Virtual classrooms: a look at educational uses of the Internet

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Virtual classrooms: a look at educational uses of the Internet

Abstract
This research paper will look at how the Internet, specifically email and the Web, has been utilized within the educational system. This paper will answer the question "How is the Internet being used in various K-12 classrooms in the United States?" Each educational use of the Internet will be defined and a brief description will be given of each. In addition, the Internet tools necessary to access these uses will be discussed. Special attention will also be given to certain elements and outcomes to particular educational uses of the Internet. The advantages and disadvantages of each educational use will also be considered. Yet, before the different educational uses of the Internet are reviewed, the origin of the Internet will be discussed.
Virtual Classrooms: A Look at Educational Uses of the Internet

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CHAPTER ONE

Introduction

The arrival of the Internet has been compared to Johann Gutenberg's invention of movable type, which revolutionized the production of information. Around mid-1400 AD Gutenberg created single metal letters that could be aligned and moved to make page assembly more efficient when printing multiple pages (Knowledge Adventure, 1997). As a result, the printing press and movable type have been classified as the first mass communication medium (Gates, 1995). Prior to the creation of moveable type the process of printing, whether by machine or hand, was tedious and extensive. According to Gates (1995) the creation of moveable type allowed, "...knowledge, opinions, and experiences [which] could be passed on in a portable, durable, and available form" (p. 8). Before Gutenberg's invention there were only about 30,000 books in Europe, by the 1500s there were more than 9 million (Gates 1995). Just as the printing press and movable type have dramatically affected our culture so will the Internet.

The Internet is a global network of computers that communicate and share information by using a common protocol (computer language). The global network of computers and the capability to share information has nearly affected every aspect of our lives.
Governments, commercial enterprises, educational institutions, and non-profit organizations all have been involved in the growth of the Internet. With the ability to remove geographical and cultural barriers, the Internet has become an important informational tool.

To access the various resources from the Internet several tools have been created. Electronic mail (SMTP or e-mail) was one of the first Internet tools constructed which permitted individuals to communicate with each other using a computer and a modem. In 1993, e-mail accounted for nearly 44% of all Internet users (Armstrong, et al., 1993). Other tools such as Gopher, Veronica, File Transfer Protocol (FTP), and newsgroups also allows users to access information from the Internet (Whittle, 1997). These various Internet tools not only permit users to access data but also transmit and retrieve data.

Then in 1989, Berners-Lee, a researcher from CERN, created a tool that allowed users to access universal information in a multimedia format (Hughes, 1993). This tool is known as the World Wide Web (Web, WWW, W3).

The Web uses a software interface so users can view universal protocols as text, graphics, animation, sound, and movies. Before the Web was created, users would have to activate various types of programs to read corresponding Internet protocols. The user would
then only access one protocol, or computer language, at a time. Now with the creation of the Web, users can access e-mail, Gopher, FTP, HyperText Transfer Protocol (HTTP), and other protocols all while using the same software interface. Consequently, the Web has evolved into the second largest used Internet tool and continues to grow in numbers (Whittle, 1997). Thus in a few short years, the Web will be to the Internet, as moveable type was to the printing press.

Purpose

This research paper will look at how the Internet, specifically e-mail and the Web, has been utilized within the educational system. This paper will answer the question “How is the Internet being used in various K-12 classrooms in the United States?” Each educational use of the Internet will be defined and a brief description will be given of each. In addition, the Internet tools necessary to access these uses will be discussed. Special attention will also be given to certain elements and outcomes to particular educational uses of the Internet. The advantages and disadvantages of each educational use will also be considered. Yet, before the different educational uses of the Internet are reviewed, the origin of the Internet will be discussed.
CHAPTER TWO

Review of Literature

Origins of the Internet

The Internet evolved from the desire to connect, or network, computers to form a wide area communication system (Hardy, 1993). The first organization to implement such a network was the United States Department of Defense in 1969 (Zakon, 1997). The Department of Defense created an experimental network called ARPAnet (named for the Advanced Research Projects Agency which provided funding) (Armstrong, et al., 1993). The purpose of ARPAnet was to provide a communication system in case of an A-bomb attack; hence came the nickname "Cold War military project" (Edwards, Havriluk, & Roblyer, 1997). The function of this experimental network was to support military communication research (Armstrong, et al., 1993).

