Involvement of the school library media specialist in critical thinking skills and web site evaluation at the middle school level

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IN VOL VEMENT OF THE SCHOOL LIBRARY MEDIA SPECIALIST
IN CRITICAL THINKING SKILLS AND WEB SITE EVALUATION
AT THE MIDDLE SCHOOL LEVEL

by
Michele L. Burton

A Thesis
Submitted in partial fulfillment of the requirements of the
Master of Arts Degree
of
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at
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Approved by ____________________________ Professor

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ABSTRACT


In the twenty-first century, the World Wide Web is being utilized more at home and in our school systems. The use of the WWW is transforming our learning institutions. Students must be information literate in order to critically evaluate the information they read on the WWW. The purpose of this study was to investigate the degree to which School Library Media (SLM) specialists in Camden County, New Jersey were teaching middle school students the appropriate skills needed to become critical thinkers when using Web sites on the Internet, and what methods/search strategies these SLM specialists used in teaching. Questionnaires were mailed to 117 middle SLM specialists in Camden County, New Jersey. An overall response rate of 55% (64 out of 117) was obtained; however a usable rate of 52% (61 out of 117) provided the results. The survey results indicated that 75% of the computers in the media centers have Internet accessibility and that 85% of the SLM specialists strongly agree or agree that the teaching of critical thinking skills is part of their professional responsibility. However, only a small portion of the SLM specialists (36%) teach Web site evaluation.
MINI ABSTRACT


This study assessed the degree to which SLM specialists were teaching students skills needed to become critical thinkers when using Internet Web sites, and what methods/search strategies SLM specialists used. Results indicated a need for further instruction in the area of critical thinking skills and Web site evaluation.
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CHAPTER I

STATEMENT OF THE PROBLEM

Significance of the Topic

At the end of the twentieth century, the United States became a more technological society with the introduction of the World Wide Web. The Web's accessibility, ease of use, and wealth of information has caused it to become a widely used research tool. Student’s access to the Internet is becoming more widespread in the nation’s schools and homes.

A recent research report found that 78% of the public schools in the United States in 1997 had Internet access and predicted that 95% of the schools would have Internet access by the end of the year 2000. Computers are also penetrating home markets in the United States, with 50% of the households in 1998 reporting owning a computer (Hirsh, 1999, p. 1265).

Through the use of technology today, it is clear that the Internet is dramatically changing how our students learn, and how teachers teach their students. The use of the World Wide Web is definitely transforming our institutions of learning. In fact, online research seems to be as important as “reading, writing, and arithmetic.” Students, at all levels, need to become familiar with online resources, and develop skills to find their own information and answer their own questions.

Educators want the children, under their supervision, to have the best
opportunities to learn and enrich their lives. The greatest change within technology to
affect the field of education is Internet availability. The Internet offers students
remarkable opportunities. It allows them to access information in order to support
information needs that range from researching school assignments to exploring their
personal interests. However, the Internet will not automatically or magically revamp
education for the better. For educators, there is an obligation to prepare our students to
function and thrive on the Information Superhighway. Students must be taught effective
techniques to search, retrieve, collect, exchange, and evaluate information.

Rationale for Study

As teachers, it is our responsibility to assist students to become information
literate. “Knowing what type of information is appropriate for particular purposes,
knowing how to find such information easily, and evaluating information may be called
information literacy, digital literacy, media literacy, or techno-literacy” (Schrock, 1998,
p.3). We need to teach our students the appropriate search strategies to assist them with
locating valuable information in order to become information literate.

The Internet provides access to a tremendous amount of information. “A new
page is placed on the World Wide Web every 30 seconds” (Descy, 1996, p. 3). Anyone
can place almost anything on the Internet. We must teach our students that no one filters
the information on the Internet or checks it for accuracy. Therefore, it is extremely
important that our future citizens and leaders, who are presently our students, know how
to review material on the Internet with a “critical eye.”

Due to the widespread accessibility and uncontrolled nature of the content
on the Web, research on children’s use of the Web has started to explore student perceptions of quality, accuracy, and truthfulness of the information found on the Web. In general, these studies are finding that students from elementary school to high school, do little evaluating of accuracy of the information they find on the Internet; they tend to assume that the information they find is true and valid (Hirsh, 1999, p. 1267).

In today’s generation, students appear to be enthusiastic users of electronic resources. Often students prefer using electronic sources to print counterparts because they feel that the information can be found right at their fingertips. Students need to become critical information consumers and realize the importance of checking one source against others. Evaluating what one reads on the Internet is an essential task. As educators, it is our responsibility to teach our students about authority, accuracy, credibility, authenticity, and currency in order for them to find reputable sites. Often, students experience information overload and do not know which of the many Web sites they have found are the “best” to use. Evaluation is a critical skill for today’s students in order to make them become more information literate.

