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Integrating World Wide Web searching skills into world geography information skills curriculum

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Abstract

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INTEGRATING WORLD WIDE WEB SEARCHING INTO
WORLD GEOGRAPHY INFORMATION SKILLS
CURRICULUM

A Graduate Research Paper
Submitted to the
Department of Curriculum and Instruction
Division of Library Science
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by
Karla Kay Steege
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Information Skills Curriculum.

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Chapter 1

Introduction

A recent United States Department of Education (DOE) study found that 35% of public schools are connected to the Internet, yet only 3% of America's classrooms have Internet access (Valauskas, 1995, p. 32). Multimedia Schools reports on the 1995 Education Technology Survey, commissioned by the National Education Association (NEA), National Association of Secondary School Principals (NASSP), National Association of Elementary School Principals (NAESP), American Association of School Administrators (AASA), and *Cable in the Classroom*, which shows that only 16% of teachers surveyed use the Internet for classroom or professional purposes. The survey sample consisted of one thousand teachers, media coordinators, elementary and secondary principals, and administrators in the 70% of American schools that are connected to cable television. The most significant barriers, other than funding, that prevent United States students from using the Internet, according to 80% of the educators surveyed, are "lack of workshops or training for using the services, lack of time to learn how to use them, and lack of access to telephone, cable, or data lines in the classroom ("Survey of America's Classrooms," 1995, p. 8).

The vision of the Information Superhighway painted by then

Senator Al Gore in 1988 is coming into existence in the nation's schools. With so much emphasis on computer technology in school transformation and Internet enhancing students' roles as constructivists of their own learning, it is time for school library media specialists to take on the challenge of integrating the Internet as an information source into the information skills curriculum. Internet use should be a part of all school curricula in order to avoid what Congressman Edward Markey (D-Mass) referred to as a nation of information "haves" and "havenots" (Kapoor and Berman, 1992, p. 238).

While not a lot of research has been done evaluating how the Internet has been integrated into the information skills curriculum at the K-12 level, awareness of new sources of information and various formats [electronic for example] "mandates" that more states will provide curriculum guides for school library media centers for teaching research skills (Morris, 1992, p. 65). A significant amount of research indicates that integrating Internet information searching skills across the school curriculum is necessary in order to provide equal access for all students and to prepare them for the future.

Wilson and Marsh (1995) view the potentials of the Internet from the perspective of social studies teachers. They believe the Internet will produce the next "American Revolution . . . with equal

access to unbounded, unlimited information" (p. 202). They agree that teaching students to handle and interpret electronic information will prepare them for their "future in the electronic work place" (p. 202). They see the Internet as a tool for instruction in social studies because it presents students with an opportunity to learn about the unprecedented shift in authority and decision making in the government and all other organizations from the top and middle managers to lower levels. Electronic information brings the world closer together--"the greatest democratizing movement" in the history of the world (p. 202).

Wilson and Marsh (1995) also present computer technology and instant, electronic communication as the most dramatic challenges to traditional theories about curriculum development. They state that the Association for Supervision and Curriculum Development, the National Council for Teachers of Mathematics, and the American Association for the Advancement of Science, along with the National Commission on Social Studies in the Schools endorse change in curricula and instruction to a more "active, inventive instruction" (p. 198). This more active approach is based on "learner-centered constructivism" which is intended to teach students to function successfully in real-world contexts (p. 198).

School library media specialists must start reaching out to teachers and students as information specialists knowledgeable

about Internet sources of information, as teachers who can instruct staff and students about how to access the Internet, and as instructional consultants who participate in the writing of curriculum integrating Internet use.

This study is based on the information skills curriculum model at New Hampton High School in New Hampton, Iowa. At New Hampton High School, information skills are integrated throughout the curriculum. Skills ranging from how to access the nonfiction collection to how to paraphrase an idea are taught with the required English, social studies, science, and math courses. Since searching the Internet for information is as important as searching the automated catalog for books and the periodical index for magazine articles, all students should be required to learn how to access information on the Internet, how to evaluate whether the source is appropriate for the assignment, and how to use the source in a paper or project.

A European travel project was facilitated by the World Geography I instructor and the library media specialist, for World Geography I students during the 1994-1995 school year. Students did not have Internet access at that time. They used print sources-- books, newspapers, and periodicals--as well as travel agencies to find the required information. Students made many calls to the local travel agency for airfares to Europe, but encountered difficulty

finding information about travel within Europe. They also had trouble finding current exchange rates in newspapers for less common countries such as Belarus. The World Wide Web has an abundance of travel information and current exchange rates, which are constantly being updated. Therefore, this project was the perfect opportunity to incorporate searching the World Wide Web into the information skills curriculum in the social studies area.

Although e-mail is the most commonly used feature on the Internet in education, e-mail is primarily a mode of communication and is not usually used as a searchable information source requiring electronic search skills (The Internet in K-12 Education, 1993, p. 28). Therefore this study is limited to the World Wide Web.

The World Wide Web (WWW) is an Internet graphic database employing hypertext (text linked to other words, accessed by clicking on the text) (Armstrong, 1995, p. 182). Researchers may begin with an original search or use bookmarks, which have been previously evaluated for appropriate content. An original search, for example a search for information about European travel, may return thousands of sites or sources of information. Because the search engines are not as sophisticated as most CD-ROMs and automated catalogs, however, searching is equivalent to a keyword search, meaning the search engine counts any word in an article that matches the search term requested. Many of these sources will be

irrelevant to the desired topic. Internet searching lacks subject heading classification, which is used to search most library catalogs. A commonly used metaphor when referring to the Internet is a library with all the books, magazines, newspapers, videos, and other information sources thrown into a room with no organization.

To combat this problem, librarians create bookmarks, lists of Internet sites that have been specially selected because they support an identified curricular area and generally comply with the library selection policy statement. In the same way that librarians select books appropriate for the school curriculum and student population, they make bookmarks to Internet sites to help guide students to appropriate sources. A bookmark feature appears on a menu screen within the Internet World Wide Web software. The researcher can select one bookmark by clicking on it, then move on to the next source in the same fashion. (See Appendix E for compiled list of European travel bookmarks.)

Netscape 1.1 (Netscape Communication Corporation) was the program used to access the World Wide Web because it was the software most easily available. Netscape allows for easy navigation of World Wide Web sites. A site on the World Wide Web is another large computer database providing information to World Wide Web users over the Internet. It may be a university library catalog, a collection of documents about AIDS provided by a national

organization, or a travel database containing hotels and airfares. One may click on buttons in Netscape to conduct an original search, maneuver forward or backward from site to site in the search results list, print a document, open an exact location by entering in the exact Internet location of the site, or create and use a menu of preselected bookmarks.

The three main purposes of this study were: 1) to study World Geography I students as they access World Wide Web sources of information--climates, maps, pictures, historical information, foreign currencies, exchange rates, transportation, lodging, and food--for a European travel project, 2) to study the amount of time needed to access the above information using only one modem connection, and 3) to evaluate the attitude of the World Geography I students using the World Wide Web by soliciting their intentions for future use of the World Wide Web as a source of information.

The hypotheses for this research were:

1. Ninety percent or more of the 53 New Hampton High School World Geography I students will be able to find one of the required pieces of information for the European travel project (see Appendix C) using pre-marked bookmarks on the World Wide Web.
2. Eighty percent or more of the 53 New Hampton

High School World Geography I students will be able to access one WWW source using bookmarked sites for the European travel project within the scheduled computer time.

