert.com>

Ask a Historian

<http://www.askahistorian.com/>

BJ Pinchbeck's Homework Help

<http://school.discovery.com/homeworkhelp/bjpinchbeck/>

Quandaries and Queries

<http://MathCentral.uregina.ca/qq/>

### **Reference**

Brain Pop

<http://www.brainpop.com/>

Homework Spot

<http://homeworkspot.com/>

Home Work Helper

<http://gosin.com/homework.htm>

WWW for Kids

<http://www.4kids.org/>

### **Government sites for students**

Kidz Privacy

<http://www.ftc.gov/bcp/conline/edcams/kidzprivacy/>

The Learning Page

<http://lcweb2.loc.gov/ammem/ndlpedu/>

## **Multimedia resources**

### **Clip art**

Barry's Clip Art

<http://www.barrysclipart.com/>

Flags of the World

<http://fotw.vexillum.com/flags/>

Matt's Charitable Contribution to Math Clip Art

<http://www.brookwood.s-cook.k12.il.us/mathart/mathart.htm>

### **Digital photos**

Digital Florida

<http://www.itrc.ucf.edu/df/>

Digital Photography Exhibit

<http://gcc.bradley.edu/exhibit/>

NASA Photo Gallery

<http://www.nasa.gov/gallery/photo/>

### **Audio**

The Classical MIDI archives

<http://www.classicalarchives.com>

Geek-Girl: Sites with audio clips

<http://www.geek-girl.com/audioclips.html>

The MIDI Farm

<http://www.midifarm.com/>

Vincent Voice Library: U.S. Presidents of the 20th Century

<http://www.lib.msu.edu/vincent/presidents/>

### **Video**

Library of Congress, Early Motion Pictures

<http://memory.loc.gov/ammem/collections/>

NASA Video Gallery

<http://www.nasa.gov/gallery/video/>

The Webcorp Multimedia Archive

<http://www.webcorp.com/video/videoarchive.htm>

## **Virtual field trips**

### **Virtual tours**

Historic Brattonsville, SC

<http://www.knowitall.org/letsgo/index.html>

The Louvre Museum

<http://www.louvre.fr/louvrea.htm>

Teacher's Guide to the Holocaust

<http://fcit.usf.edu/holocaust/resource/VR.htm>

Virtual Cave

<http://www.goodearthgraphics.com/virtcave.html>

Virtually Hawaii

<http://hawaii.ivv.nasa.gov/space/hawaii/virtual.field.trips.html>

### **Electronic field trips**

Colonial Williamsburg

<http://www.history.org/trips/>

Electronic Field Trip to a Pig Farm

<http://www.ca.uky.edu/agc/dl/Ftrips/PIG/Pig.htm>

Glacier National Park

<http://www.sd5.k12.mt.us/glaciereft/home.htm>

Mississippi River - Landmarks and Legends

<http://www3.iptv.org/interactive/miss/virtualtour/frames/>

### **Online simulations**

The CUWU Statistics Program

<http://www.stat.uiuc.edu/~stat100/cuwu/>

Educational Space Simulations

<http://www.rice.edu/armadillo/Simulations/>

SimScience

<http://SimScience.org/>

Stock Market Simulation

[http://library.thinkquest.org/10326/market\\_simulation/main.html](http://library.thinkquest.org/10326/market_simulation/main.html)

Virtual Chemistry

<http://neon.chem.ox.ac.uk/vrchemistry/>

## **Software resources**

### **Freeware**

Free Software and Other Materials

<http://www.freeworksheets.com/>

Jumbo

<http://www.jumbo.com/>

### **Shareware**

Shareware Site (CNET)

<http://shareware.cnet.com>

Softseek

<http://www.kawartha.com/softseek/>

### **Public domain**

The Avalon Project

<http://www.yale.edu/lawweb/avalon/purpose.htm>

Choral Public Domain Library

<http://www.cpdll.org/>

Public Domain Music

<http://www.pdinfo.com/>

Project Gutenberg

<http://www.gutenberg.net/>

### **Software trial versions**

Hyperstudio

<http://www.hyperstudio.com/>

Inspiration

<http://inspiration.com/>

# 4 CHAPTER FOUR: **Communication Tools**

The Internet can be used as a tool for communicating outside of the classroom. Students can easily collaborate with peers across continents or ask questions directly to an expert in their field of interest. The multimedia capabilities of the Internet allow students to share information, stories, artwork, movies, and other productions with multiple audiences.

## **Collaboration with peers**

Email provides the opportunity for students to collaborate with their peers across town or across the globe. Of course, email use in the classroom should be carefully monitored and subject to the school's Acceptable Use Policy (AUP). Once students are aware of safety and netiquette issues, they may begin to work with students around the world. The following are examples of successful email projects in schools.

### *Plant growing contest*

Students from a variety of geographical areas throughout the world plant the same kind of seeds on the same day, follow the same directions for care of the plants as they grow, measure the plants, and send data to other participants so they can use these data for graphing, analysis, and drawing conclusions.

### *Weather watch*

Students exchange, compare, and graph weather information with other students across the country and around the world.

### *Pollution patrol*

Students measure the quality of the air and water (in lakes, oceans, or rain) and compare findings with students in other parts of the world. The impact of pollution and environmental factors can be addressed.

### *Price is right*

Students conduct surveys, collecting and comparing food, gas, or clothing prices from around the world.

### *Round robin stories*

Students in participating classes start a story. Each story-starter is sent to a predetermined class, and the students add a new section to the story. Stories continue to rotate to the different classes until each story reaches the original class. Graphics can be added to illustrate the stories or create a book.

### *Tales to tell*

Students exchange and collect regional, ethnic, and urban folktales from various parts of the world (or country). They can compare common themes, and discover what makes each story unique.

### *Map skills*

Students from various parts of the world exchange postcards. Each class then connects the postcards to a large map as they arrive. Another idea is to have the students plan a fictional trip to visit their key pals, and determine the best routes and modes of transportation, amount and type of money needed, and sites to see when they arrive.