Purpose of the Study

With the continuing growth of the World Wide Web and the vast amount of information that is available, middle school students need to be able to critically evaluate Web sites for authority, accuracy, credibility, authenticity, and currency. The Internet supports freedom of speech; therefore, anyone is free to publish information or an opinion on the Internet. Even though the Internet can reveal valuable and factual
information for students to use, it is also filled with rumors, gossip, and falsehoods. As educators, it is our responsibility to give students the necessary skills to become critical thinkers in order to evaluate Web sites and to identify reputable sites. The purpose of this study was to determine the degree to which SLM specialists, in Camden County, New Jersey were teaching middle school students the appropriate skills to become critical thinkers when using Web sites on the Internet, and what methods/search strategies these SLM specialists teach.

Areas of concern for this project included the following research questions:

- How many computers are in school media centers for middle school student use, and are they all Internet accessible?

- When SLM specialists teach about the World Wide Web is it done by demonstration? If so, with what type of equipment? Is it done by hands-on experience? How often does each middle school student have the opportunity to use a computer?

- What type of methods/search strategies are SLM specialists teaching to locate useful information on the Internet?

- What and how do SLM specialists teach about Web site evaluation? Is evaluation of Web sites part of the required curriculum/scope and sequence? Do SLM specialists encourage/require students to find information on their topics in print sources prior to locating information on the Internet? Do SLM specialists explain to students authority, accuracy, credibility, authenticity, and currency? Do SLM specialists reinforce the importance of checking one source against another?
• Do SLM specialists teach middle school students using rubrics or checklists to assist in the evaluation of Web sites? If so, what type of rubrics or checklists are used?

• Do SLM specialists teach Web site evaluation in isolation, or do SLM specialists and teachers collaboratively teach this skill?

**Definition of Terms**

*Internet*-the collection of networks throughout the world that agree to communicate using specific telecommunication protocols (Ackermann & Hartman, 1999, p. 431).

*World Wide Web (WWW)*-also called the Web; a collection of different services and resources available on the Internet (Ackermann & Hartman, 1999, p. 436).

*Web sites*-an organized collection of Web pages on a host computer. Web sites are maintained by companies, government agencies, universities, associations, or by individuals (Ackermann & Hartman, 1999, p. 436).

*Methods*-systematic approaches to conduct of an operation or process–includes steps of procedure, application of techniques, systems of reasoning or analysis, and the modes of inquiry employed by a science or discipline (Houston, 1995, p. 191).

*School Library Media (SLM) Specialists*- a person with appropriate certification under state requirements and broad professional preparation, both in education and media, with competencies to carry out a media program. The school media specialist is the basic media professional in the school media program (Young, 1983, p. 200). For this study, SLM specialists applies only to those middle school librarians in Camden County, New Jersey.
**Middle School Students** - For this study, students will be in fifth through eighth grade.

**Critical Thinking Skills** - development of the ability to analyze or separate material into its component parts, to synthesize information or put its parts together to create a new whole, and to evaluate or judge material for a given purpose (Crane, 2000, p. 43).

**Information Literacy** - the ability to read and use information that is essential for everyday life and necessitates recognizing information needs and seeking information to make informed decisions. Also, it is the ability to access effectively and evaluate information for a given need (Crane, 2000, p. 43).

For this study, the following terms have operational definitions that pertain to the World Wide Web:

**Search Strategies** - comprehensive plans, approaches, or procedures used for locating/retrieving and evaluating information on the World Wide Web.

**Evaluation** - the ability to make judgements and decisions based upon standards (Crane, 2000 p. 53) and appraising or judging of Web sites for: authority, accuracy, credibility, authenticity of content, and currency of information.

**Authority** - determining who is responsible for a Web site and their experience/qualifications.

**Accuracy** - determining factual and correct information that is present in a Web site.

**Credibility** - determining statements or situations that are generally perceived as true or possible.

**Authenticity** - determining the quality of being authoritative, valid, true, real, or genuine.

**Currency** - determining dates when the Web site was created and last updated.
Assumptions and Limitations

One assumption for this study was that teaching critical thinking skills is an important activity and that they can be taught. Another assumption was that critical thinking skills are essential to effective Web use. Also, the researcher assumed that the SLM respondents responded truthfully and accurately to the questionnaire.

This study was limited geographically to school library media centers in Camden County, New Jersey. In addition, only middle school SLM specialists were surveyed. Another limitation was the number of questionnaires received and questions answered accurately. This study does not reflect the national status of Internet search strategies and the evaluation skills needed to determine the credibility of Web sites being taught to middle school students; however, it does offer some insight as to what SLM specialists were doing to teach critical thinking skills and to assist middle school students in becoming more information literate.
CHAPTER II

REVIEW OF THE LITERATURE

Importance of Information Literacy

Students in the twenty-first century need to be able to think critically, rationally, and logically. Today, there are many more sources of information, both print and electronic, available to students. It is becoming increasingly difficult to ensure that students can derive meaning from the massive amounts of information. It has become a central role of school library media (SLM) specialists to help provide the future leaders and citizens of our country with the necessary information literacy skills. John Dewey once stated, “All which the school can or need do for pupils, so far as their minds are concerned, is to develop the ability to think” (Mancall, Aaron, Walker, 1986, p.18).