3. Eighty percent or more of the 53 New Hampton High School World Geography I students will report they would be inclined to use WWW sources for future informational needs.

One assumption was that the World Geography I students have not had prior instruction in using the World Wide Web as an information source. This study is important because it will add to the body of knowledge about integrating Internet across the curriculum so that it enhances the content rather than simply teaching the technology.

Definitions

Cyberspace-A space where one can "create or borrow, a virtual room, and meet other users there face-to-face, body-to-body, ...virtual-image to virtual-image." One can move around, touch, see from any point-of-view, create images, sounds, language, objects, people, actions, events, from recordings of material reality or by direct construction (Lemke, 1993, paragraph 43).

Telecommunications-For purposes of this paper, telecommunications will refer to "basic telecommunications technology-- computers, modems, and phone lines" (Honey, 1993, p. 2).

Internet-A world-wide network of computer networks.

Netscape 1.1-A browsing application published by Netscape Communication Corporation that allows users to connect to information on the World Wide Web, including text, sounds, and graphics (Armstrong, 1995, p. 182).

World Wide Web (WWW)-An Internet search tool employing hypertext (text linked to other words, accessed by clicking on the text) (Armstrong, 1995, p. 182).

E-mail (electronic mail)-Messages sent through a communications network from one computer user or group to another.

Constructivism-The constructivist view of learning emphasizes teaching "basic skills within authentic contexts, . . . modeling expert thought processes, [and] providing for collaboration and external supports to permit students to achieve intellectual accomplishments they could not do on their own" (U.S. Department of Education, 1993, p. 2).

Chapter 2

Literature Review

Since the early 1980s, schools have increased computer instruction. Computer programming was the first form of computer instruction in most schools (Office of Technology Assessment, 1988, p. 12). Gradually schools turned to other forms of instruction such as drill and practice, use of word processing, database management, and simulations (p. 10). These skills were taught because schools wanted to prepare students for the increasingly technological world they would face following school (p. 11). Technology has prompted much school reform. This researcher has reviewed the area of literature concerning 1) how computer technology and the Internet support educational reform; 2) how Internet access increases learning for students engaged in the research process; and 3) why Internet information searching skills should be integrated throughout the information skills curriculum.

Computer Technology and Internet in Educational Reform:

Schools across the nation continue to implement computer technology into instruction in order to meet national goals for education reform. However, in spite of increased computer use, there seems to be a growing frustration at the small amount of

change in the nation's instructional process. Studies concerning the impact of computer technology and the Internet on educational reform have indicated that computers enhance teaching and learning processes (Office of Technology Assessment, 1988); computer technology supports the constructivist view of learning (U. S. Department of Education Office of Research, 1993); advanced technologies make possible postmodern perspectives on learning in cyberspace (Lemke, 1993); computer technology is putting schools into the "age of information and communications" (Dyrli and Kinnaman, 1995); e-mail projects support student-oriented learning and collaboration strategies (Hakerem, Gita et al., 1993) and (Hassard and Weisburg, 1992); and networking in distance education is a skill students will need in the future (Lehman, 1995).

In September, 1988, the Office of Technology Assessment (OTA) published the study, Power On! New Tools for Teaching and Learning. The purpose of the study was "to better understand the potential of new interactive technologies for improving learning" (p. iii). The Office of Technology Assessment (OTA) conducted a comprehensive study of data on the distribution and access to computer technology , patterns of use, and research literature on the effectiveness of computer technology in the classroom. The OTA also visited schools and research centers and interviewed publishers, vendors, researchers, policy makers, teachers, and

students. This study was conducted during a time when computer technology was rapidly changing the business, medicine and production sectors of society (p. iii).

The Office of Technology Assessment (1988) found that teaching and learning were enhanced by computer use. Computers allowed teachers to individualize learning, open up new worlds of instruction for disabled populations, and make new forms of cooperative learning possible through telecommunications and electronic networks (p. 12). Learning advancements were discovered as well as advancements in instruction. Elementary school children who used computer-assisted instruction (CAI) for mathematics gained the equivalent of one to eight months instruction over peers who received only traditional instruction (p. 10). Also simulations in science, mathematics, and social studies motivated students to engage in "high level critical thinking, gain a better understanding of political affairs, and appreciate different perspectives on issues" (p. 10).

In spite of the fact that the 1980s witnessed a tremendous expansion in school use of computers, the OTA found that most schools did not have enough computers to make the computer a "central element of instruction" (p. 4). The OTA identified several tasks and sources of funding that would help the development of computer-assisted instruction. Tasks identified were development

of appropriate software, installation of sufficient hardware, teacher training in their new role in electronic classrooms, expanding basic research into the science of human learning and cognition, and ensuring equity of access for all learners (p. 3). While the federal government could provide leadership, the actual costs of computer technology would be borne by federal, state, and local governments, and the private sector (p. 2).

The U.S. Department of Education Office of Research (1993) prepared a compilation of studies about computer technology and education reform that represented the major approaches and issues in the research literature. Conclusions of the study confirm that computer technology supports the constructivist view of learning, which emphasizes teaching "basic skills within authentic contexts, . . . modeling expert thought processes, [and] providing for collaboration and external supports to permit students to achieve intellectual accomplishments they could not do on their own" (p. 2). However, this study found that technology and reform do not necessarily go hand in hand. Certain technologies were expected to revolutionize the classroom --"television in the 1960s, computers in the 1970s, videodisc and artificial intelligence in the 1980s"--but failed to meet this expectation (p. 10). The focus of previous research has often been whether a technology can instruct or how it compares with accepted practice. Whereas ideally, the focus of

curriculum and instruction reform should be on the effects technology has on what is learned and the teaching and learning roles within the classroom (p. 10). Global computer networks are one area of technology where the Office of Research suggests potential for realizing educational reform (p. 29-30).

Jay L. Lemke (1993), who is a faculty member in the education department of the City University of New York Brooklyn College, has a postmodern perspective on learning which indicates drastic changes are ahead for education and the role of schooling. The article, "Education, Cyberspace, and Change" was originally written on the Internet by Chris Bigum and Bill Green of Deakin University in Australia as "a starting point for discussions of new perspectives on education made possible by advanced technologies," in conjunction with a major conference held there in 1992 (paragraph 2). The article was adapted and published by Lemke in the Electronic Journal on Virtual Culture, available through e-mail. It is the opinion and prediction of Lemke, Bigum, and Green in this article that traditional education is already a thing of the past. Today's students have "already diverged, in interaction with video media, from the developmental track that formerly led to print literacy" (paragraph 19). Textbooks, which Lemke defines as "books written for and read only by school students and their teachers," are already becoming less important in school as more and more teachers read them and

give oral lectures about the information, which students usually do not read (paragraph 14). Lemke says that, "fewer students actually read their textbooks, or learn how to construct meaningful discourse patterns by doing so" (paragraph 17). Students have other sources of information such as television and movies about the "amazing, horrifying, and often dangerous world in which we live" (paragraph 17). Lemke uses a metaphor for textbooks today:

In the same city you will find architecture, and even plumbing, from different decades and different centuries, side by side. . . In our postindustrial societies you can find on-line database technologies and textbook-based schooling (paragraph 12).

Lemke predicts that libraries will exist in cyberspace and will contain all electronically stored information, which is publicly accessible, including pictures, graphic representations, videos, music, and virtual realities. Lemke suggests some of the things that will be possible in cyberspace, a result of technological advancement:

In cyberspace we will be able to see. . . infrared, microwave, and x-ray. We will be able to hear at all frequencies, from the echoes of earthquakes and the songs of whales and insects, to the resonances of crystals. We will be able to walk the Martian plains [and] kick lunar dust. We will be able to float above the earth at any elevation. . . observing cities or rain-forests in real-time or watching the changes of days or years go by in minutes, or seconds. We can live at the pace of a tree or a forest, a hurricane or a glacier, a cell or a molecule.