### *Ask an expert*

Ask an expert web sites allow students to interact with real world experts. A diverse group of professionals serve as useful resources for students. Connecting students to an expert in a specific field is a way of expanding horizons, enhancing curriculum with current information, and integrating Internet resources.

## **Publishing on the Web**

Publishing on the Web is an exciting way for students to share their work with others beyond the classroom. Although one might think the threat of publishing would make a student shy, the opposite often happens. The various opportunities to publish on the Web can engage students and encourage creativity.

### *Student work*

Numerous web sites are available for students to submit their work, such as poetry, essays, research reports and school articles. Some web sites will publish all the student work that is submitted. Other web sites offer prizes and other incentives for students who submit their work.

### *Online journals*

Online journal web sites publish or feature outstanding individual work and classroom projects. Students can submit an article or project to the journal for review and will receive feedback on their submission.

### *Student opinions*

Student opinion web sites are available to allow students to publish their view or opinion on issues affecting young people. Students themselves have created some of these web sites, with the guidance of teachers and professionals in the field.

### *Oral histories*

Oral history engages students in the journalism process. Students can interview different people, such as parents, grandparents, civic leaders or others who can share their experiences. This allows students to experience a different perspective of history and to share that story with others.

### *Newspapers*

Publishing the school newspaper on the Web, as well as in print, allows others in the community to be more informed about what is happening at the school. Online newspapers allow students to cover more activities and give students writing experience.

## **Creating a web page**

A web page is a method of communicating that allows the outside world to step inside and learn a little more about yourself or your classroom. Creating web pages can be as simple or complex as you wish. The only tool you really need is a simple word processing program such as Simpletext (on the Mac) or Wordpad (on the PC). This basic introduction can get you started making a web page. For a more thorough guide to creating school web pages, see "A Teacher's Guide to School Web Sites," also available on the Web at <http://fcit.usf.edu/websites/>.

To turn any page of text into a web page, you need to add special code called HTML. HTML (HyperText Markup Language) tells the browser how to display your text. For example, there are codes to tell the browser when to start a new paragraph or when to make a font larger. There are also codes to tell the browser how to link to another page on the Internet if certain text or graphics are clicked. Learning just a handful of these HTML codes will allow you to create a web

page. Here is an example of the "bare bones" code you need to type for any web page:

```
<HTML>
<HEAD>
<TITLE>
Sue's Home Page
</TITLE>
</HEAD>
<BODY>
This is my first web page!
</BODY>
</HTML>
```

And here is what the resulting page would look like.



Figure 4: A simple web page

Of course, you'll probably want more than one short sentence on your page. Look at the next picture of a web page (figure 6) and the code that created it. Can you see what Mrs. Smith added to the "bare bones" code on the previous page to create her own page with text, links, and a graphic?



```

<HTML>
<HEAD>
<TITLE>Mrs. Smith's Fourth Grade</TITLE>
</HEAD>
<BODY BGCOLOR="#FFFFFF">
<CENTER>
<H1>Welcome</H1>
<H3>to Mrs. Smith's Fourth Grade</H3><P>
<IMG SRC="books.gif" WIDTH=141 HEIGHT=114><P>
This is going to be a great year! Click on the links below for
more information.<P>
| | <A HREF="HOMEWORK.HTM">Homework</A>
| | <A HREF="CALENDAR.HTM">Calendar</A>
| | <A HREF="MAILTO:mrssmith@myschool.edu">
Email the teacher</A> | |
</CENTER>
</BODY>
</HTML>

```

Figure 5: A screen shot of Mrs. Smith's web page and the code that created this page

Even though basic HTML code is relatively easy, you may wish to use a software program that writes the code for you. These programs are often referred to as WYSIWYG programs, "What You See Is What You Get." With a WYSIWYG program, you just type your text the way you want it to look and the program will create the HTML code for you. Examples of WYSIWYG programs include Adobe GoLive, Macromedia Dreamweaver, Microsoft FrontPage, and Netscape Composer. Also many word processing programs will allow you to save a document as HTML.

Whenever you create a web page, you should make sure it is accessible to the visually impaired visitor. An easy way to check your page for accessibility is to submit your site to "Bobby." Bobby is a web-based tool that analyzes web pages for their accessibility to people with disabilities. The Center for Applied Special Technologies (CAST) offers Bobby as a free public service in order to further its mission to expand opportunities for people with disabilities through the innovative uses of computer technology. You can go to the Bobby site, <http://www.cast.org/bobby/>, and enter your URL to see if your web site is accessible.

You will also need to find space on a server to host your web pages. If your school does not have access to its own server, visit the Florida School Neighborhood. This is a service of FIRN (the Florida Information Resource Network) that provides free classroom web space for the Florida public school system. For more information about this program, visit <http://neighbor.firn.edu/>.

## **Viewing multimedia on the Internet**

As the Web has moved from text to multimedia, the number of file formats has increased dramatically. Browsers acquire

the ability to display media in various formats through the use of plug-ins. Your browser came with a number of plug-ins already installed. Occasionally, however, you will encounter a web page that asks you to install a new plug-in or update an existing one. In most cases you will be provided with a link to a site offering the plug-in you need. Simply click on the link for the plug-in and follow the directions you are given. Typically you will need to restart your browser after installing the plug-in.

## **Publishing in a variety of formats**

As students begin to incorporate multimedia into classroom projects they will also want to publish multimedia on the Web. Adding multimedia to a web page is more difficult than creating a simple page of text, but the results are well worth the effort. This section will give you some idea of what is possible in multimedia publishing.