In order to transmit research data ARPAnet was designed as a packet-switched network. Hardy (1993) described packet-switching as, "a method of fragmenting messages into sub-parts called packets, routing them to their destinations, and reassembling them" (p. 3). The most common implementation of packet-switching is TCP/IP (Transmission Control Protocol/Internet Protocol) protocol suite.
With this type of network, nodes and host computers were established to communicate and share information from one computer to another.

The first node and host computer was located and developed by a team at UCLA in September 1969 (Zakon, 1997). The second node was Doug Engelbart’s project on “Augmentation of Human Intellect” at Stanford Research Institute (SRI) (Cerf, et al., 1997). One month later the first host-to-host message was sent from UCLA to SRI (Cerf, et al., 1997). Two additional nodes were added at UC Santa Barbara and the University of Utah; both of which introduced graphics to the network (Zakon, 1997). By 1971, there were 15 nodes and 23 hosts on ARPAnet: UCLA, SRI, UCSB, University of Utah, Bolt Beranek and Newman, Inc. (BBN), MIT, RAND, SDC, Harvard, Lincoln Lab, Stanford, UIU (C), CWRU, CMU, NASA/Ames (Zakon, 1997). Up till 1989, ARPAnet continued to grow across the country and then spread to other countries.

As a result of ARPAnet, THEORYNET was established in 1977 and NSFNET (named for the National Science Foundation which provided funding) was established in 1986 (Zakon, 1997). Both networks were established by universities who wanted to take advantage of this tremendous communication system (Cerf, et al., 1997). The trend of networks being created by universities for
government and higher education purposes continued until the late 1980s.

In 1989 everything shifted—the US government stopped funding ARPAnet. Consequently, plans were made for a commercial successor to be called the "Internet" (Gates, 1995). Though the Internet became a commercial service, the majority of the customers were still higher education institutions and computer companies who used it for sending and receiving e-mail messages (Gates, 1995). This shift of ownership also lead to the introduction of the Internet into K-12 classrooms.

Schools were being introduced to Internet projects like National Geographic Kids Network, Global Schoolhouse, SuperQuest, and Kids WeatherNet (Armstrong, et al., 1993). To participate in these projects teachers would connect a computer and a modem and then dial-in to the reflector site. With specific software teachers and students could begin to share data with other schools. For two years schools utilized e-mail to participate in these projects. However, in 1990 the Web was introduced and new opportunities emerged.

**Educational Uses of the Internet**

In 1989, a small number of K-12 educators and students began to use e-mail, Gopher, and Veronica within their curriculum and
assignments (Gates, 1995). Educators used the various Internet tools to communicate and share resources with others. However as more companies, universities, and schools emerged onto the Internet, additional uses of the Internet evolved. The introduction of the Web and new web-based technologies (e.g., advanced scripting, plugins, Java, etc.) also created further ways educators could use the Internet. Following is a list of current Internet uses which were found in various K-12 classrooms in the United States:

- Communication
- Collaborative Learning
- Resource Sharing
- Research and Information Gathering
- Presentation Medium
- Marketing
- Interacting With Web Applications
- Entertainment

In the following sections of this research paper the various educational uses of the Internet will be discussed. In addition, the advantages and disadvantages of these educational uses will be listed.

Communication. Communication is the foundation of the Internet, or any computer network. Computer networks, two or more connected
computers, rely on sending and receiving messages in order to complete programmed actions. Therefore, it only seems logically that the users of connected computers should be able to send and receive messages. Communication is one of the most widely used educational applications of the Internet (Whittle, 1997). As a result, the ability to communicate globally has become one of the greatest advantages of the Internet (Barron & Ivers, 1996).

The process of communicating requires that at least two objects (e.g., computers, humans, animals) are involved in the process. Heinich, Molenda, Russell, and Smaldino (1996) defined communication as, "the transmission of information from a source to a destination" (p. 13). This definition corresponds to the Internet since it does not stipulate that communication only occurs between humans. The definition of communication used in this paper also suggests that nearly every educational use previously listed is a form of communication. However, when researching this topic it was evident that communication is an independent and distinct use of the Internet. Therefore, Schramm’s model of communication will be used to help define this educational use.