. . .We [as children] will not develop along the same cultural paths as in the past (paragraph 61).

Dyrli and Kinnaman, faculty co-directors of the Technology &

Learning Professional Development Institute, (1995) view

technology in the schools as more than a reformation, or something which occurs once. They see it as an "evolution" because technology is continuously evolving (p. 92). They call the time in which we have come to live the "age of information and communications" because it is the new communication systems making information accessible outside of the school building that will radically change the face of education. Students no longer must be transported to the same building to best utilize scarce resources and teachers. Instead information will be moved to students everywhere (p. 98).

While Lemke's view focuses on the *potential* of learning through experiencing life in cyberspace, numerous collaborative projects using Internet e-mail have already been tested in schools. The following three research studies demonstrate that Internet e-mail access promotes educational reform. Students are more interested in learning, and teaching styles become more student-oriented.

One collaborative project (Hakerem, Gita et al., 1993) took place between the Center for Polymer Studies at Boston University and a middle class suburban high school where Reduced Instruction

Set Computing (RISC) and a telecommunications link were introduced to a tenth grade honors chemistry class (17 students) and an eleventh grade chemistry class (16 students). Students were able to access computer simulations created by post-doctoral, graduate, and undergraduate physics students at Boston University. Telecommunications were available for the high school students to consult with university students. Results of the Hakerem et al. study show that the teacher's classroom became more student-oriented and that students were more on-task when exploring their own questions raised by the simulations (p. 25).

Another collaborative project, The Global Thinking Project, was undertaken by Hassard and Weisburg (1992) of Georgia State University and the Russian Academy of Pedagogical Sciences. Lesson materials were developed by a team of United States and Soviet teachers. Materials were designed to teach "small, cooperative teams from partner schools in the U.S. and USSR to work together to investigate a problem of global importance" (p. 44). One of the three main purposes of the project was to "develop computer literacy in students that will allow them to use micro-computers as a telecommunications tool to collaborate with counterparts in other nations" (p. 44). Fourteen teachers and 400 students from urban and rural United States school districts and schools in Moscow and St. Petersburg were connected through the AppleLink network. One

United States school sent and received electronic mail through Internet. Teachers reported that the collaboration was effective because it encouraged global communication about environmental problems, and it was especially effective when they received immediate responses to e-mail messages. The flow of e-mail messages was usually two to five messages per week.

This project is significant because the social structure of the world has changed. Students live in a world of global interdependence and through this project, they developed a "global perspective on environmental problems" (p. 47). Using telecommunications gives students access to new tools and consequently "empowers them to ask more questions" that help them to relate to their peers in another culture (p. 47).

Another emerging use of computer networking and e-mail is in conjunction with distance education. James Lehman (1995) delivered a university course to a traditional classroom group and simultaneously to a computer-mediated distance education group. He concluded that content involving extended discussion was best suited to the computer-mediated distance methodology. Also he found that cooperative or collaborative learning at remote sites benefited participants, whereas, isolated participants may suffer. Participants in the computer-mediated class were in support of the flexibility and reduced travel demands on them. He also found it was

important to have reliable operation of the computer system and that orientation of the users to the system is important. Lehman encouraged educators to continue to explore distance education possibilities via computer networks because it is quickly becoming available from home, on the job, and in the classroom (pp. 154-155).

Internet Access and Increased Student Learning:

Not only does the Internet contribute to educational reform, Internet information searching skills are shown to increase learning for students engaged in the research process. Searching the Internet motivates students who are engaging in their own research (Wilson and Marsh, 1995), changes the role of the teacher to that of information guide (Armstrong, 1995), expands library resources (Wilson and Marsh, 1995), (Armstrong, 1995), and (Wilson and Utecht, 1995), and makes learning lifelong (Wilson and Marsh, 1995), (McKenzie, 1995a), and (Meizel, 1992).

Emphasizing the relevance of the instructional content is the most important aspect of motivating students to learn about social studies, according to Wilson and Marsh (1995), both professors at the University of Alabama. Using original sources--literature, films, television, artifacts, photographs, historical maps, computers, and computer software that assists in learning--is encouraged by the National Commission on Social Studies in the Schools to improve thinking skills because students absorb this

information directly rather than hearing a teacher lecture. These sources on their own, however, will not guarantee that students will find their own learning more engaging than textbooks. Wilson and Marsh see the Internet as an opportunity to revolutionize the way students think and work. The Internet can "stimulate an interest in the written word as students search for documents in remote libraries. . . . Thus while still at school, they can acquire knowledge far beyond the boundaries of their own communities" and because they are engaging in their own research, the information gained can be "personally relevant" (Wilson and Marsh, 1995, p. 199).

Relieving teachers of the stress that they are supposed to know everything and getting students to be self-motivated are, in Armstrong's opinion, two of the advantages of using Internet, (Armstrong, 1995, p. 12). Internet will dramatically increase motivation of students in the classroom because students have the power at their fingertips to figure out how to get resources. Therefore the teacher's lessons can concentrate more on evaluating information and guiding students in information management. To manage information, students must sift through it, use or discard it, analyze, and synthesize (p. 12).

Library resources are expanded by the global electronic network which includes access to thousands of libraries as well as information that will be obsolete by the time it is published in books

(Wilson and Marsh, 1995, p. 199). The Library of Congress is currently preparing to convert the most important materials in its collection into digital form. The project will include digitized images of books, drawings, manuscripts, photographs, and eventually movies and music--all of which could be downloaded over computer networks to students and all other researchers (Wilson and Marsh, 1995, p. 201).

Current sources are available in all areas of the curriculum on the Internet. Armstrong (1995) mentions several popular ones--up-to-date corporate data from organizations for economic classes, real statistics that can be analyzed by math students, and current events in the news for social studies students. However, Armstrong emphasizes that the challenge is to order and control the information. Students must learn how to ask the right questions and become aware of the biases of the information providers. The teacher's challenge is "teaching learners to become discriminating users of information," which has always been true with print materials and is now applied to electronic sources (p. 13).

Wilson and Utecht (1995) write about the teachers at Eagan High School in Eagan, Minnesota, who have discovered a wealth of resources on the Internet in almost every curricular area. Thomas Wilson, principal, and Greg Utecht, technology in learning coordinator explain that Eagan students access sources such as

weather data from NASA computers for science classes (1995, p. 75) and "information on court cases--the facts of the case, the date and location, names of the parties involved and the ruling" for business law classes (p. 78).

Student learning will continue to increase as searching for information becomes a lifelong learning process. Wilson and Marsh (1995) summarize findings of additional research regarding school use of computer technology. They find that computer technology creates the opportunities for students to do meaningful work, increases the amount of knowledge that students can absorb, enhances the quality of thinking and writing, and meets the need for graduates to be globally aware and able to use sources outside the school (1995, p. 198).

Jamieson McKenzie (1995a), Director of Technology and Media at Bellingham, Washington School District, suggests that the most important skills to be taught about using the Internet are the lifelong skills of information problem-solving. He says that effective use of the Internet "depends upon the possession of strategic questioning, planning, searching and information-compacting skills" (p. 6). This means students will list questions, visit an appropriate Internet site, collect relevant information, read and review the information, and plan another and another visit to the Internet, while constantly redefining their search strategy.