An extensive review of library and educational literature has indicated the importance of students becoming information literate in order to function in today’s society. However, in 1989, Craver wrote that ...

Despite the fact that more than 2,000 articles have been written about critical thinking since 1985, there have been few empirical studies performed to measure and evaluate it. Little progress has been made regarding the most effective materials and methods to teach critical thinking” (Craver, 1989, p. 16).

This review of research and other literature indicates a need for an assessment of SLM
specialists' involvement in teaching of critical thinking skills specifically those skills needed to evaluate Web sites on the Internet, and what methods/search strategies these SLM specialists teach.

As defined in *Information Power*, the role of a school library media specialist is that of "...a teacher, an instructional partner, an information specialist, and a program administrator" (AASL, 1998, pp. 4-5). As a teacher and information specialist, the SLM specialist needs to help students to develop sophisticated skills in information literacy. *Information Power* defines information literacy as "the ability to find and use information." It is also "the keystone of lifelong learning" (AASL, 1998, p. 1).

Helping students flourish in this learning community is the central concern of student-centered library media programs. The goal is to assist all students in becoming active and creative locators, evaluators, and users of information to solve problems and to satisfy their own curiosity. With these abilities, students become independent, ethical, lifelong learners, who achieve personal satisfaction and who contribute responsibility and productively to the learning community and to society as a whole (AASL, 1998, pp. 2-3).

In an ERIC Digest document titled *Information Literacy in an Information Society*, information literacy is defined as "the ability to access, evaluate, and use information from a variety of sources."

An information literate person is one who recognizes that accurate and complete information is the basis for intelligent decision making, recognizes
the need for information, formulates questions based on information needs, identifies potential sources of information, develops successful search strategies, accesses sources of information including computer-based and other technologies, evaluates information, organizes information for practical application, integrates new information into an existing body of knowledge, and uses information in critical thinking and problem solving (ERIC Clearinghouse on Information and Technology, 1994, pp.1-2).

In the Fall of 1986, *School Library Media Quarterly* published a special issue that was devoted to the topic of skills involved in finding and using information effectively (also called information skills, information literacy, critical thinking skills, and higher-order thinking skills). Within this special issue, a basic objective of education was stated. “Each student needs to learn how to identify needed information, locate and organize it, and present it in a clear and persuasive manner” (Hashim, 1986, p. 17).

In one article, “Educating Students to Think: The Role of the School Library Media Program,” the author stated that a major part of a media teacher’s time should be spent fostering the development of thinking skills. The role of the school library media program in achieving this basic objective was described:

School library media programs need to be involved in helping students develop thinking skills; school library media programs need to take into account current research on how children and adolescents process information and ideas; and school library media programs need to assist with the development of an information skills program in all curricular
areas (Mancall, Aaron, Walker, 1986, p.18).

In another article from the 1986 special issue of School Library Media Quarterly, a controversial statement was made.

It is most appropriate, and long overdue, that the relationship between school library media programs and the development of critical thinking skills by students has become an educational focus. Unfortunately, one does not sense universal agreement with this point of view. Too frequently library media teachers (as well as classroom teachers) consider involvement of this sort as just one more responsibility being added to an already overloaded job description. Such a view is both unprofessional and untenable ...

To the extent that educating students to think is the primary role of the school, it also becomes an important role of the school library media center program. We must realize that to effect this role a revision of emphases may be required (Jay, 1986, p. 28).

Access to the Internet has increased in both schools and libraries over the last few years; therefore, it is essential that SLM specialists and teachers join forces in order to teach information literacy skills as part of the school curriculum.

Problem solving, decision making, critical thinking, information gathering and sense making are abilities related to information literacy. These skills must be taught in addition to basic literacy and computer literacy for students to be able to function in an information environment (Crane, 2000, p. 42).
Information Literacy and Critical Thinking

One may ask, “How does information literacy relate to critical thinking?” In Crane’s book, she explained how information literacy relates to critical thinking skills by using Bloom’s Taxonomy. Bloom defined learning on a hierarchy or ladder of skills. “Critical or higher order thinking requires the ability to analyze or separate material into its component parts, to synthesize information or put its parts together to create a new whole, and to evaluate or judge material for a given purpose” (Crane, 2000, p. 43).

Critical thinking skills are at the higher end of Bloom’s ladder of learning. In order for students to be prepared for the information society of the twenty-first century, they need to be able to think critically.