Schramm’s model of communication maintains that there must be a sender and receiver. The sender must send a signal, or message,
and the receiver must provide feedback (verbal or nonverbal) after receiving the message (Heinich, et al., 1996). However, with the use of the Internet and the occurrence of time shifts, feedback may occur in two minutes or two days later (Barron & Ivers, 1996).

Educators and students use the Internet to communicate when they use e-mail, electronic discussions, Internet Relay Chat (also referred as a chat room), and video conferencing (Education and the Internet, 1997). Utilizing these tools permits Internet users to communicate with one person or several people at one time. In addition, the text of the message may include words, pictures, illustrations, sounds, or movies.

The most popular use of the Internet is e-mail (Edwards, et al., 1997; Harris, 1995a). Moreover, the most common educational use of e-mail is electronic pen pals (also referred as key pals) (Barron & Ivers, 1996). Key pals involve partnering students with another individual outside the classroom. The purpose is to create an environment where both individuals exchange personal thoughts, stories, ideas, questions, and experiences (Barron & Ivers, 1996). In several different resources e-mail was commended on helping students to eliminate culture, gender, race, age, and physical stereotypes (Barron & Ivers, 1996; Edwards, et al., 1997; Garner & Gillingham, 1996). Since 1989, several
different case studies have been produced as a result of having successful key pal projects (Armstrong, et al., 1993; Garner & Gillingham, 1996).

Traditionally, key pals involved two-way communication between a student from one school and another student from a different school; however, mentoring projects have also been created with the same concept as key pals. Electronic mentoring refers to students communicating with an expert (Edwards, et al., 1997). Students could post a question relating to the expert’s field and usually within a week receive feedback (Barron & Ivers, 1996). This concept has flourished as the list of available experts continued to grow and e-mail addresses became more readily available to educators.

E-mail is also utilized by educators as a way to communicate with other e-mail users. They too can post questions, comments, and suggestions to other educators and students or both. Discussion groups called Listservs are also a common way for educators to communicate with more than one person in their field or area of interest (Edwards, et al., 1997).

Besides Listservs, educators are also using electronic discussion groups to communicate with their peers. Usenet, also referred to as newsgroups, is a mechanism to communicate with others on a
common topic (Mawson, 1997). One newsgroup could discuss sports in general or it could discuss women’s soccer in the United States. Since newsgroups are established by Internet users the topic can be anything (Edwards, et al., 1997).

Forums are another form of electronic discussion groups (Virtual Classroom, 1997). Whereas users who participate in a newsgroup(s) would access Usenet, users you participate in forums need to access the Web. To use forums, users need to access a web page and then type messages into a text box to communicate electronically. The structure, or organization, of forums is similar to newsgroups; however, their range of topics is minimal compared to newsgroups.

With the implementation of the Web and software plugins, real-time Internet Relay Chat (IRC or chat room) was created (Mawson, 1997). Chat rooms involve two-way communication and little to no delay between message and feedback (Virtual Classroom, 1997). The topics covered in chat rooms are similar to those available in newsgroups and forums. Several chat rooms have been designed specifically for educators and students to discuss school related topics (Mawson, 1997). Unfortunately with the lack of control over the content discussed by other chat room users, educators are urged to closely monitor students when using chat rooms (Whittle, 1997).
Another form of real-time Internet communication is video conferencing (also referred to as desktop video conferencing). Video conferencing allows educators and students to see and speak to each other in real-time via the Internet (Martin, 1996). Video conferencing is becoming a popular form of Internet communication (Fetterman, 1996). Educators and students can use voice, video and text to communicate with others in another country just as if they were standing in the same room. To transmit a signal from one computer to another when video conferencing is taking place special software is need on each computer (Fetterman, 1996). If users are going to utilize both audio and video each computer will also need a video camera and a microphone (Johnson, 1997). In addition to seeing and speaking to other users, most video conferencing software includes a white board or a window for users to type messages (Harnish, 1997). Johnson (1997) described the following as an educational function of the white board:

On the white board a teacher can type out ideas, outline the course work, show pictures, graphs, etc. to illustrate a point. The teacher can then ask for input from the students who can add notes and make changes on the white board with highlighter, pen, circle, or other annotation tools. (p. 1)
With the use of software, a video camera, a microphone, and a white board, virtual classrooms may become more common.