According to McKenzie, students will move in cycles that will prepare them to be lifelong information problem-solvers (p. 6).

"High School Education and the Internet: The Davis Senior High School Experience" is a descriptive research study by Meizel (1992). Meizel's results show that providing 50 teachers and 300 students with training and their own Internet accounts through the University of California at Davis (UCD) was a successful project contributing to lifelong learning. It provided a "catalyst for changes in the classroom and for individual student participation in the learning process" (p. 139). Several positive effects of Internet access were: students and faculty had more positive attitudes about computer use, the project was equally popular with students of both sexes and all ethnic groups, and more non-computer science teachers assigned computer-assisted tasks (p. 139). Journalism students used Internet resources for their newspaper articles. Art students downloaded public domain graphics for use in reports and other projects. USENET Newsgroups and e-mail also received frequent use. The school librarian taught teachers and students how to use standard Boolean operators to conduct searches on the University of California online library catalog (MELVYL). This resource was used by the computer students, music history students, as well as students in several English classes. Access to MELVYL not only helped the students create their final projects, but it also played a significant role in

finding a suitable subject. Students would look at the array of possible topics before narrowing down their own specific interests and needs. Teachers independently used e-mail and bulletin boards to communicate with professional organizations (p. 139). Meizel concludes that:

Few innovations have the potential importance in the intellectual and vocational development of students as learning to use the facilities provided by the Internet connection. . . . It is imperative, however, that educators view such an issue not as a "frill" or as a resource for the privileged few, but as instrumental in the establishment of an educated populace, a necessary component to cope with the challenges of the information age (p. 139-40).

Meizel observed these challenges to making lifelong learning with the Internet a realistic possibility: the computer must be available when they need it and where they need it, people want exact directions and specific information and they need to integrate the network into their curricula (p. 140).

Internet in the Information Skills Curriculum:

Four major research studies in K-12 settings have found positive results in using the Internet but stated the need for integrating computer technology and the Internet into the curriculum. The Office of Technology Assessment (1988) concluded that new strategies and new authority would be necessary to attain more "fully integrated applications [of computer technology] across

the curriculum" (p. 3). Two thirds of the States surveyed by OTA cited lack of funds as the primary barrier to increased use of technology (p. 7).

The U.S. Department of Education Office of Research (1993) found that any state-of-the-art technology application requires that teachers engage in "rethinking, reshifting, and reshaping" their curriculum (p. 67). Three models for integrating computer technology into "inquiry-oriented curricula" are given (p. 67). In one model, teachers may find a new technological application to incorporate into their existing instruction. In another model, the teacher chooses activities from a "comprehensive multimedia curriculum" (p. 67). In a third model, "teachers construct a curriculum unit around a theme or topic, using a variety of technology applications" (p. 67). Several questions offered by the U.S. Department of Education Office of Research that should be considered when integrating technology into curriculum are:

- What does the technology offer my students in terms of developing concepts and content?
- How does it help them to carry out inquiry processes?
- How will they work together collaboratively or cooperatively?
- What is the relationship between the technology and other instructional materials?
- What knowledge, processes, skills do students need before using the technology?
- What new knowledge of my content or discipline, or teaching, or of technology do I need in order to foster

new learning in my students? (p. 67-68)

The Carnegie Mellon University study, The Internet in K-12 Education (1993), consisted of an experiment in a Pittsburgh Public School System elementary school referred to for purposes of the study as Vanguard Elementary. After the first few months of the two-year project, twenty of twenty five respondents felt that the Internet would make a positive contribution to educational processes. Most teachers who experimented with Internet in their classrooms felt that they would be able to integrate the Internet into their curriculum once they were no longer hindered by equipment delays (p. 45).

A study by the Center for Technology in Education in New York (Honey and Henriquez, 1993) shows a need for curriculum integration, while citing three logistical obstacles specific to integrating telecommunications into the curriculum. The study analyzes the responses of 550 kindergarten through grade 12 educators involved with telecommunications technology both for professional development and student learning. The sample of 550 educators was developed by posting on-line announcements on more than 50 educational, commercial, and state-run telecommunications networks within the United States as well as solicitations through mailing lists, conferences and other professional contacts. All

educators who responded volunteered to participate.

Several of the obstacles cited involve curricular issues. The first obstacle is 40-minute class periods, which are not adequate for projects that successfully integrate computer or multimedia technology into the curriculum. Second, curriculum development needs to be funded. The third obstacle is that state or city-mandated tests make it difficult to use telecommunications as part of the ongoing curriculum.

In an additional study at the university level, Rockman (1993) found positive results from teaching about the Internet as a formal course option at California Polytechnic State University. The course was created by the education librarian and was designed to attract students from a diversity of majors. Lectures, demonstrations, and hands-on experience, focusing on intellectual as well as physical access were used to teach students what information could be retrieved, why information would be retrieved, and when it would be appropriate to use each source. Students were first introduced to the university's online library catalog and CD-ROM sources to learn skills that would later transfer to the Internet. Students learned the following skills: log-on procedures, scopes of collections, screen display locations or user prompts, searching commands, the role of the return key, terminal emulations, user interfaces, if online help exists and how "helpful" it is, truncation, Boolean

searching, modifying search results, and exiting the system (p. 69).

Evaluation was based upon homework assignments, an oral presentation, and a written project, an annotated bibliography of 15 citations from Internet sources (p. 69). Rockman (1993) concludes that teaching the Internet as a formal course:

enhances information literacy; supports effectiveness in written and oral communication; provides opportunities to analyze, synthesize, and evaluate information; and increases self esteem by successful utilization of the library, and strengthens academic success (p. 71).

McKenzie (1995b), in his lecture at Decorah High School, in Decorah, Iowa, addressed the need to implement computer technology properly to be sure student learning is actually increasing. First faculty must decide where certain technologies will be taught. Then the teachers must decide how they will teach kids not simply to find information, but how to use the information they find. McKenzie says the primary goals for student learning are to communicate, to analyze data, and to solve problems using computer technology.

What McKenzie hopes schools will avoid is the idea of "surfing" the Internet because it has negative connotations. A "surfer" may sit and wait for hours for a good wave to come along and then just spend a lot of time just skimming along the top. Rather than ignoring the plethora of information or pretending that learning can occur with access alone, McKenzie recommends that media specialists teach

children and staff "how to navigate through oceans of data purposefully," even when only three of one thousand articles recovered in an online search may prove useful for the question being studied (p. 4).

In his article, "DirectConnect," McKenzie (1995a) uses more of his infamous metaphors for the Internet, which express the need for teaching students how to be intelligent information consumers. He relates Internet searching to looking for diamonds in a haystack, finding one's way through a labyrinth, and "Alice's mad tea party" (p. 7). Good curriculum would teach students to use hardcopy guides to the Internet to find reliable sites, to learn to combine keywords with skill, and to balance intuition about good material with logical analyses and evaluation of the material (p. 7-8).

Marjorie Pappas (1995), in her Information Skills Model for electronic sources developed with Tepe, supplies the curricular model that McKenzie says is vital to learning to use the Internet. Pappas's model specifies steps in the process of searching electronic databases including CD-ROM, as well as Internet. Searching techniques are explained. Filtering through the information for the most appropriate information is a skill that is taught, along with interpreting the information in one's own words (p. 39-40).