### *Graphics*

Many students will want to add images to their web pages. Communication can be enhanced by the use of photographs, illustrations, maps, charts, and other graphics. Sources for graphics include digital cameras, scanners, and painting programs. Although graphics may be saved in many different file formats, only two formats are typically used on the Web: GIF (Graphics interchange Format) and JPEG (Joint Photographic Experts Group). The GIF format is limited to 256 colors and is best used for graphics with areas of solid color. GIFs are saved with a .gif file extension. The JPEG format is best for continuous tone photographs or other graphics requiring more than 256 colors. When saving a graphic in the JPEG format, students will be given a choice regarding the amount of compression to be used. A JPEG with very little compression will look great, but will also have a larger file size and consequently take longer to download. A JPEG with a greater amount of compression

will have a much smaller file size, but the image quality will suffer. Students may want to experiment with various levels of compression to determine what is acceptable. JPEGs may be saved with either a .jpeg or a .jpg file extension.

### *Animation*

Animation is a useful tool for showing processes. Any series of drawings or photographs can be turned into an animation and added to a web page. For example, a student might wish to make an animated map showing the growth of the United States. She would need to create a series of maps, each one showing the addition of a new territory. Each map should be saved with its own file name (map1, map2, map3, etc.). These separate images can be turned into an animated GIF using any number of inexpensive graphic programs, or even the freeware program GifBuilder. The file extension for animated GIFs is .gif.

Macromedia Flash is another program that can create animations for the Web. Flash animations are vector based which means that the file size can be fairly small even though the animation itself is large. The learning curve for Flash is steeper than for animated GIFs, but that is because there are so many more features in this increasingly popular format. The file extension for Flash animation is .swf.

### *Sound*

Although sound files can be a powerful enhancement to a web page, there are many sites on the Web where inappropriate or poor quality music detracts from the visitor's experience. Therefore, students should be instructed to carefully select audio files for use on the Web. Audio files should complement the page and there should always be a way to turn the audio off. In fact, it is usually best not to have any audio play automatically. Instead, give the visitor the choice to play a particular file.

The educational uses of audio on the Web are limitless. Some students may wish to record themselves reading poetry they have written. These sound files could be placed next to the text of their poems on a web page giving visitors the option of hearing the poems read by the authors. Another student might record birdcalls in her locale and collaborate with other students in various parts of the country to create a web site about birds. Each photo of a bird could be accompanied by a link to the appropriate sound file. A musically inclined student might wish to save his composition in the MIDI file format and include it on his personal web page or use it as background music in a web-based multimedia project.

There are a number of audio file formats appropriate for the Web. The poets in the above example may wish to save their sound files as either .au, .wav, or .aif depending on the capability of their sound editing program. The musician could save his MIDI piece as a .mid or he could import it into QuickTime and save it as a .mov since the .mov format handles a wide variety of sound files. (In the computer world, you can have movies with sound only and no pictures.)

### *Video*

Desktop movies can motivate and excite students about learning. Such movies can be more than what we usually think of as motion video. They can also incorporate still pictures, artwork, text, and audio. Desktop movies provide students with hands-on experience as script writers, storyboard artists, directors, and editors. Movies can be created and edited in a wide variety of software applications ranging from the professional to simple programs suitable for elementary students. File formats for video include .mov (used by QuickTime), .avi (Audio Visual Interleave), and .mpg (Motion Picture Experts Group).

## *Virtual reality*

Virtual Reality (VR) provides viewers the opportunity to move around in a photorealistic environment and to manipulate objects. Students find VRs particularly engaging and are often surprised to learn that they can be created in the classroom at little or no cost.

A panorama VR allows one to view a scene in all directions. Students will first need to create a very long picture that shows a scene in all directions. One end of the picture should match with the other end. Perhaps one student will want to make a panorama VR movie of your classroom. She could start with a series of photos from a digital camera and use a graphics program to paste them all together end-to-end. Another student might want to make a VR of the hydrological cycle. He could draw a long picture in a graphics program showing (from left to right) water evaporating from the ocean, falling as rain on land, and returning to the ocean. Either the classroom photo or the water cycle drawing can be turned into a VR using a free application from Apple. Go to <http://developer.apple.com/quicktime/quicktimeintro/tools/> and download QTVR Make Panorama 2. VRs such as these can be added to any web page.

VR movies can also be made from objects. Viewers of an object movie can turn the object to view it from all directions. For this, your students will need a digital camera and a small turntable of some sort. Place the object on the turntable and take a series of photos with the object turned to different positions. Use QuickTime Pro to convert the photos into a movie. A free application, QTVR Edit Object, turns the movie into a VR object movie. Add the resulting movie to a web page for the whole world to view. Object movies are great for sharing 3-D student projects such as models or sculptures.

### *Portable Document Format*

Although there are ways of creating a variety of text styles on a web page, you can never be sure that a page will display exactly as a student expects. For projects that utilize special fonts and text formatting, students should consider publishing the document as a Portable Document Format (PDF) rather than as an HTML page. A PDF displays a page exactly as it was created. Many word processing and layout programs have the capacity to save as PDF. A student would then create an HTML page with a link to the PDF file. This page should also carry a link to <http://www.Adobe.com> so a visitor to the page can download the free Adobe Acrobat plug-in needed to view the PDF.

### **Multimedia resources:**

Adobe

<http://www.adobe.com/products/>

Macromedia

<http://macromedia.com/downloads/>

QuickTime

<http://www.apple.com/quicktime/download/>

RealPlayer

<http://www.real.com/player/>

Windows Media Player

<http://www.microsoft.com/windows/windowsmedia/download/default.asp>

# 5 CHAPTER FIVE: **Research Tools**

The Internet can be a researcher's dream come true. By browsing the Internet, much as you would browse the shelves of a library, you can access information on seemingly limitless topics. In addition, web-based catalogs are available in many libraries to assist researchers in locating printed books, journals, government documents, and other materials.

Possibly the biggest obstacle facing researchers on the Internet is how to effectively and efficiently access the vast amount of information available with the simple click of the mouse. With the Internet's potential as a research tool, teachers must instruct and guide their students on manageable strategies for sorting through the abundance of information. The search for reliable resources can be both overwhelming and frustrating if students are left on their own in their initial search. A few simple guidelines can make conducting research more manageable, reliable, and fun.