As previously mentioned, the Internet has provided several ways for educators and students to communicate with others. As a result, classrooms now have access to more resources and current information (National Research Committee, 1994). By utilizing the Internet, educators and students have gained valuable information from other educators, students, and experts; all of which may be integrated into their curriculum and assignments (Wilson, 1992). Another benefit of communicating via the Internet is the reported improvement of students' writing skills. Students are using better grammar, using proper word usage and having fewer misspellings (Edwards, et al., 1997). Furthermore, the Internet eliminates students' social biases toward other Internet users (Edwards, et al., 1997). The benefits just mentioned are a fraction of what is being reported as advantages of using the Internet. However, besides having positive consequences there are drawbacks to using the Internet in education.

Since the Internet does not have a governing or supervisory organization to regulate content, anyone can create and post a web page on the Internet. Consequently, false data, pornography, gambling, and carnage are available to most Internet users (Whittle, 1997). Besides the
issue of inappropriate content, another large problem is the number of educators and students who do not have access to the Internet (Wilson, 1992). Location, time, and money are all factors in who has access and who does not (Wilson, 1992). Internet users need a computer, a modem, various types of Internet software, and an Internet Service Provider (ISP) just to connect to the Internet. After becoming connected, educators and students still need to find the time to use the Internet. Once Internet users find the time and evaluate the content they still need to be concerned about "buggy" software (especially when using video conferencing software) and Internet hackers (Fetterman, 1996; Wilson, 1992). Yet, with all the negative problems associated with using the Internet the benefits seem to outweigh the bad.

Besides communicating with others, educators and students can participate in collaborative learning projects. By utilizing the same communication tools just mentioned educators and students have taken advantage of the Internet by establishing and participating in projects involving other classrooms. 

**Collaborative Learning.** Collaborative learning projects allow schools to become more involved or engaged in the communication and learning process. Collaborative learning involves the process of communication; however, it also includes individuals working in a
cooperative team (Erkens & Kanselaar, 1995). Individuals who are involved in collaborative teams share tasks and products (Topper, 1996).

The Internet enhances collaborative learning projects by allowing educators and students to work with other individuals in different cities, states, and countries (Andres, 1995). With the use of the Internet, a classroom in Cedar Falls can collaborate on a project with a classroom in Tokyo just as easily as with a classroom down the hall. The Internet has removed distance barriers and permitted a large number of students to interact and share information with students from other countries (Rogers, 1994). Given a collaborative activity has been created and resources are available, certain classroom activities will occur during collaborative learning.

Involvement is one element of collaborative learning. Linguists refer to "involvement" as when one person converses with another (Garner & Gillingham, 1996). An example of involvement would be if a student sent an e-mail message to another student explaining how her dog had eaten her homework; and in response the other student wrote back sympathizing with her and explained how he had had the same problem last week. Student involvement is very significant when creating teams to accomplish a common goal (Repenning, Stahl,
& Sumner, 1995). To identify if involvement is present between Internet users, Garner and Gillingham (1996) believe that four different characteristics should exist within their e-mail messages.

The four different involvement characteristics include: (1) repetition, (2) detail, (3) sense of audience, and (4) revision when writing is practiced as a social activity (Garner & Gillingham, 1996). Repetition is present if responses from an e-mail message repeat a topic(s) discussed in the originating message. Besides having dialog on a particular topic, adding details to a message demonstrates involvement. For example, a student is demonstrating involvement if she describes what she did every day on her trip, rather than only stating that she took a trip to another state. In addition, Garner and Gillingham feel if a student can visualize or generate mental images of unfamiliar objects and events then involvement has occurred (Garner and Gillingham, 1996). Lastly, involvement is present if students revise the content of an e-mail message by adding details to clarify an idea, rather than merely editing spelling and punctuation errors. The appearance of these characteristics within e-mail messages illustrates the strength of the involvement and the relationship between students.
Other than involvement, there are five other elements, or activities, of collaborative learning: (1) positive interdependence, (2) promotive interaction, (3) individual accountability for the group’s work, (4) social skills, and (5) group self-evaluating (Topper, 1996). These five basic elements can become challenging when teams use the Internet as the communication medium. Yet, each one is very important.