The Internet with its interactivity and multimedia gives students problem-solving capabilities that are much closer to the kinds of situations they will encounter in the “real” world. Using the Internet and its resources to help develop critical-thinking skills, students are exposed to a rich curriculum that prepares them better for the complexities of the world ahead. Online technology, requiring search and retrieval and communication of ideas and viewpoints to others, motivates students, develops their deductive reasoning and critical thinking, and reinforces concepts and information within a particular discipline (Crane, 2000, p. 46).
Research

The researcher extensively searched the Internet, the Educational Resources Information Center's (ERIC), and Library Literature through the use of Dialog databases to locate research studies pertaining to the teaching of information literacy/critical thinking skills to evaluate Web sites. However, the researcher was unable to locate studies which specifically assessed SLM specialists' teaching methods or search strategies for teaching critical thinking skills for Web site evaluation. Some studies were found that analyzed the behavior and search methods of students at the elementary, middle, and high school level. However, little appears to be known about how children evaluate the information they find when searching electronic sources.

Studies on Children's Research Process

In the Journal of the American Society for Information Science, Hirsh reported on a 1999 study that explored the criteria and search strategies elementary school children (5th graders) applied when searching for information related to a class assignment in a school library setting. Students were interviewed on two occasions at different stages of the research process. Students performed searches using an on-line catalog, an electronic encyclopedia, an electronic magazine index, and the World Wide Web. A total of 254 mentions of relevance criteria were identified, including 197 references to textual relevance criteria that were coded into nine categories (authority, convenience/accessibility, interesting, language, novelty, peer interest, quality, recency/temporal issues, and topicality), and 57 references to graphical relevance criteria that were coded into five categories (authority, clarity/completeness, interesting, peer interest, and
expediency). One important finding was that students exhibited little concern for authority of the information they found. The findings suggested that students could benefit from additional training in how to search, navigate, and evaluate electronic sources. In her conclusion, Hirsh stated:

As children prepare to work and learn in an increasingly digital and information-oriented society, children need better search skills to enable them to find the information they need and better information literacy skills to enable them to make informed decisions about the information they use. Specifically, students need training in how to search effectively. Students are no longer using only on-line catalogs and electronic encyclopedias for their school projects, as they did in the late 1980s and early 1990s. Students now are using more complicated and less well-structured electronic resources, like the Internet. Teachers and students alike need more instruction in how to search and navigate the Internet and other electronic sources to meet their needs. Students also need training in how to evaluate the authority and accuracy of the information they find both in print and electronically. Because the Internet has no built-in filters to publishing, and children are making greater use of the Internet for their school assignments, children need to understand how information is placed on the Internet and how to verify the accuracy of the information they find there (Hirsh, 1999, p. 1281-1282).

There has been some research on children’s information-seeking behavior which
sheds light on the needs that stimulate behavior. Kuhlthau’s work, which focused on adolescents, is perhaps the most developed in this area. She conceptualized the relationship of information-seeking behavior to stages of cognitive and affective development. Two articles that Kuhlthau wrote described information that was relevant to this thesis. One article dealt with a case study (1990-1993) that identified some primary inhibitors and some basic enablers for successful implementation of library media programs. The data collected through survey questionnaires from library media specialists and teachers from Manhasset, New York, revealed three primary inhibitors of implementation: lack of time, confusion of roles, and poorly designed assignments.

Results of Kuhlthau’s research showed how the constructivist theory can be used to explain the information search process. She stated that “the constructivist theory provides a sound basis for library media programs in the information-age school.” Students were engaged in extensive problem-driven research incorporating their thoughts, actions, and feelings in a holistic learning process. “The philosophy of education developed by John Dewey is consistent with the constructivist view of learning. Dewey portrayed learning as a constructive process occurring in five phases of reflective thinking: suggestion, intellectualization, guiding idea, reasoning, and testing by action” (Kuhlthau, 1993, p.11).

This case study showed that for a school library program to be successful in teaching information skills, it requires a development of an instructional team and a break with the traditional concept of one teacher to one classroom. It requires a commitment to developing skills for living, working, and participating in changing technological society. It demands highly
competent educators who creatively instruct, guide, coach, and assess students and who design and redesign programs to enhance the learning process (Kuhlthau, 1993, p.18).

The second article (1997) that Kuhlthau wrote dealt with the role librarians have in creating environments that foster meaningful and lasting learning in digital libraries. Again, Kuhlthau focused upon the constructivist theory as an approach to information age learning environments for children and teenagers. The role for librarians has been described for guiding and coaching students in the stages of the information search process. She stated that there are five strategies for coaching students in the information search process: collaborating, continuing, conversing, charting, and composing.

This theory is based on the constructivist approach of acting and reflecting, feeling and formulating, predicting and choosing, interpreting and creating. The challenge for librarians, particularly those who work with children, is to create environments for learning within the digital libraries (Kuhlthau, 1997, p. 723).