## **The research process**

Lessons and projects should be designed so that research time on the Web can be maximized in terms of efficiency. This may mean gathering necessary information beforehand, having students work in groups, or focusing on whole-class projects.

Barron and Ivers (1996) outlined a cycle for online research projects. (See figure 7.)

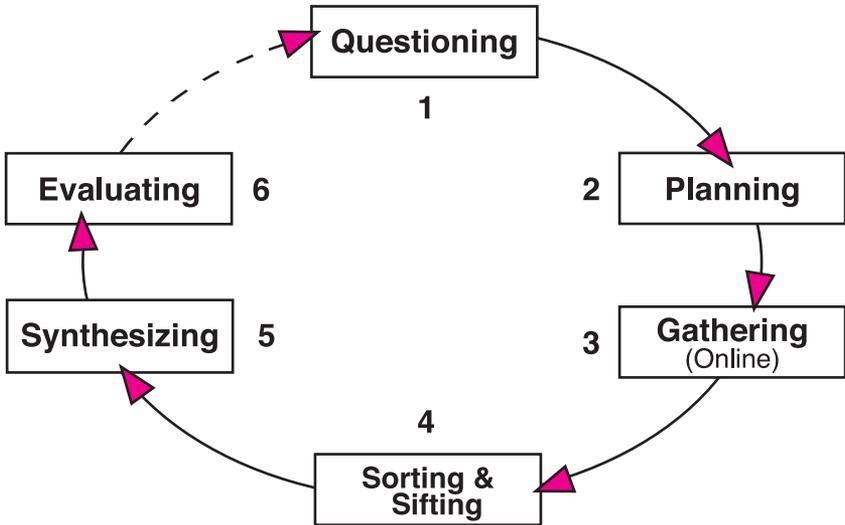


Figure 6: Online Research Process

**Step 1:** *Questioning* – before going on the Internet, students should structure their questions.

**Step 2:** *Planning* – students should develop a search strategy with a list of sites to investigate.

**Step 3:** *Gathering* – students use the Web to collect and gather information.

**Step 4:** *Sorting & Sifting* – students analyze and categorize the data they gathered on the Web.

**Step 5:** *Synthesizing* – students integrate the information into the lesson, and draw conclusions.

**Step 6:** *Evaluating* – students assess the results, and if necessary, begin the process again.

## Searching the Web

There are millions of pages of information on the World Wide Web, and finding relevant and reliable information can be a challenge. Search engines are powerful tools that index millions of web sites. When entering a keyword into a search engine, you will receive a list with the number of hits or results and links to the related sites. The number of hits you receive may vary a great deal among different search engines. Some engines search only the titles of the web sites, and others search the full text.

One place to begin a web search is on the search pages that are maintained by Netscape Navigator and Internet Explorer. If you click Search on the Netscape Navigator menubar, you will go to a page that provides quick access to many different search tools. You can select the search engine you want to use from those pages rather than accessing each search engine site directly.

Techniques for using the different search tools vary. For best results, read the search tips or hints that are provided at each search site. Also, note that some of the search engines do not allow Boolean searches that combine words with the logical connectors AND, OR, or NOT.

Common commands for searching include:

- "..."      Using quotation marks will help to find specific phrases involving more than one word.  
For example: "Martin Luther King"
- +            Adding a + sign before a word means that it MUST be included in each site listed.  
For example: +Florida +taxes
- Adding a - sign before a word means that it will NOT appear in the sites listed.  
For example: +Washington -DC

- \* Asterisks can be used for wild-cards in some search engines. For example, Mexic\* will look for Mexico, Mexican, Mexicali, etc.

## **Search engine capabilities**

Search engines are rated by the size of their index. Large engines such as AltaVista and HotBot are good tools to use when searching for obscure information, but one drawback to an extensive index is the overwhelming number of results on more general topics. If this is the case, it might be better to use a search engine with a small to medium size index, such as Excite or WebCrawler. The directory structure of engines such as Yahoo or Lycos is also helpful for categorizing the hits.

Many search engines provide directory-listing search tools such as yellow pages, white pages, and email addresses. In addition, many allow you to personalize their site to your needs. For example, you might want to set the attributes of the page to show educational news headlines and your favorite teacher resource links. In the preferences of your web browser, you can then set this page as your home start-up page.

## **Search engines especially for children**

Search engines designed for younger students are useful tools for the classroom. They screen for inappropriate material and provide appropriate sites for students on topics related to education and entertainment. Using these sites helps to narrow the scope of hits on a search inquiry. As a result, the student will spend less time reading irrelevant material.

Although some search engines allow you to turn on filters to help filter out adult content, they are not always thorough or

accurate. There are several good search engines that are specifically designed for the younger audience, such as Ask Jeeves, OneKey, and Yahoooligans.

## Evaluating Internet sources

Students often uncritically accept information they see in print or on computer screens. Students should be encouraged to carefully evaluate sources found on the Internet. The evaluation tool below will help students

### Analyzing Web Resources

Answer the following questions to evaluate web resources.

#### Accuracy

- Are sources listed for the facts?
- Can information be verified through another source?
- Has the site been edited for grammar, spelling, etc.?

#### Authority

- Is the publisher reputable?
- Is the sponsorship clear?
- Is a phone number or postal address available?
- Is there a link to the sponsoring organization?
- Is the author qualified to write on this topic?

#### Objectivity

- Does the sponsor have commercial interests?
- Is advertising included on the page?
- Are there obvious biases?

#### Currency

- Is a publication date indicated?
- Is there a date for the last update?
- Is the topic one that does not change frequently?

#### Coverage

- Are the topics covered in depth?
- Does the content appear to be complete?

Figure 7: Analyzing Web Resources

analyze web resources in terms of accuracy, authority, objectivity, timeliness, and coverage. Consideration of these factors will weed out many of the inaccurate or trivial sites students may encounter.