One element that students learn during collaborative learning is positive interdependence. Positive interdependence is based on the concept that team members need to play distinct and useful roles (Andres, 1995). For instance, one student may be the scribe and be responsible for taking and organizing meeting notes. Yet, team members could also play the role as the historian, graphic artist, or leader of the team. The process of assigning tasks has been addressed in two separate articles. One article suggests that educators should assign tasks to students according to their strengths prior to the Internet activity (Andres, 1995). Yet, another article suggests to wait and have the team assign tasks and labels to each other (Favorin, 1995). Despite how the tasks are assigned, students must be dependent upon each other (Topper, 1996).
The sharing of information and interacting with others is what Topper describes as “promotive interaction” (Topper, 1996). Students need to encourage each other and promote positive interactions. Moreover, students need to feel comfortable and demonstrate respect towards one another (Certo, 1997). Being courteous to other team members via the Internet is very important. Therefore, Internet etiquette should be instructed and then practiced by the team.

The third element of collaborative learning is individual accountability for the group’s work. Once each student has been assigned a task(s), they need to be held responsible for accomplishing that task (Topper, 1996). Teamwork is based on each member doing his or her share of the work (Topper, 1996).

Collaborative learning also promotes students’ social skills. Experiencing real-life situations teaches students about leadership, decision making, trust building, communication, and conflict management (Topper, 1996). Utilizing the Internet and communicating with students from other cultures also allows students to learn non-traditional communication skills. Andres (1995) wrote, “It has been observed that the more communication exchanges among students of different ethnic and racial backgrounds, the greater the understanding and acceptance of one another as they learn their
similarities often outweigh their differences” (p. 1). All these skills are life-long skills that students can apply to their everyday lives.

The last element of collaborative learning is group self-evaluation. Self-evaluation should be a continual process throughout the project (Topper, 1996). The team needs to know how to evaluate where they are in the project and determine what steps need to be taken to accomplish the goal.

The same five collaborative learning activities just discussed, also occurs when educators participate in collaborative projects. Student-based collaborative projects (i.e., Student-to-Student and Classroom-to-Classroom projects) also relies on the teamwork established by teachers. Teacher-to-Teacher and Teacher-to-Research projects are designed to provide additional assistance and create a collaborative environment. Having the capability to communicate with peers and experts helps teachers to generate ideas, ask questions, publish papers, and gain more knowledge (Topper, 1996).

Collaborative projects, especially Internet-based projects, teach educators and students life-long skills (Miller, 1996). They learn about and implement cooperative problem solving, trust building, communication, and conflict management skills (Erkens & Kanselaar, 1995; Topper, 1996). Collaborative projects also teach students how to
work together and share responsibilities. The ability to communicate via the Internet allows educators and students to learn about different cultures. These classrooms are becoming part of the “global village,” by enabling and developing relationships beyond the classroom walls (Rogers, 1994; Story, 1996). Since Internet-based collaborative learning usually involves communicating electronically, collaborative learning also has the same benefits as those mentioned in the communication chapter.

One of the largest disadvantages is the commitment that is involved in participating in a collaborative project (Garner & Gillingham, 1996). Educators need to know and accept all responsibilities prior to becoming involved. Educators and students will also need to take in consideration the problems that might arise because of different time zones. The facilitator or leader of the team will need to communicate with the corresponding team to work out a plan of action. As previously mentioned, since communication is involved in collaborative learning, the same disadvantages of communicating via the Internet apply to collaborative projects.

Resource Sharing. Educators and students are using the Internet to do more than just communicate and collaborate with others, they are sharing resources (National Research Committee, 1994). Resource
sharing or information distribution is one of the most important ways individuals are using the Internet (Harris, 1995b). Resource sharing is the process of publishing information on the Internet for others to view and use. This particular capability of the Internet is the reason it has been compared to Gutenberg's invention of moveable type and the printing press (Gates, 1995).