**Research on Children’s Use of the Internet**

The majority of schools are now Internet ready, yet children’s information seeking and use of the Internet are virtually unexplored areas of research. One study conducted in 1997 by Schacter, Chung, and Dorr examined the effects of task structure on elementary school students’ information seeking on the Internet. Thirty-two 5th and 6th grade students were selected from a laboratory elementary school affiliated with a major university in southern California. These students had been using the Internet as an
educational resource for five months. They were selected from one 5th grade classroom and the upper-elementary afterschool program. Students were chosen by their classroom teacher to represent a heterogeneous sample of academic ability. The students searched for information that was relevant to solving two tasks or problems. Analyses of students' process behaviors illustrated that the children were interactive information seekers, preferring to browse rather than plan or employ systematic analytic-based (keyword) searching strategies. The children did not use sophisticated analytic search techniques, nor did they use Boolean search terms, adjacency indicators, exact term searching, or truncation techniques. In addition, this study revealed that the majority of child searchers believed that all the information they found on the Internet was true. "Children do not seem to be cognizant that false, inaccurate information is posted and that the information they find needs to be challenged and questioned" (Schacter, Chung, Dorr, 1998, p. 848).

In addition, it was stated in the conclusion section of this study that

Children need not only to be educated in how to better plan their searches and conceptualize solution paths, but also how to organize, structure, manage, and represent the information they find so that they can use it in purposeful ways (Schacter, Chung, Dorr, 1998, p. 848).

Another study in 1998, examined a sample of 8th grade students' perceptions about their experiences with technology and the use of the World Wide Web. In this study, Watson had twelve 8th grade students volunteer to participate. However, only nine participants, five male and four female were actually involved in the study. The participants were asked to construct meaning of their own experience using an interview
process. Throughout the interviews, students raised questions about the quality of technological resources and wondered how to handle great quantities of information. Several students commented on how much information appeared before them, and how much of it appeared irrelevant or useless. Most students tried to locate information by the “trial and error” method or through browsing. Results of this study also showed that student users need additional information about searching itself. This study concluded by stating that “further research into how best to assist teachers and school media professionals in learning how to facilitate students’ searching on the Internet is needed” (Watson, 1998, p. 1034).

The researcher found one study, conducted by Kafai and Bates in 1995, which involved graduate students enrolled in the Graduate School of Education and Information Studies at UCLA. The group of graduate students decided to examine “Education on the Internet” by working with teachers and elementary school children (grades one through six). The purpose of this study was to examine how teaching through the use of the Internet could be achieved, and determining what education and Library and Information Science (LIS) skills graduate students should learn about the Internet, education, and LIS research literatures to be effective scholars, master teachers, or library media specialists. The objective for the elementary students was to have children develop an understanding of what the Internet and Web searching were, gain some skills in searching, and develop their critical-thinking skills by evaluating the information gathered from various sites (Kafai & Bates, 1997, p. 103).

For the implementation of the SNAPdragon Project, the researchers took
advantage of an existing consortium of West Los Angeles schools, called School Network Action Project (SNAP). Only six classrooms participated in this study because the researchers wanted to match each classroom with one UCLA graduate student. The “SNAPdragon” project was created to investigate how children can interface with the Internet by asking them to build an annotated directory of Web sites for other children (Kafai & Bates, 1997, p. 104).

The results of the SNAPdragon study showed that all children, in first through sixth grade, were able to use Web sites to advance their learning. All the children learned to scroll through a site and use hypertext links to other sites. Older children (fifth and sixth graders) learned to use search engines and the rudiments of Boolean logic. In addition, they learned how to navigate, perform searches, use bookmarks, visit sites, and use hot buttons. However, their typing, spelling, vocabulary, and Boolean logic skills did limit their ability to find appropriate sources. It was noted that once students had experienced some frustration in searching, they were more receptive to learning the differences among search engines. Finally, it was noted that it was difficult for the younger children, first through fourth grade, to evaluate sites or to write annotations. They could determine what they liked, but had trouble articulating why they liked it (Kafai & Bates, 1997, p. 108).

Kafai and Bates’ (1997) study taught children about a major new information source, and for the older students (fifth and sixth graders), it helped them to develop critical thinking skills by evaluating sites and creating a directory of their evaluations. In addition, the study provided insight for the graduate students of UCLA, teachers, and
SLM specialists in regards to Internet instruction, children’s information searching and information evaluation, and students’ motivation and interest.

The last study titled, “Critical Thinking: Tools for Internet Information Evaluation,” (Fitzgerald, 1997) was extremely relevant to this thesis. This qualitative study, which was conducted in 1997, described strategies employed by sophisticated adult World Wide Web users as they evaluated authentic Web information with the purpose of adapting these strategies for children in K-12 settings. The participants were recruited from personal colleagues at a major research university. Six graduate students, all with advanced Web expertise, participated in the study. The participants in this study followed think-aloud protocols and answered interview questions about two Web documents containing numerous misinformation devices. Misinformation was defined as material presented as true although it contradicted facts presented in standard reference works. Evaluative strategies were extracted and analyzed. The results of this study generated a list of strategies and styles used by adults in evaluating Web sites. The purpose of Fitzgerald’s study was to adapt these strategies for use in elementary through high schools (Fitzgerald, 1997).