## **Setting bookmarks on the Web**

Both Netscape Navigator and Internet Explorer provide a way to create a list of your favorite sites that you can access with a click of the mouse. In Netscape, these lists are called bookmarks, and in Internet Explorer they are called favorites.

The procedure for creating a list of sites is an easy and powerful tool for web use. When you find a web page that you want to bookmark, simply select the “Add Bookmark” or “Add Favorite” option from the menu bar. To return to the site at a later time, choose the name from the bookmark or favorite list, and you will immediately access the site. You can organize your bookmarks into file folders and can save them on a disk to transfer and use on other computers.

## **Copyright issues**

Teachers and students have a somewhat flexible, but not unlimited, copyright privilege under the “fair use clause” of the U.S. Copyright Act. “Fair use” is the means by which educators of non-profit educational institutions may use copyrighted works without seeking permission or making payment to the author or publisher. Teachers and students are also protected to some extent by the Digital Millennium Copyright Act, which went into effect in October 1998. Under current guidelines, teachers and students are able to make limited use of copyrighted materials for instructional purposes.

Currently, copyright law as it relates to the Internet is vague and being challenged and rewritten on an ongoing basis. However, the guidelines of the “fair use clause” can be applied to Internet use in the classroom. Although classroom use allows teachers and students to be creative, you must be extremely careful. Teachers and students should realize that all materials found on the Internet are protected by the same copyright laws as printed materials. Copyright protects “original works of authorship” that are in a tangible form of expression.

Copyrightable works include the following categories:

- literary works
- musical works, including any accompanying words
- dramatic works, including any accompanying music, pantomimes, and choreographic works
- pictorial, graphic, and sculptural works
- motion pictures and other audiovisual works
- sound recordings
- architectural works

These categories should be viewed broadly. For example, computer programs and most “compilations” may be registered as “literary works”; maps and architectural plans may be registered as “pictorial, graphic, and sculptural works.”

*Important questions to ask*

- What is the purpose for using the material?
- Who is the audience?
- How widely will the material be distributed?
- Will the material be reproduced?

It is allowable under copyright guidelines to use copyrighted materials for class assignments. Check specific guidelines for the length of time the material can be kept up on a web site.

*When in doubt, ask*

If you and your students find a graphic or portion of a text on the Internet that you want to utilize in a class project, locate the source of the web site and email them to ask permission for use of their graphic or text. Many web site designers are happy for you to “borrow” their graphics and words. Some ask that you give them credit and others do not. Although your students may be too young to comprehend copyright law, they can understand the concept of respecting someone else’s property.

It is advisable for school sites to have an online service provider or an “agent” who can act as a filter on copyright issues. The agent is the person someone would notify if they found a copyright violation on a student or school web site. In most cases, you are simply asked to remove the offending copyright violation.

For more information on fair use guidelines for educational multimedia, go to <http://www.utsystem.edu/ogc/intellectualproperty/ccmcguid.htm>.

*Copyright discussions with students may include:*

- Does copyright apply to student web pages? Any original work of authorship, whether created by a student, teacher, or professional is protected by the copyright laws. An original piece of work does not need to possess or display a copyright to be protected under the copyright laws.
- May students “borrow” art, sound, animation, etc., from others’ web pages? Resources (such as graphics and sound files) from most web sites are copyright protected and require permission to use, but the resources at some web sites are advertised as “free” for use. These web sites may require that credit be given to the original source of the materials.

## Citation of electronic manuscripts

There are many resources describing how to cite electronic manuscripts. Printed style manuals generally concur with online resources. MLA-style guidelines can be found online at [http://www.columbia.edu/cu/cup/cgos/idx\\_basic.html](http://www.columbia.edu/cu/cup/cgos/idx_basic.html). This site shows examples of a variety of electronic manuscripts that require citation.

Generally, to cite a World Wide Web page, provide the author's name, last name first (if known); the full title of the work, in quotation marks; the title of the complete work (if applicable), in italics; any version or file numbers; and the date of the document or last revision (if available). Next, list the full URL, followed by the date of access in parentheses.

Burka, Lauren P. "A Hypertext History of Multi-User Dimensions." *MUD History*. 1993. <http://www.utopia.com/talent/lpb/muddex/essay> (Jan. 8, 2000).

To cite email, give the author's name (if known) or the author's email or login name (the part of the email address before the @ sign), followed by the subject line of the posting, enclosed in quotation marks; the date of the message if different from the date accessed; and the name of the discussion list (if applicable), in italics. Next, give the address of the list, or the newsgroup, followed by the date accessed in parentheses.

Crump, Eric. "Re: Preserving Writing."  
*Alliance for Computers and Writing list server*.  
[acw-l@unicorn.acs.ttu.edu](mailto:acw-l@unicorn.acs.ttu.edu) (Jan. 8, 2000).

## **A helpful hint for research activities**

### *Be prepared for the unexpected*

If you are planning to use the Internet as an integral part of an assignment, something can (and often will) go wrong. Since the Internet is constantly changing, always preview the sites to verify the addresses and the appropriateness of the content. In some circumstances, it may be appropriate to “whack” the site as a backup, using software such as Blue Squirrel Web Whacker. Whacking a site saves it to a local location, such as a computer or network drive. In case something does go wrong, you are able to continue the activity through the usage of this whacked site.

## **Search tools for teachers**

Google

<http://www.google.com>

iWon

<http://www.iwon.com>

Northern Light

<http://www.northernlight.com>

Yahoo

<http://www.yahoo.com>

## **Search tools for students**

Ask Jeeves for Kids

<http://ajkids.com>

Lycos Zone

<http://www.lycoszone.com>

Study Web

<http://www.studyweb.com>

Yahooligans

<http://www.yahooligans.com>

Name \_\_\_\_\_

Class \_\_\_\_\_

## Finding a Needle in Cyberspace

Using the major search engines on the Web, find the best way to look for a needle. Fill out the following chart, noting the number of hits you receive in each of the search engines for the word *needle* and the phrase “Space Needle.” Then, answer the questions at the bottom of the page.