The Internet permits individuals to post, or distribute, their papers and articles so that millions of Internet users have access to them (National Research Committee, 1994). The Web provides a simple and cost-effective way to share information, therefore it has become the most popular way to publish materials (Gates, 1995; Harris, 1995a). With access to a web server anyone can publish information; and the amount of information that can be stored is overwhelming.

To publish on the Web requires the author to use a form of scripting called HyperText Mark-up Language (HTML) (Barron & Ivers, 1996). HTML relies on the use of simple tags to format text and create hyperlinks (a way of linking web pages) (Frazier & Frazier, 1994). In addition, graphics, sound and movies can be add to their web pages (Morasch, 1996). Once the web page has been produced the author needs to place the file on a web server so others have access to the information.
Educators and students are not only publishing papers and articles, but web pages that contain a collection of hyperlinks that they feel are useful or important. For example, a social studies teacher may have a web page that has hyperlinks to the CNN homepage, the American Civil War homepage, the Declaration of Independence homepage, and the Native American Center homepage. The web page may consist of five hyperlinks or several hundred.

Lesson plans and learner activities are another way educators are sharing resources. Moreover, more schools and districts are publishing their own web pages (Morasch, 1996). These web pages usually contain information for teachers, students, parents, and community members. In addition to creating newsletters, schools are now publishing them on the Internet (Story, 1996).

The most significant benefit of publishing via the Internet is that educators and students are distributing information to a much larger audience. Whereas educators and students were usually limited to distributing information to their school, district, community, or state, the Internet and the Web have taken it globally (Story, 1996). Internet publishing is also a cost-effective way to distribute information to a large population (Gates, 1995).
A disadvantage to publishing writings on the Internet is the lack of expertise on how to create simple or complex web pages. The insufficient amount of time and staff development available to educators are the main reasons for this deficiency. However, once educators and students learn how to create web pages it still takes time to produce HTML files. If the educator or student is only formatting a paper or an article the time is minimal. Yet, if they are developing a web page that contains a substantial amount of hyperlinks it will take more time. However, learning HTML and taking the time to create a web page is a small price to pay for all the benefits.

Research and Information Gathering. In addition to using a variety of resources located in libraries (e.g., books, magazines, journals, CD-ROMs, videos, etc.), educators and students are also using the Internet to research and gather information. Educators and students are using the Internet to solve problems, gain knowledge, and conduct research on almost any topic (Edwards, Havriluk, & Roblyer, 1997). The Internet consists of millions of web and gopher pages that contain a multitude of information about people, places, and things (Story, 1996). The use of hyperlinks on web pages is also an added benefit of using the Internet to find corresponding information on a topic. The Internet is
only one source when conducting research, yet in the future it will be
one of the top methods for gathering information (Maloy, 1996).

There are several different ways users can search for information
on the Internet. Internet users can gather information from messages
sent by e-mail, Listserv, chat room, video conferencing, and newsgroup
users. Or, to research information they can use Veronica, an Internet
tool designed to search for information on gopher pages (Harris, 1995b).
Yet, the tool most used for gathering information from the Internet is
the Web.

Search engines and subject guides are two ways Web users can
search for information on the Internet. Search engines are web sites
that allow users to type in keywords and search a database consisting of
a large number of web pages. These databases may contain a thousand
web pages or over 50 million web pages (Heartland Area Education
Agency 11 [AEA 11], 1996). Subject guides, or directories, are searchable
databases consisting of web pages that have been evaluated by
individuals. Currently, many search engines also incorporate a subject
directory of web pages they have found to be good. Most directories are
sorted by content which makes searching for a topic much easier.

In addition to using search engines and subject directories, Web
users can access other electronic databases. For example, Encyclopedia
Britanica and Electric Library are now on the Internet and can be searched by keywords (Education and the Internet, 1997). Electric Library is a searchable database containing a collection of electronic books, magazine articles, and newspaper articles. In 1996, there were already 10,000 databases on the Internet, and already this year there are over 15,000 databases (Education and the Internet, 1997).