Within this study, Fitzgerald commented on a statement that Piaget made in 1948. Teaching evaluative strategies to children is challenging. Children cannot be instructed to search for abstract constructions like bias and logical fallacies without extensive preparation. Children of elementary school age are also uncomfortable with this disequilibrium caused by ambiguity, a necessary accompaniment to evaluative thinking (Fitzgerald, 1997, p.47).
The following skills and strategies for “Web Information Evaluation” were formulated from this study (Fitzgerald, 1997, p. 48):

Use of a Checklist (starting at 3rd grade)

- Scan document, read first three sentences. Ask: Is this page relevant? (4th grade)
- Ask question: What is the purpose of this site? (6th grade)
- Think like an editor. Use what you know about writing. What should be changed in this document? (6th grade)
- Don’t make up your mind too soon. Identify different perspectives. Collect evidence to support each one. Make choices or decisions based upon the evidence. (8th grade)
- Build knowledge from a variety of sources. (4th grade)
- Follow up on author credentials and references. (4th grade)
- Separate fact from opinion. (3rd grade)
- Evaluate arguments (Isolate and identify; identify fallacious ones and disregard). (5th grade)
- When you hear yourself think “I don’t understand” or “this doesn’t make sense” stop and exam reasons for this thought. (4th grade)
- Examine how opposites are used. (5th grade)
- Examine how feelings are expressed. How do they show bias and purpose? (6th)

Non-Research Based Articles

As previously stated, this researcher was unable to locate specific research studies which investigated the methods/search strategies that SLM specialists are using to teach
Web site evaluation skills. However, throughout the review of literature, authors constantly indicated that there was a need for further research within this area.

The researcher located numerous articles that dealt with assisting SLM specialists and teachers with the teaching of critical thinking skills and Web site evaluation. One recently informative article titled "Critical Thinking 101: The Basics of Evaluating Information" (Fitzgerald, 2000) suggested instructional strategies for SLM specialists and classroom teachers. The suggestions provided concrete teaching strategies that may begin to help students to think evaluatively. It was interesting to note that Fitzgerald highly recommended that the evaluative strategies would be most effective if they are collaboratively implemented by both the SLM and teachers.

Another valuable article was titled "A Model for Teaching Critical Thinking Through Online Searching" (Crane & Markowitz, 1994) suggested a teaching model to guide teachers in fostering the teaching of higher order thinking skills through the use of online technology. By using this model, teachers helped students learn problem solving skills while using the computer. Also, the article titled "An Internet Research Model" (Barron & Ivers, 1996) focused on research activities of the Internet and proposed a model for conducting relevant and meaningful Internet activities. The online research model involved: Questioning, Planning, Gathering, Sorting & Sifting, Synthesizing, and Evaluating.

An article called "Misinformation on the Internet: Applying Evaluation Skills to Online Information" (Fitzgerald, 1997) named, described, and classified misinformation types that exist on the Internet. In addition, a set of nine critical thinking/information
literacy skills were proposed to help teachers teach how to evaluate information on the Internet. The set of skills presented was in a formative stage and further research is needed.

The article called "Teaching Critical Evaluation Skills for World Wide Web Resources" (Tate & Alexander, 1996) provided librarians with a three part lesson plan to assist them with the challenge of teaching students how to apply critical thinking skills to Web-based research. A five part criteria checklist is explained in great detail (Authority, Accuracy, Objectivity, Currency, and Coverage). In addition, the authors reinforced the importance of using hands-on practice of identifying a well-designed and poorly designed Web page. Another article called "It Must Be True. I Found It on the Internet!" (Schrock, 1996) presented a lesson plan which provided students with the skills needed to evaluate the accuracy, authenticity, and applicability of information found on the Net. Finally, an article titled "Producing Information Consumers: Critical Evaluation and Critical Thinking" (Schrock, 1999) provided valuable Web site addresses to other pertinent information dealing with Web site evaluation.

Three articles that the researcher located provided valuable Internet sites which established evaluation criteria checklists and rubrics to be used during instruction with elementary, middle, and high school students. The articles were: "A School Media Specialist's Introductory Guide to Developing Critical Thinking and Inquiry Skills Using Web-based Resources and Activities" (Champelli, 1996), "The Art of Evaluation" (Junion-Metz, 1998), and "No, It's Not All True" (Minkel, 2000).

One person who has written on the topic of Web site evaluation is
Kathy Schrock. She has developed practical and useful checklists to be used during instruction with students. Schrock has two Web sites that deal with Web site evaluation. The first Web site is titled “Kathy Schrock’s ABC’s of Web Evaluation” (http://kathyschrock.net/abceval/). This site provides links to other useful articles and information pertaining to Web site evaluation. The other Web site is called “Kathy Schrock’s Guide for Educators: Critical Evaluation Surveys” (http://school.discovery.com/schrockguide/eval.html). In addition, she published numerous articles and a useful book called Evaluating Internet Web Sites: An Educator’s Guide (1997).