Teaching the Internet, according to Brandt (1995) need not be a

decision of which to teach first, the chicken or the egg, Internet hardware and software or Internet searching skills. Instead, he explains that Internet system features and operation can best be taught in conjunction with information seeking skills (p. 35). For example, teaching the Internet could flow in the following sequence:

- Background on the software/hardware and information that make up the Internet
- How a client retrieves information from a server
- Considering a topic prior to exploration on the Net
- Kinds of resources found on the Internet for a given topic
- URLs as addresses or location devices for resources
- Browsing subject-oriented lists versus searching to find specific resources or information
- Using bookmark to retrieve information in the future
- Evaluating specific information for a given application
- Saving, mailing, or printing information (p. 35).

Finally Clifford Stoll, author of Silicon Snake Oil and highly qualified Internet critic, pulls ideals about the Internet back into perspective. He questions all the hype about the Internet which has brought such high expectations, but in reality brings "mediocre writing and poorly thought-out arguments. . . [and] e-mail [which is]... frequently ungrammatical, misspelled, and poorly organized" (p. 26). The network is missing editors. It is up to the Internet reader to "separate out the dregs" (p. 38). People want to believe that computers can save them from needing to think and reason so much but Stoll wonders why reasoning should be so painful that it requires a labor-saving device (p. 44). In actuality, the Internet alone cannot

be the "silicon snake oil" that will make a better society. Likewise it will not cure social problems (p. 50).

Perhaps the Internet cannot cure social ills, but it can be better utilized in education settings, according to Black, Klingenstein, and Butler (1995b). Black, the director of the Boulder Valley Internet Project (a large k-12 school with district Internet access), suggests that "we have only just begun to scratch the surface of the realities and potential" in the area of Internet and school curriculum (p. 54). Of the five levels of Internet use in schools, utilization of the Internet for the highest level, where students are both experienced researchers as well as providers of information to others on the Internet, is extremely rare (p. 55). Black et al believe that most elementary programs focus on collaborative e-mail projects, whereas most high schools focus on using Internet as a research tool--neither of which are innovative. They also speculate that most teachers do not have the time for extensive rewriting of curriculum and many do not have direct access to the Internet for 20-30 students at the same time. Both would be necessary to support such extensive curricular reform (p. 55)

Positive experiences using the Internet by educators in all fields, along with the realization of its potential for economic reform will guarantee the Internet's place within the school.

Previous technological applications have survived in schools-- television, videos, computers, videodiscs--however, the question that remains to be answered concerning the Internet is how much its presence will help to actually transform school instructional practices. Areas of literature reviewed in this paper have been 1) how computer technology and the Internet support educational reform; 2) how Internet access increases learning for students engaged in the research process by making them constructivists of their own learning; and 3) why Internet information searching skills should be integrated throughout the information skills curriculum. This literature suggests that schools currently have a need for curriculum rewriting, integrating Internet to the capacity currently supported with available access. Now is the time for library media specialists to include Internet information searching skills in the information skills curriculum, which is a part of each subject area curriculum.

Chapter 3

Methodology

The three purposes for this study were: 1) to study World Geography I students as they access World Wide Web sources of information--climates, maps, pictures, historical information, foreign currencies, exchange rates, transportation, lodging, and food--for a European travel project, 2) to study the amount of time needed to access the above information using only one modem connection, and 3) to evaluate the attitude of the World Geography I students using the World Wide Web by soliciting their intentions for future use of the World Wide Web as a source of information. A student survey was chosen as the data-gathering instrument because the students themselves could best answer questions about their experience using the World Wide Web--what they found on the WWW, how long it took them to find it, and whether they intend to use the WWW as a source of information in the future.

Questions one and two of the survey were designed to focus on the student's previous experience using the World Wide Web and his or her attitude toward using computers in general, respectively. Questions one and two were included because both could have great impact on the student's ability to use the WWW to meet assignment requirements because students were given a brief introduction to

the WWW and were expected to feel comfortable using computers.

Question three, which asks what information students found using the WWW that was relevant to the European travel project, was included to collect data for hypothesis one, which states that ninety percent or more of the students will be able to find one of the required pieces of information for the European travel project using the WWW. This researcher used question four about preparation and instructions about the WWW to receive student feedback about whether the amount of time spent in preparation was adequate.

Question five, access time in class, was used to collect data for hypothesis two, which states that eighty percent or more of the students will be able to access a WWW source for the European travel project within the scheduled computer time. And question six, time spent outside of class, was used to see how many students went outside of class time to use the WWW for the European travel project, above and beyond the assignment of using the WWW to find at least one item.

Question nine solicited data for hypothesis three about students' intentions for future use of the WWW as an information source. Questions seven and eight were used to help explain students' reactions to question nine because extensive technical difficulties or slow Internet connections encountered during the European travel project could greatly influence students' attitudes

toward future use of the WWW.

The data gathering instrument was tested during the European travel project trial run in the fall of 1995; only one student reported not finding at least one item on the World Wide Web, which was required. The majority of students indicated they could find information on the World Wide Web in a "reasonable or short amount of time."

The survey instrument (see Appendix B) was changed after the trial run to nine yes/no questions with follow-up questions soliciting additional comments after each question. Yes/no answers lend themselves better to data collection than rubric style questions with three to four choices for each question. The follow-up questions allow for analysis of which items, specifically, students found for their projects, how much time was spent outside of their scheduled computer time in class, and for what students intend to use the World Wide Web in the future.

Students in this study included 53 ninth and tenth grade students in two sections of a semester-long World Geography I course at New Hampton High School, in New Hampton, Iowa, during the spring of 1996. World Geography I is intended for ninth and tenth grade students and is offered as an elective. Students who take the class are of a wide variety of ability levels. Because students were involved, an informed consent form (see Appendix A) asking for

permission for the student to complete the survey was sent to each student's parent(s) or guardian prior to the project, in order to protect the rights of the students.

World Geography I students were required to plan a vacation to Europe, visiting at least three countries in 14 days, including three large metropolitan areas. Students worked in pairs and were required to include all of the following items in their projects: time of year, maps, descriptions and pictures or drawings of historical sites, airfares, transportation plans within Europe, hotel accommodations, food and souvenirs, and their budget, using foreign currencies and current exchange rates. Each group had to find at least one of the items for their project using the World Wide Web. A bibliography of sources used was also required with the project.

Students were given class time in the media center to do their research. Groups were able to sign up for thirty minutes of computer time during the five days the class met in the media center. At the end of the project, students completed a survey in class which would be used to collect data in order to analyze the three hypotheses. Students were asked about their previous experience using the World Wide Web, their attitude toward computers, their ability to use the World Wide Web to meet assignment requirements, their time spent accessing the WWW, and their intentions for future use.

In preparation for the European travel project, this researcher set bookmarks for travel sites in Netscape 1.1 (Netscape Communication Corporation) using a variety of search engines as well as visiting sites suggested in educator resources such as Classroom Connect magazine. Search engines are the programs that allow electronic searching across all Internet locations at once. Words such as "European" and "hotels" were entered. The search engines usually returned hundreds or thousands of results matching the search terms in less than 60 seconds. This researcher then selected the sites listed and evaluated them for desired content. If deemed appropriate, the sites were marked by dragging down to the item in the bookmarks menu in Netscape called "add a bookmark."

Seven sites for locating hotels for the European travel project were marked in the list of bookmarks. For example, a bookmark was set at the Internet location "All the Hotels on the Web" (see Appendix E). At this site, one can search for a hotel by answering a series of questions about the location, options, and desired price range. Once finished answering questions, the researcher clicks on "submit" and the computer searches all the hotel listings at this Internet location. The computer will then generate a list of all the hotels matching the location, options, and desired price range indicated. If the search has no matching hotels, one may either alter the search or move on to another of the seven hotel bookmarks. (See Appendix E

for listing of all bookmarks).