Search Engine	Search for: needle	Search for: "Space Needle"
Excite		
HotBot		
WebCrawler		
Yahoo		

1. Which search engine would be the best if you were looking for something very obscure?
2. Did searching for “Space Needle” result in more hits or less hits than searching for *needle*? Why?
3. Which search engine seemed to display the result fastest?
4. Try another search. This time, look for sites that contain all of these words: *needle*, *sleeping*, and *beauty*. (Hint: On many of the search engines you can specify that certain words **MUST** be included by adding a + in front of the word: +*needle* +*sleeping* +*beauty*.)

Name \_\_\_\_\_ Class \_\_\_\_\_

# Owner's Rights

Often a web site will state the terms and conditions for the use of copyrighted materials. The following activities require students to find this information on two different web sites.

## America's Story from America's Library

"America's Story from America's Library" is from the Library of Congress in Washington, D.C. and is designed for young people. The site is located at:

<http://www.americaslibrary.gov/>

### *About this site*

At the "America's Story" web site, information is provided about the site and who owns the copyright to the information. From the "America's Story," homepage click on "About This Site," then "Copyrights." This page is located at:

<http://www.americaslibrary.gov/about/copyright.html>

### Questions:

1. Does the Library of Congress own the rights to everything in its collections? \_\_\_\_\_
2. What type of information does the Library of Congress provide? \_\_\_\_\_
3. If a researcher would like to use material from this site, who must they contact to get permission?  
\_\_\_\_\_
4. Where can a researcher find more information about U.S. Copyright law? \_\_\_\_\_

### *Explore the states*

From the “America’s Story” homepage click on “Explore the States” then select the state of Florida. Click on the spyglass to see the photo credit.. This page is located at:

**[http://www.americaslibrary.gov/pages/es\\_fl\\_subj\\_e.html](http://www.americaslibrary.gov/pages/es_fl_subj_e.html)**

### **Questions:**

1. “Saint Augustine, Fla. Bastions of Fort Marion,” comes from what collection of photographs from the Library of Congress? \_\_\_\_\_
2. Who owns the right to photo 1? \_\_\_\_\_
3. Between what years was the photograph “Jacksonville, Fla. Signal tower” taken? \_\_\_\_\_

### *Singing games*

From the “America’s Story” homepage click on “See, Hear and Sing” then select “Children’s Songs,” and click on “Mary Mack dressed in...” and click on the spyglass to read the credits. This page is located at:

**[http://www.americaslibrary.gov/pages/sh\\_kidsongs\\_singame\\_1\\_e.html](http://www.americaslibrary.gov/pages/sh_kidsongs_singame_1_e.html)**

### **Questions:**

1. Where was the picture taken?  
\_\_\_\_\_
2. When was the picture taken?  
\_\_\_\_\_
3. Who was the photographer? \_\_\_\_\_
4. Can it be used for a class project? \_\_\_\_\_

## Owner's Rights - Page 2

### Meet Amazing Americans

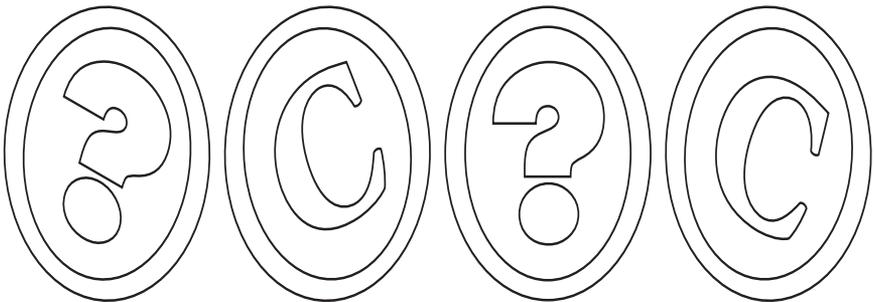
From America's Story homepage click on "Meet Amazing Americans" then select "Frederick Douglass."

This page is located at:

<http://www.americaslibrary.gov/cgi-bin/page.cgi/aa/douglass>

### Questions:

1. Click on "A Daring Escape." What is the copyright year of the 1845 cover of *Narrative of the Life of Frederick Douglass, an American Slave*? \_\_\_\_\_
2. Who owns the rights to this image? (hint: click on the thumbnail.) \_\_\_\_\_
3. Return to the "Frederick Douglass" page and click on "Follow the North Star." What newspaper did Frederick Douglass publish?  
\_\_\_\_\_
4. Where in the Library of Congress is this newspaper located? \_\_\_\_\_
5. Click on "Recruiting for the Union Army." Who owns the rights to this picture and in what year was it copyrighted?  
\_\_\_\_\_



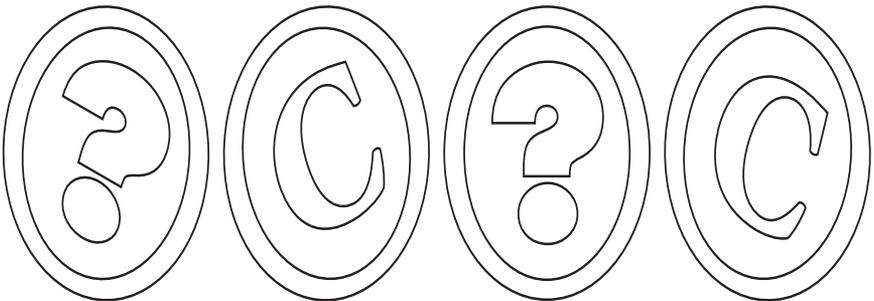
## Metropolitan Museum of Art

The Metropolitan Museum of Art has many beautiful photographs on their site. They also have a page on their site concerning the "terms and conditions of use" of these photos. Go to this page at:

<http://www.metmuseum.org/copyright.htm>

### Questions:

1. Are you permitted to use images from this site in a school report that you are not publishing? \_\_\_\_\_
2. Are you permitted to copy the images to a CD-ROM?  
\_\_\_\_\_
3. Are you permitted to use images from this site on a personal web page that includes advertisements?  
\_\_\_\_\_
4. Citations for images must include the author and source of the materials as you would from any printed work. What additional piece of information must also be included?  
\_\_\_\_\_



Name \_\_\_\_\_ Class \_\_\_\_\_

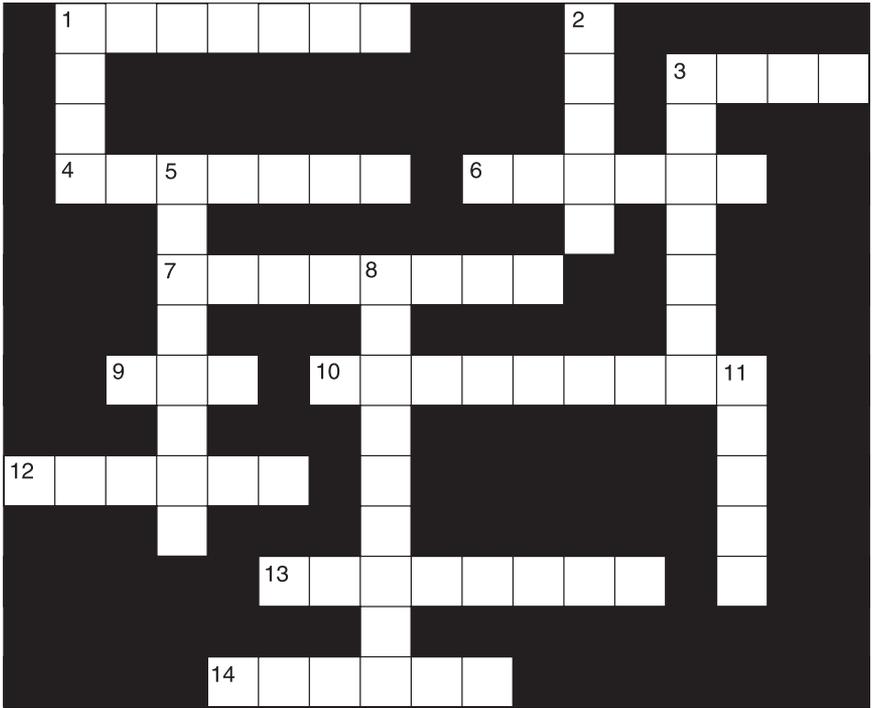
# Browse the Library of Congress

Access the Library of Congress at:  
<http://lcweb.loc.gov/z3950/gateway.html>

## ACROSS

1. Who is the author of *Waiting for Godot*?
3. What is the last digit in the ISBN number for Ann E. Barron's 1997 book?
4. Who wrote *The Mysterious Cat*?
6. Who wrote a pantomime about *Jack and the Beanstalk*?
7. What is the first word in the title of Michael Verney's 1967 book?
9. The last digit in the LC Call Number for *101 Dalmations* by Justine Korman.
10. Who wrote *Anatomy of the Honey Bee*?
12. When *Ten Great Basketball Offenses* was revised, how many offenses were there?
13. Who wrote the *Global Mind*?
14. What book by Leon Uris was published in 1924?





DOWN

1. Who wrote *How Good Guys Grow Rich*?
2. How many books did Judy Blume publish in 1972?
3. What does the F. stand for in F. Scott Fitzgerald?
5. Who illustrated the *Adventures of Huckleberry Finn*, published by Heritage Press?
8. Where was *Equestrian Statue of Peter I* published?
11. How many years did the author of *The Scarlet Letter* live?

## Answers: Chapter 5 Activities

### *About this site*

- |            |                     |
|------------|---------------------|
| 1. No      | 3. Copyright owners |
| 2. Factual | 4. Copyright office |

### *Explore the States*

1. Selected Civil War Photographs, 1861-1865
2. Sam Cooley
3. 1860-1865

### *Singing Games*

- |               |               |
|---------------|---------------|
| 1. Cat Island | 3. Alan Lomax |
| 2. 1935       | 4. No         |

### *Meet Amazing Americans*

1. 1999
2. The University of North Carolina at Chapel Hill
3. The North Star
4. African American Odyssey: A Quest for Full Citizenship
5. Currier and Ives, 1863

### *Metropolitan Museum of Art*

- |        |                                |
|--------|--------------------------------|
| 1. Yes | 3. No                          |
| 2. No  | 4. The URL "www.metmuseum.org" |

### *Finding a Needle in Cyberspace*

Answers will vary. In most cases, Yahoo and WebCrawler will result in fewer hits than the other search engines. InfoSeek and HotBot will probably return the greatest number of hits.

### *Browsing the Library of Congress*

- |             |               |              |
|-------------|---------------|--------------|
| ACROSS      |               | DOWN         |
| 1. Beckett  | 9. Two        | 1. Berg      |
| 3. Five     | 10. Snodgrass | 2. Three     |
| 4. Garrick  | 11. Sixty     | 3. Francis   |
| 6. Cregan   | 12. Twelve    | 5. Rockwell  |
| 7. Complete | 13. Perelman  | 9. Leningrad |
|             | 14. Exodus    |              |

# CHAPTER SIX: **6 Problem-Solving Tools**

This chapter discusses activities for the use of the Internet as a problem-solving and decision-making tool. The diverse resources of the Internet allow teachers to create meaningful opportunities to develop problem-solving skills for their students.

## **General guidelines**

Before creating or implementing a project that involves the use of the Internet, you should ask yourself, “Is the Internet the most efficient and effective medium to reach the instructional goals?” Following are a few guidelines to help ascertain the relevance of projects.