Summary

The time is indeed upon us to rethink how SLM specialists teach critical thinking skills to students. It is no longer sufficient to merely teach students how to locate and retrieve information. “SLM specialists must also help them to develop the skill in manipulating that information by questioning, challenging, analyzing, comparing, contrasting, evaluating, summarizing, and synthesizing it. Unfortunately, only a small percentage of students presently leave school with these skills” (Smith, 1987, p. 38).

This study attempted to determine the degree to which SLM specialists in Camden County, New Jersey, were teaching middle school students the appropriate skills they need when evaluating Web sites on the Internet, and what methods/search strategies these SLM specialists teach.
CHAPTER III

METHODOLOGY

Overall Design and Justification

This study was designed to be an applied research study in which the teaching of critical thinking skills and Web site evaluation with middle school students was addressed. The researcher attempted to investigate the degree to which SLM specialists were teaching middle school students the appropriate skills to become critical thinkers when using Web sites on the Internet, and what methods/search strategies these SLM specialists teach.

The study was conducted through the distribution of a descriptive survey (quantitative data) to middle school SLM specialists in Camden County, New Jersey. The design of a descriptive survey was selected because “the basic purpose of a descriptive survey is to describe characteristics of the population being studied, estimate proportions in the population, make specific predictions and test associational relationships” (Powell, 1997, p. 61). In addition, Powell states that “the basic assumption of most survey research is that, by carefully following certain scientific procedures, one can make inferences about a large group of elements by studying a relatively small number selected from the larger group” (Powell, 1997 p. 57).

The method selected for this study was a mailed, self-administered questionnaire (see Appendix B). A survey was the chosen methodology because it is the most effective
way to reach the qualified respondents. In addition, this method was chosen due to the size of the population to be questioned and time factor limitations.

Statement of Purpose and Research Questions

With the continuing growth of the World Wide Web and the vast amount of information that is available, middle school students need to be able to critically evaluate Web sites for authority, accuracy, credibility, authenticity, and currency. The Internet supports freedom of speech; therefore, anyone is free to publish information or an opinion on the Internet. Even though the Internet can reveal valuable and factual information for students to use, it is also filled with rumors, gossip, and falsehoods. As educators, it is our responsibility to give students the necessary skills to become critical thinkers in order to evaluate Web sites and to identify reputable sites. The purpose of this study was to determine the degree to which SLM specialists, in Camden County, were teaching middle school students the appropriate skills to become critical thinkers when using Web sites on the Internet, and what methods/search strategies these SLM specialists teach.

Areas of concern for this project included the following research questions:

- How many computers are in school media centers for middle school student use, and are they all Internet accessible?
- When SLM specialists teach about the World Wide Web is it done by demonstration? If so, with what type of equipment? Is it done by hands-on experience? How often does each middle school student have the opportunity to use a computer? What type of methods/search strategies are SLM specialists
teaching to locate useful information on the Internet?

- What and how do SLM specialists teach about Web site evaluation? Is evaluation of Web sites part of the required curriculum/scope and sequence? Do SLM specialists encourage/require students to find information on their topics in print sources prior to locating information on the Internet? Do SLM specialists explain to students authority, accuracy, credibility, authenticity, and currency? Do SLM specialists reinforce the importance of checking one source against another?

- Do SLM specialists teach middle school students using rubrics or checklists to assist in the evaluation of Web sites? If so, what type of rubrics or checklists are used?

- Do SLM specialists teach Web site evaluation in isolation, or do SLM specialists and teachers collaboratively teach this skill?

**Population and Sample**

The population selected for this study was middle school SLM specialists in Camden County, New Jersey. This population was selected based on a desired size, the parameters of the survey population, and specific criteria. The researcher contacted the Camden County Superintendent’s office in Blackwood, New Jersey in order to gather information in regards to addresses and grade levels for the school systems in Camden County. A Web site address for the Camden County Office of Education (http://www.ccts-ettc.org/ctysupofc/), and a public school directory were provided to the researcher.

The researcher reviewed the *Camden County Public School Directory* (2000-
2001) and nonrandomly selected schools that meet the stated criteria. For this study, public schools were selected that contained grades fifth, sixth, seventh, or eighth grades. Elementary schools were included if they contained grade levels fifth or higher. High schools were included if they contained grades sixth, seventh, or eighth. In addition, surveys were mailed to schools that indicated that they were middle schools. A total of 117 surveys were mailed out. Since the names of the SLM specialists were not provided in the directory; the envelopes for the surveys were addressed as “Attention: School Library Media Specialist.”

Since the population was restricted to a specific criteria, and only to one county in southern New Jersey, the sample is the same as the population. This decision was made in order to receive results applicable to the Camden County middle schools.

Variables

“The term variable is used by researchers to refer to an element, entity, or factor that is under study in an empirical investigation” (Busha & Harter, 1980, p. 9). In this study, there were several independent variables:

- Number of Internet accessible computers in the school media centers.
- Ways of teaching about the World Wide Web (demonstration and/or hands-on experience).
- Number of opportunities for students to use computers.
- Methods/search strategies taught to locate useful information on the Internet.
- Use of or lack of rubrics and checklists for Web site evaluation.
- Teaching Web site evaluation skills in isolation or in collaboration.
Certification area and years of experience as a SLM specialist.