When students are utilizing the Internet to conduct research it is very important that they use some form of searching strategy. The process of finding relevant information and then evaluating the content is very important. Unfortunately, many students believe in the following two myths:

1. Anything that comes from the computer is better than anything that comes from a book.
2. Many student look for quantity of sources, not quality of sources. (Smith, 1996).

Both of these myths can be proven false by teaching students basic research and information gathering skills.

An advantage and disadvantage to using the Internet to research and gather information is the multitude of information available. Though educators and students can find information on almost any topic, it also takes a tremendous amount of time to find relevant
information. Yet, the Internet not only provides text for researches but: sound, animation, movies, hyperlinks, and e-mail addresses of authors and experts. With the exception of e-mail, none of these items can be found in books, magazines, or newspapers. Again, the Internet is only one resource—but what a powerful resource!

**Presentation Medium.** With the development of presentation software, educators and students are starting to use electronic presentations. Presentation software allows the user to create slides (similar to the layout of 35mm slides and overhead transparencies) and present the information electronically. With new technology and the use of HTML scripting, electronic presentations are being delivered via the Internet. Just by “surfing” the Web one can see Microsoft PowerPoint slides and web pages that are designed to be used with presentations. The US WEST - Iowa Teacher Technology Project has created six different presentations which can be viewed on the Internet. In addition, Kathy Schrock’s homepage is an excellent example of how educators and students can use PowerPoint and HTML web pages instead of transparencies and 35mm slides (Schrock, 1997).

The benefit of using the Internet as the presentation medium is that it can be viewed on either a Macintosh or IBM compatible computer. Therefore, the presenter does not need to worry about
having the appropriate platform. In addition, by having a presentation on the Internet it provides for an efficient and cost-effective way to distribute the slides to others. By using the Internet, those with Internet access (which was a stipulation of the project) will have the presentation readily available.

Once again time can be a disadvantage. Educators and students need to set aside additional time to create presentations for the Internet. Furthermore, if the Internet is “down” when the presenter is supposed to speak, he or she will need an alternate plan. The Internet can be a very powerful presentation tool if educators and students have the time and resources.

**Marketing.** As stated earlier, schools and districts are publishing their own web pages and sharing resources. However, besides sharing resources with other Internet users, these web pages are also advertising the school or district to the public (Gates, 1995). Whether or not marketing is the intention of the school or district, they need to design their web pages to accommodate this uncontrollable factor (McKenzie, 1996).

Any web page (i.e., teachers’ and students’) associated with a school’s web page is representing both the author and the school. Therefore, many schools may want to establish board policies to ensure
the school is being represented appropriately. Schools need to give as much attention to producing web pages as they do when creating newsletters and brochures (McKenzie, 1996).

Many corporations utilize their web pages for marketing a product(s) and for conducting public relations (Whittle, 1997). Schools can also utilize their web pages for maintaining or building public relations with parents and community members. In addition to sending press releases to newspapers, schools can post them on a web page. The school’s web page is an excellent way to showcase projects; show recognition to staff and students; and provide information on current events.

A benefit of creating school web pages with marketing in mind is the end result is usually a better product (Certo, 1997). Schools usually allocate more time and resources when developing marketing web pages. However, the time and resources needed to create these web pages are also a disadvantage for many schools. Both time, staff, and money are not always available. Yet, a significant benefit of using the Internet to market a school versus a newspaper is the global audience. Interacting With Web Applications. With the multimedia capabilities of the Web, a strong number of web pages are being developed where users can input data and receive an output or product. These web
pages are being designed so that Internet users interact and become involved with a web page. Search engines and HTML forms are a great example of how users input data and receive results. In addition, with new technologies, Internet users can interact with "live" animation, take virtual tours of museums, and create their own web pages (Whittle, 1997).

Macromedia Incorporated has created a program called Shockwave that allows Internet users to interact with animation. Several educational drill and practice games which utilize the Shockwave program are now available at Macromedia's homepage. Students can access these games and play them without downloading them to their hard drives. Besides games, virtual reality is now available on the Internet (Whittle, 1997). For example, educators and students can access virtual reality movies and by clicking in various locations they can move and investigate objects.