There were several reasons why bookmarks were used instead of asking the students to perform their own original searches. Lack of time and Internet access were the main factors. Students in World Geography I were sharing one computer with a modem and telephone line for their Internet connection. Using search engines to collect bookmark sites and skimming them for appropriate content is a time consuming task. The idea is similar to that of selecting books that are most appropriate to the curriculum from all the books available which is normally a task for the library media specialist. Another reason preselected bookmarks were used was so students would be able to have successful searches. Many of them had not previously experienced the World Wide Web or any form of the Internet.

The European travel project project took place during the last two weeks of each semester-long section of World Geography I. Prior to this project students had received instruction and extensive practice using media center resources in a variety of formats. They were taught how to search the automated catalog, how to search the CD-ROM magazine index, and how to use a variety of other CD-ROMs and reference books to retrieve information electronically for other projects. These skills were taught and practiced in previous research activities.

The research portion of the European travel project covered five ninety-minute blocked class periods, which met on alternating days for two weeks in the library media center. The 53 World Geography I students worked with partners for the European travel project. There were 27 students in the first section and 26 students in the second section. There were thirteen pairs of students in both the first and second sections, with the first section having one group of three. Since only one computer with Internet access was available, each of the five ninety-minute class periods was divided into three thirty-minute blocks of computer time to be used for World Wide Web searching. Each pair of students signed up for one thirty-minute block of computer time. The group of three students received a forty-five minute block of time.

May 16, 1996, was the first session of the European travel project. For the first thirty minutes of the ninety-minute blocked class period, the library media specialist orally presented students with a brief explanation of the assignment and a demonstration of the World Wide Web, using a computer connected to a television monitor. Students received the list of European Travel Sources (Appendix D) that showed materials available at the high school and public libraries. The list included the World Wide Web as one of many sources in a variety of formats--books, periodicals, newspapers, and electronic sources. Each source on the list also

included a brief description of the type of information available.

Students also received and completed a presearch activity The European Planner (Appendix C) used to plan sources they would check for each of the items needed--climates, maps, pictures, historical information, foreign currencies, exchange rates, transportation, lodging, and food. This planning document was kept throughout the project to keep track of sources that would be listed in the bibliography. Since they would have to share one computer to search the World Wide Web, students were instructed to plan to find only one of their required items on the WWW at first. They could do more searching after others had had a turn or outside of class time. The class also received a copy of the World Wide Web bookmarked sites (see Appendix E) and instructions for writing a bibliography, including how to cite WWW sources.

During the last hour of the May 16, 1996, class period, students started to find information for the European travel project using media center resources. Two of the thirteen groups completed their thirty minutes of computer time accessing the World Wide Web. On May 20, 22, 24, and 28, all students in both sections of World Geography I continued to meet in the media center to find information for the European travel project. The remaining eleven groups used their thirty minutes of scheduled computer time during this time. May 28 was the last day for research for the European

travel project.

All 53 World Geography I students completed the survey at the beginning of class on May 31, 1996. This researcher briefly explained the survey orally and waited in the room while students answered all nine questions. Students were told that the survey was to be used to collect data about their experience using the World Wide Web in this particular classroom situation. They were told that this researcher was studying their ability to find the required information, whether the scheduled computer time in class was sufficient, and whether they saw the WWW as an information source they would use in the future. Students were given as much time as was needed to complete the survey, however, none of the students needed more than ten minutes to complete all nine questions.

At the time of the survey, there were four students whose parent(s) or guardian had not returned the informed consent form giving permission for the student's data to be used in this study. These four students' surveys were discarded. The European travel projects were due to the World Geography I instructor the next class period, June 4, 1996.

Chapter 4

Analysis of the Data

The researcher tallied the students' answers to the nine questions on the student survey (see Appendix B). Four of the 53 World Geography I students' surveys were excluded from the sample because the researcher did not receive an informed consent form signed by a parent or guardian, permitting the student to respond to the survey questions.

The data indicate that most of the World Geography I students in New Hampton, Iowa, in the spring semester of the 1995-1996 school year were able to find the information required for the European travel project using the bookmarked World Wide Web sites within the scheduled computer time; however, the percent of World Geography I students indicating that they would be inclined to use the World Wide Web for future informational needs was not as high as this researcher had expected.

Table 1. Question Designed to Test Hypothesis One

Survey question	yes	no	Total Students
3. Found information meeting requirements of project	48	1	49

Hypothesis one stated, "Ninety percent or more of the 53 New Hampton High School World Geography I students will be able to find

one of the required pieces of information for the European travel project (see Appendix C) using pre-marked bookmarks on the World Wide Web." Survey question number three asked, "Does the information you found meet the requirements for the European travel project? Circle all the types of information that you found for the European travel project using bookmarked sites on the WWW."

Forty-three of the 49 students in the sample (approximately eighty-eight percent) circled yes to indicate that the information they found met the requirements for the European travel project. Another twelve percent answered that the information they found did not meet the requirements. Five of the six students who answered that they did not find the information required, however, proceeded to circle one or more types of information they found e.g. hotels and restaurants, which would indicate that they did indeed meet the requirement of the assignment that asked them to use the World Wide Web to find at least one of the types of information needed. As table 1 shows, 48 students (approximately ninety-eight percent) were able to find one of the required pieces of information for the European travel project. Hypothesis one was accepted.

Table 2. Question Designed to Test Hypothesis Two

Survey question	yes	no	Total Students
5. Had sufficient scheduled computer time	39	10	49

Hypothesis two stated, "Eighty percent or more of the 53 New Hampton High School World Geography I students will be able to access one WWW source using bookmarked sites for the European travel project within the scheduled computer time." Survey question number five asked, "Did you have enough time during your scheduled computer time to find at least one source of information for your European travel project using the bookmarked sites?" Table 2 shows that 39 students (approximately eighty percent) of the sample of 49 students indicated that they had enough time during their scheduled computer time to find at least one source of information for their European travel project. Hypothesis two was accepted.

Table 3. Question Designed to Test Hypothesis Three

Survey question	yes	no	Total Students
9. Plan to use the WWW in the future	38	11	49

Hypothesis three stated, "Eighty percent or more of the 53 New Hampton High School World Geography I students will report they would be inclined to use WWW sources for future informational needs. Survey question number nine asked, "Would you like to use the WWW in the future wither for assignments of personal use?" As shown in Table 3, 38 of the 49 students (approximately seventy-eight percent) indicated that they would like to use the World Wide Web in the future either for assignments or personal needs. (For a

list of how students will use the WWW in the future, see Appendix

F). The third hypothesis was not accepted.

Chapter 5

Conclusions, Summary, and Recommendations

In addition to the data provided for the investigation of the hypotheses, the questionnaire solicited other information that extended the results of the investigation. The questionnaire asked for student responses to nine questions.

Table 4. Student Responses to Survey Questions

Survey question	yes	no	Total Students
1. Had prior experience using WWW	10	39	49
2. Felt comfortable using computers	42	7	49
3. Found information meeting requirements of project	48	1	49
4. Felt preparation for WWW was adequate	44	5	49
5. Had sufficient scheduled computer time	39	10	49
6. Spent time outside of class	20	29	49
7. Believe using WWW is efficient	38	11	49
8. Encountered technical difficulties	19	30	49
9. Plan to use the WWW in the future	38	11	49

Question three was designed to collect data for hypothesis one, which found that ninety-eight percent of the students were able to find at least one item for their European travel project using bookmarks on the World Wide Web. Question five was designed to collect data for hypothesis two, which found that eighty percent of

the students were able to find at least one item for their project within their scheduled computer time. Question nine was designed to collect data for hypothesis three, which found that seventy-eight percent of the students indicated they would like to use the World Wide Web for future informational needs. Table 4 summarizes the student responses to the survey questions.