### *Projects should be meaningful*

As with other forms of technology, the Internet should be used to take advantage of its specific instructional features. Internet-based projects should be well-defined and interesting for the students.

The Internet is a tool, not an end in itself. Teachers must define, structure, and carry out a lesson integrating the Internet just as they would in any other activity. Inviting the world into your classroom requires specific goals, precise structure, organization, and follow-through.

### *Look for projects with specific goals*

Successful Internet-based projects for schools usually have specific goals and timelines. The goals should be clearly stated at the beginning of the project so that participating educators can assess the relevance for their curriculum. The timeline provides the structure needed to keep a project on track.

### *Start small*

Begin on a small scale; plan and practice with only a few participants or one other classroom. This will help you and the other participants get to know each other, as well as give you an idea of what is involved in maintaining a meaningful ongoing telecommunications project.

### *Communicate frequently*

Participants must share a strong commitment to the use of the Internet as the means of sharing data in a timely manner. Teachers should have an understanding of each others' expectations and timelines. They should be in contact with each other at least once per week and check for messages on a regular basis.

### *Share the results*

The results of your project can be shared by posting a message on bulletin board systems, electronic conferences, or by submitting your results to the local newspaper. You might send follow-up thank you messages to the participants. In addition, you can discuss plans for future projects and brainstorm about other Internet-based activities.

## **Creating and structuring activities**

Many web sites have appeared to assist educators in creating online instructional activities. Some of these sites provide

fill-in-the-blank templates, allowing teachers to create activities in a step-by-step process. Although these sites can be quite helpful when creating online activities for the first time, they can also be limiting.

For those teachers who want to step beyond the templates and create their own activities and web pages from the ground up, WebQuests and electronic portfolios have become popular for the development of engaging problem-solving activities.

### *WebQuests*

A WebQuest is a specific kind of web-based learning activity. It was developed by Bernie Dodge, a professor of educational technology at San Diego State University. WebQuests provide students with the opportunity to work independently or in small group activities that incorporate research, problem-solving, and application of basic skills. These teacher-created lessons guide student research using the Internet while incorporating skills such as problem-solving.

The following six components are essential for implementing WebQuests in the classroom. Additional information on WebQuests are located at:

<http://edweb.sdsu.edu/WebQuest/Webquest.html>

**Introduction** — The first component provides the learner with background on the WebQuest activity to be completed. It is important that the WebQuest be related to student interests, ideas, or past experiences.

**Task** — The second component describes what the learners will have accomplished at the end of the WebQuest. The main research question is developed for the learner. The teacher may want to show an

example of a completed WebQuest.

**Process** – During the third component, the teacher suggests the steps the learners should go through in completing the task.

**Resources** – The fourth component consists of a list of resources, provided by the teacher, that will assist the learner in accomplishing the task.

**Evaluation** – The fifth component uses a rubric, an established set of rules or guidelines, for evaluating students' work. It is important that the standards be clear, consistent, and specific.

**Conclusion** – During the final component, students are provided with the opportunity for reflection and summation about the experience. Students should be encouraged to reflect about the process, to extend, and generalize what was learned.

### *Electronic portfolios*

A portfolio is a concise, annotated collection of a student's work that displays his or her knowledge, understanding, skills, accomplishments, interests, and achievements over a specified time. This collection combines curriculum, instruction, and assessment. Teachers and students develop a shared understanding of what constitutes quality work, and acquire a common understanding for evaluating accomplishments. This allows students to take an active role in the learning process.

An electronic portfolio can be made available on the Web or on CD-ROM. This allows students to communicate with teachers, parents, and other members of the community about their learning. An electronic portfolio provides a concrete example of student learning by incorporating a variety of multimedia, including digital photographs, video, voice recordings, and audio.

The one aspect of an electronic portfolio that makes it unique

is the integration of the multimedia development model (Ivers & Barron, 1998). The multimedia development process incorporates the following stages for developing an electronic portfolio:

**Decide** — Teacher and students set instructional goals. Students are provided guidelines for their electronic portfolio to reflect their knowledge and learning experiences. Students then locate resources for accomplishing this task.

**Design** — Teacher and students determine the program structure and detail content. Flow charts are designed, storyboards are created and finally a template is created for the portfolio.

**Develop** — Students gather and create the multimedia elements for the portfolio. The student creates the portfolio, previewing and debugging the program.

**Evaluate** — Teacher and students evaluate both the product and process involved in developing the program.

An electronic portfolio provides the opportunity for both student and teacher to have a digital record of what the student has accomplished in the classroom. The student is able to keep that record with them through their K-12 educational experience.

# Appendix

## FCIT Resources

Additional resources from the Florida Center for Instructional Technology include:

Getting Started with Telecommunications. This booklet provides information on obtaining and using a Florida Information Resource Network (FIRN) account. Also available on the Web at:  
<http://fcit.usf.edu/telecom/>

A Teacher's Guide to Distance Learning. This booklet provides an overview of distance learning technologies and applications in K-12 education. Also available on the Web at:  
<http://fcit.usf.edu/distance/>

An Educator's Guide to School Networks. This booklet provides an overview of computer networks and their integration into the school setting. Also available on the Web at:  
<http://fcit.usf.edu/network/>

Language of the Internet. This brochure is a convenient guide to Internet terms and acronyms. Also available on the Web at:  
<http://fcit.usf.edu/language/default.htm>

Searching the Web. This brochure is a beginner's guide to using web search tools. Also available on the Web at:  
<http://fcit.usf.edu/search/default.htm>

FCAT Staff Development Tools. These programs are designed to help teachers prepare their students for the FCAT.  
Also available on the Web at: <http://fcit.usf.edu/>

Other materials are available from FCIT on the World Wide Web at:  
<http://fcit.usf.edu/>

To obtain copies of any of the print materials, call the Florida Center for Instructional Technology at 813-974-1640, or send an email message to [FCIT@tempest.coedu.usf.edu](mailto:FCIT@tempest.coedu.usf.edu).