Web page developers have also designed web pages that assist users with certain tasks. For example, instead of learning how to create web pages, educators and students can now access web pages that do the work for them. All the Internet users need to do is fill in a form with the desired data, then with a click of a button, their own web page is automatically produced for them. An example of this is located at the
Grundy Center Community School Homepage. At this site students and educators can create their own web page and have it automatically placed on the Internet for them.

An advantage in using these types of activities is students become involved in the learning process. Each of the activities discussed required students to interact with web pages in order to receive output. Moreover, the use of virtual reality can allow students to travel and explore on the Internet without leaving the classroom. The disadvantage of these programs is they usually require additional software. Unfortunately, many low-end computers (which are common in schools) may not support some of these activities.

Entertainment. Entertainment is another manner in which schools are using the Internet. The Webster’s New World Dictionary (Neufeldt, 1989) defines entertaining as “interesting and pleasurable” (p. 145). When someone is being entertained it does not mean he or she is not learning. Therefore, activities that are available on the Internet that are both interesting and pleasurable may also be educational.

The term “edutainment” has been used quite often when referring to individuals that are both enjoying themselves and learning (Whittle, 1997). Every educational use of the Internet which
has been discussed in this paper can be described as edutainment. Collaborative projects, playing drill and practice games, and other forms of interaction are all fun and educational. However, the Internet also provides other activities that are both educational and entertaining.

The Web allows users to view various types of multimedia and interaction with web pages (Gates, 1995). As a result, educators and students can view informational movies, listen to sound clips, listen to radio stations from other countries, and view animation. With the advancements of new technology, Internet users can also view live television shows on their computer screen.

Since the Internet is new and exciting, the Internet itself is entertainment (Whittle, 1997). Therefore, Whittle (1997) stated, "Cyberspace offers the promise of education that is often indistinguishable from entertainment" (p. 37). When students are participating in an educational activity of their own interest and are having fun, students will enjoy learning. The only disadvantage of using these activities for educational purposes is inaccessibility, as described in the previous section. However, utilizing the Internet for educational and entertainment purposes is a great way to get students involved.
CHAPTER THREE

Conclusion

Since the development of the Internet in the 1960s it has become a valuable tool for communicating, researching, and learning. Utilizing e-mail, Gopher, and the Web, users can communicate easily with others and access an abundance of information. The capability to communicate electronically and provide access to information has lead to the Internet’s popularity and it’s introduction into education. Therefore, this research paper investigated how the Internet has been integrated into K-12 classrooms. This paper discussed eight different educational uses and described several useful Internet tools. Each educational use was analyzed and the advantages and disadvantages were provided. The purpose of this paper was to provide examples of how schools with access to the Internet can use the Internet.

As discussed throughout this paper each educational use motivates, enhances curriculum, and challenges students (Barron & Ivers, 1996). The Internet also helps students build global relationships, learn about other cultures, and develop life-long skills. By integrating the Internet into education it has not only affected students and teachers, but administrators and community members. Administrators can now communicate easily and efficiently with
teachers, parents, and other external contacts. Community members can communicate with educators and become involved electronically with school activities and student homework. In addition, telecommunications allows for collaborative activities and mentoring programs among community members and students.

The disadvantages mentioned in this paper were usually based not on the Internet's capabilities but on the lack of resources provided by schools. Having limited or no access to money, hardware, and software has been a huge factor in the low number of schools having access to the Internet. The lack of time and staff development have also affected the number of educators using the Internet in the classroom. Once resources become more available to schools the Internet will become a powerful tool with in the education system.

The Internet has allowed educators and students to remove structural and communication barriers and extend their classroom walls. Prior to the Internet educators were isolated within their classroom and the school building. However, with access to the Internet educators and students can communicate and collaborative with others from other parts of the world—actually eliminating structural and communication barriers. The traditional classroom is becoming the virtual classroom. Where educators and students have
access to a multitude of information, communication tools, and new technology. The educational uses of the Internet discussed in this paper help to demonstrate how educators can create their own virtual classroom.
References