While hypothesis one found that ninety-eight percent of the students reported that they located at least one of the required items for the European travel project using the World Wide Web, the survey questionnaire solicited additional data that might have helped to explain these results. Questions one, two and four, were designed to provide additional information to understand the responses to hypothesis one. According to student responses to question one, only twenty percent of the students involved said they had had prior experience using the WWW, and not one of those students indicated they had used the WWW more than twice before. This would have been a concern if the only students who had been able to find information on the World Wide Web had been experienced WWW users.

Similarly, if only students who indicated in question two that they felt comfortable using computers had been able to find the required information using the World Wide Web, this could have been used to help explain negative results for hypothesis one. Eighty-six

percent of the students said they were comfortable using computers and even six out of the seven students who said they were not comfortable using computers found the required information despite their level of comfort. In addition, question four found that only ten percent of the students felt they needed more preparation and instruction before using the World Wide Web. If the students in this sample had not been comfortable using computers, more time would have been necessary to familiarize students with basic computer use and to prepare them to use the World Wide Web.

Although hypothesis two found that eighty percent of World Geography I students found at least one piece of information for their travel project within their scheduled computer time, sharing one modem among 53 World Geography I students was a potential problem because each pair of students' World Wide Web time was limited to 30 minutes during class. Question six, however, found that this situation did not inhibit most of the students since eighty percent of them said they spent an average of one and a half hours outside of class continuing their searching on the World Wide Web. Forty-one percent of those students who went beyond their scheduled computer time also reported being able to find one item during their scheduled computer time. Thus by working outside of class, those students went above and beyond the required searching of the World Wide Web. They chose to use the World Wide Web rather

than the alternative print and CD-ROM sources to find additional items for the assignment.

Questions seven and eight were helpful in analyzing why hypothesis three was not accepted. Hypothesis three stated that eighty percent or more of the students would want to use the WWW for their future informational needs. From this sample, seventy-eight percent said they would like to use the WWW in the future for assignments or personal use. There was a noticeable relationship among students who indicated that they would not like to use the WWW for future informational needs with students who indicated in question seven that they did not feel the World Wide Web was an efficient means to find information and students who reported having technical difficulties in question eight. Of the 11 students who said they did not wish to use WWW in the future, eight also felt the WWW was not an efficient means to find information and seven of the 11 said that they encountered technical difficulties during their search time in class.

Technical difficulties reported ranged from computer problems to interpersonal problems (see Appendix F). Of the 19 students experiencing technical difficulties, nearly half of them were caused by the limitations of the one modem connection. Many students were impatient waiting for others to get done. The remainder of the technical difficulties were frozen computer screens, printer jams,

and busy signals on the Internet. Most of these problems could be alleviated by having more Internet connections available to the students.

Working with a partner allowed the students to maximize their Internet access time because only 13 pairs (and one group of three) per section needed to be scheduled, rather than 26 or 27 students individually. Students were willing to help one another. Not only did they help their partners, they also showed the next group how to get started and where to locate something they had just found. In addition to teaching students how to use the World Wide Web, this assignment also developed the students' cooperative learning skills.

Recommendations

Similar studies need to be done with students of various age groups and in various discipline areas in order to verify the results of this study. Research also needs to be done requiring students to find all of the information for the European travel project using bookmarks on the World Wide Web. Another study could be conducted when students are required to perform original searches on the WWW for a topic of their choice. Projects involving more extensive use of the World Wide Web would require more instruction about the use of search engines and more time on the Internet. For these more types of projects, additional Internet connections or a longer time frame would be necessary.

Using bookmarks to retrieve information from the World Wide Web is only one of many skills students will need to be proficient users of the World Wide Web. The information skills studied in this European travel project were what Eisenberg and Berkowitz (1990) refer to as location and access of information (p. 8-9). Students in World Geography I learned to find information on the World Wide Web. Finding information, whether in print or electronic sources, falls within the location and access category of information skills. Examples of additional skill categories include the use of information, synthesis, and evaluation (p. 8-9).

This researcher recommends that future studies focus on additional skill categories integrating the World Wide Web. Studies will need to be done to observe how students use and interpret the information they find on the World Wide Web, how students synthesize information into their projects, how they evaluate their searches for appropriate material and how teaching and learning roles change as a result of integration of the World Wide Web.

The findings reported in this paper indicate that grade nine and ten World Geography I students are capable of learning to use World Wide Web bookmarks to find information for a specific assignment. Furthermore, students learned to use World Wide Web bookmarks in a relatively short amount of time, considering that the students were not experienced World Wide Web browsers. Students reported a

variety of experiences with most feeling inclined to use the WWW for future school assignments as well as personal or recreational purpose.

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Appendix A
INFORMED CONSENT FORM

May 20, 1996

Dear Parent(s)/Guardian of _____

During the last two weeks of school, I will be working on a research project with Eric Olson's World Geography I classes at New Hampton High School. The project is to create a travel itinerary for a European dream vacation. This year students will be accessing information over the Internet. A typical task might be to find the cost of hotels, meals, and airfare to Paris, France using the World Wide Web. Students will be shown how to use the approximately 20 preselected sites on the World Wide Web. I will be studying this project in partial fulfillment of my Master's Degree in Library Science at the University of Northern Iowa. My research project is to study the effectiveness of integrating Internet World Wide Web searching skills into this World Geography I unit. Following the project, I will ask students to complete a questionnaire about the usefulness of World Wide Web resources that they found, the amount of time needed to access the information, and their attitude about using the World Wide Web to access information. The questionnaire should take approximately five minutes to complete. Participation in filling out the questionnaire is voluntary. This research will benefit students in New Hampton and beyond by showing the advantages of teaching students Internet information finding skills. No names will be used on the questionnaire and it will have no effect on the students' grades. I would appreciate it if you would please sign the permission slip authorizing your student to fill out the questionnaire. Please return it in the postage paid envelope by **Friday, May 24**. If you have any questions before signing and returning the form, please contact me at 394-2144 at school. For answers to questions about the research and the rights of research subjects, contact the Human Subjects Coordinator at the University of Northern Iowa at (319) 273-2748.

I am fully aware of the nature and extent of my son/daughter's participation in this project as stated above. I hereby agree to his/her participation in this project. I acknowledge that I have received a copy of this consent statement.

(signature of parent or guardian)

(date)

(printed name of parent or guardian)

(signature of investigator)

(date)

Thank you,
Karla Steege

Appendix B
European Travel Project Student Survey

This survey is being used as a part of a research project for my master's degree in library science. The research is to study use of the World Wide Web as a source of information for research projects.

Directions: Please circle the answer which best describes how you feel. Write any additional comments in the space provided following each question.

Definitions:

World Wide Web (WWW)--Electronic information on computers around the world accessed using a computer and modem over the Internet.

Bookmarks--List of WWW sources pre-marked on the computer.

1. Experience (Before starting European travel project)

Had you used the World Wide Web (WWW) before?

yes no

If so, approximately how many times had you used the WWW? _____

2. Attitude

Are you comfortable using computers?

yes no

Approximately how many times a week do you use a computer? _____

For what do you generally use computers? (school work, games, home office work, typing letters, sending e-mail, finding information, etc)

3. Relevance

Does the information you found meet the requirements for the European travel project?

yes no

Circle all the types of information that you found for the European travel project using bookmarked sites on the WWW:

climates	foreign currencies
transportation (airfare, etc.)	maps
pictures	hotels
historical information	restaurants
other_____	

4. Preparation

Did you receive adequate instructions in class to be able to find information using the WWW?

yes no

If not, what could have been done to help you? _____

5. Access Time in Class

Did you have enough time during your scheduled computer time to find at least one source of information for your European travel project using the bookmarked sites?

yes no

6. Time Spent Outside of Class

Did you spend time outside of class searching for information for the European travel project on the WWW? (this was not required)

yes no

If so, approximately how many hours did you spend outside of class? _____

If you accessed the WWW outside of class time, where did you do so?

7. Speed

Do you feel that using the WWW is an efficient way to find information? (Could you do it in a reasonable amount of time?)

yes no

8. Technical Difficulties

Did you have any problems such as access to a computer or computer problems that kept you from being able to find information on the WWW?

yes no

If so, please explain. _____

9. Future Use

Would you like to use the WWW in the future either for assignments or personal use?

yes no

If so, how would you like to use WWW sources in the future? Please list examples.

Appendix C

The European Planner

Use this document to plan your research. Refer to list of European Sources and write the sources you will use to find the following information. List titles of all sources. If you use more than one source, record both. This planning sheet will be used to create your bibliography.

Time of year:

Maps:

Pictures and descriptions of sights to see:

Historical significance of sights:

Name of currencies and exchange rate:

Airfare:

Transportation once in Europe:

Hotels:

Restaurants:

Other: _____

Appendix D European Travel Sources

CD-ROMS

World Atlas

London: The Multimedia Tour

Groliers Multimedia Encyclopedia

National Geographic Picture Atlas of the World

REFERENCE BOOKS & NONFICTION BOOKS

Fielding's Europe 1990 (R 914 FIE)--HOTEL & FOOD, SIGHTS, &
TRANSPORTATION

Student Atlas of the World (R 912 STU)--MAPS

National Geographic Index 1947-1983 (R 071 NAT)--PHOTOS

The World Almanac 1995 (R 031 WOR)--TEMPERATURES & CONDITIONS

The Universal Almanac (R 031.02 UNI)--TEMPERATURES & CONDITIONS

Lands and People (on encyclopedia reference shelf)--SIGHTS, HISTORY,
CULTURE

Newspapers-Des Moines Register and Waterloo Courier-MONEY EXCHANGE
RATES

Call Getaway Travel Agency in New Hampton--AIRFARES, HOTELS

INTERNET SOURCES

See the Bookmarks in the Netscape 1.1 (Netscape Communication Corporation.) World Wide Web Browser-- HOTELS, MONEY, PHOTOS, RESTAURANTS, TRANSPORTATION

PUBLIC LIBRARY

Hours after school are Mon.--Thurs. until 5:30 p.m. Then they open again from 7:00 to 9:00 p.m.. Fri. the hours are 2:00--7:00 p.m. and Sat. from 10:00 a.m.--4:00 p.m.

Appendix E

European Travel Project Bookmark WWW Sites

HOTELS

All the Hotels on the Web = <http://www.digimark.net/dundas/hotels/>

Economy Hotels = <http://www.omnitavel.com/neteconhotels.html>

International Cities = <http://www.omnitavel.com/netsightseeing.html>

Hotel Anywhere! = <http://www.earthlink.net/~hotelanywhere/europe/all.html>

Hotel Net = <http://www.u-net.com/hotelnet/>

Hotels in Europe =
<http://www.traveldiscounts.com/HotelResCenter/data/europe.html>

TravelWeb Search Page = <http://www.travelweb.com/thisco/global/travel.html>

MONEY

The GNN/Koblas Currency Converter = <http://bin.gnn.com/cgi-bin/gnn/currency>

Foreign Exchange Rates = <http://www.dna.lth.se/cgi-bin/kurt/rates>

PHOTOS

Around-the-World Journal (Photo Album) =
<http://www.city.net/travel/atwj/album.html>

Beautiful Cultural European Home Pages = <http://s700.uminho.pt/cult-europ.html>

Great Travel Images =
<http://www.traveldiscounts.com/discount/images/index.html>

Pictures = <http://www.lfbs.rwth-aachen.de/pix/pix/trains/pix.html>

RESTAURANTS

City.Net Countries & Territories = <http://www.city.net/countries/>

TRANSPORTATION

European Travel Links = <http://www.slip.net/~eurofile/homeinex5.html>

European Traveler, Inc. = <http://www.pcap.com/eurotrav.htm>

The Internet Travel Grid = <http://www.earthlink.net/~hotelanywhere/>

Airfare Database = <http://www.slip.net/~eurofile/homeinex1.html>

Internet Travel Flights - Low-Cost Airfares to Europe =
<http://www.omnitavel.com/netflight.html>

Eurailpass Information = <http://www.omnitavel.com/eurailform.html>

Appendix F

List of Comments by Student Number
from Student Surveys

Technical Difficulties

- #3 yes "some people didn't get off on their scheduled time, and troubles with the computer"
- #4 yes "troubles with computer and people using our time"
- #9 yes "sometimes it was busy"
- #12 yes "printer jammed up"
- #17 yes "people who were just screwing around didn't get off, so people who needed it could get on"
- #20 yes "computer would go down, people took longer than expected"
- #21 yes "the screen froze or something"
- #22 yes "computer locked up"
- #23 yes "yearbook was on it"
- #24 yes "tied up a lot"
- #25 yes "the computer stalled and we had to restart it"
- #26 yes "the computer locked up"
- #30 yes "the computer froze"
- #31 yes "sometimes I wish we had more WWW computers"
- #32 yes "when there was area that you clicked on nothing came up and you got lost."
- #36 yes "at times it was confusing so much info."
- #43 yes "it froze up, but we still found enough info in time"
- #44 yes
- #45 yes "it was looking something up and it just stopped"

Future use

- #1 yes "homework, letters, finding information"
- #2 yes "find out new information"
- #4 yes "information, to look around"
- #5 yes "find information, school work, projects"

- #6 yes "projects, reports, speeches"
- #7 yes "unlimited amount of time"
- #8 yes "to find information, listing of things"
- #9 yes "school reports"
- #10 yes "for school assignments"
- #13 yes
- #14 yes
- #15 yes "for other projects"
- #16 yes "to find stuff"
- #17 yes "finding currencies"
- #18 yes "different projects, things like that"
- #19 yes "?"
- #21 yes "talking to other people, getting pictures for reports"
- #22 yes "in other research projects"
- #24 yes
- #27 yes "location, places to see, people"
- #28 yes "locations for vacation, places to see, people to meet"
- #29 yes "for other portfolios"
- #31 yes "whatever comes up"
- #32 yes "population of countries, what's happening in the world today"
- #33 yes "in books, all computers"
- #35 yes "to look up research, to find information, to get good maps printed out"
- #36 yes "planning my own trip, other home work, learning more about the world"
- #37 yes "school work, curiosity"
- #38 yes "assignments"
- #39 yes "for looking up sporting events"
- #40 yes "finding things for vacations, etc."
- #41 yes "projects, portfolios"
- #42 yes "find info"
- #43 yes "to surf it, to experience it, to find info"
- #44 yes
- #45 yes "school projects"
- #48 yes "recreational websights (ESPN net)"
- #49 yes "for other school work"