The dependent variable was the degree to which SLM specialists teach critical thinking skills for Web site evaluation.

**Method of Data Collection**

The method of data collection for this study was a mailed, self-administered questionnaire. This method was selected for several advantages (Powell, 1997 p. 90-91):

- The mail questionnaire tends to encourage frank answers.
- It eliminates interviewer bias.
- The fixed format of the questionnaire tends to eliminate variations in the questioning process.
- The manner in which a mail questionnaire is distributed and responded to also allows it to be completed, within limits, at the leisure of the participants. This encourages well-thought-out, accurate answers.
- Questionnaires can be constructed so that quantitative data are relatively easy to collect and analyze.
- It facilitates the collection of large amounts of data in a relatively short period of time.
- It is relatively inexpensive to administer.

The surveys were mailed directly to the nonrandomly selected SLM specialists in Camden County, New Jersey. However, because the *Camden County Public School Directory* (Camden County Superintendent of Schools, 2000-2001) did not provide the names of SLM specialists, the envelopes were addressed to “School Library Media
Specialist.” The questionnaires, with a cover letter (Appendix A), were mailed out on January 26, 2001. The recipients had two weeks to return the surveys before they received a reminder/thank you postcard (Appendix C). The postcards were sent on February 12th. Since there was a low response to the first mailing of the survey (36 out of 117) and the reminder/postcard (an additional 9 more surveys were returned for a total of 45 out of 117); it was decided that a second mailing was necessary for a more accurate evaluation. The second mailing, with a new cover letter (Appendix D), was on February 21st, and SLM specialists had until March 9th to return the survey. Data analysis began on March 12, 2001 (a total of 64 surveys were returned).

Reliability and Validity

The researcher was concerned with reliability and validity when designing this study. According to Powell, “research is considered to be valid when the conclusions are true, and reliable when the findings are repeatable, but validity and reliability are actually requirements for both the design and the measurement of research” (Powell, 1999, p. 37).

A pretest was administered prior to the distribution of the questionnaire. The pretest was given to colleagues in the Seminar Thesis class, selected potential users of the results, and selected members of the population. This pretest was administered to test the reliability and validity of the questionnaire in order to make revisions prior to it being mailed. The pretest allowed for opinions and suggestions to be made to improve the accuracy and reliability of the questionnaire, and to avoid confusion when the actual survey was mailed.
CHAPTER IV
ANALYSIS OF DATA

Procedure/Methods

A questionnaire regarding the degree to which SLM specialists are teaching middle school students the appropriate skills to be critical thinkers when evaluating Web sites on the Internet, and what methods/search strategies these SLM specialists used to teach was mailed to 117 SLM specialists in Camden County, New Jersey. The questionnaire consisted of a combination of twenty structured fixed response questions and some unstructured open-ended questions.

Data were collected from the returned surveys. Numerous tally charts were kept to tabulate the responses for each of the questions. Data were checked for "completeness, comprehensibility, consistency, and reliability" (Powell, 1999, p. 63). The researcher also looked for surprising responses and unexpected results.

Response Rate

Data were analyzed by examining the results of the returned questionnaires. There was a 55% return rate (64 surveys returned out of the 117) and 52% usable response rate for this study (61 surveys returned out of 117). Three of the surveys indicated that their schools were Kindergarten through fourth grade only; therefore, they were not usable. The information printed in the Camden County Public School Directory must have had some minor mistakes with the grade level information.
provided. Tables and figures were developed to report the results in a clear and understandable format. In addition, narrative descriptions were provided to further explain the results.

**Presentation of Results**

For question #1 (Do you teach scheduled classes or mini lessons to middle school students?) the SLM specialists (respondents) had the choice of selecting from four answers: "Yes, students are scheduled for library classes on a fixed basis," "Yes, I teach some lessons, but infrequently," "Yes, as requested or needed on a flexible basis," or "No, it is not part of my job." The majority of responses (value: 40, 66%) reflected that library instruction takes place on a scheduled, fixed basis. Also, 23% (value: 14) taught library classes or mini lessons on a flexible basis. Table #1 provides the results of question #1.

<table>
<thead>
<tr>
<th>Choices</th>
<th>Value</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes, students are scheduled for library classes on a fixed basis</td>
<td>40</td>
<td>66%</td>
</tr>
<tr>
<td>Yes, I teach some lessons, but infrequently</td>
<td>1</td>
<td>2%</td>
</tr>
<tr>
<td>Yes, as requested or needed by teachers on a flexible basis</td>
<td>14</td>
<td>23%</td>
</tr>
<tr>
<td>No, it is not part of my job</td>
<td>2</td>
<td>3%</td>
</tr>
<tr>
<td>No answer given</td>
<td>2</td>
<td>3%</td>
</tr>
<tr>
<td>Combination answer (rows 1&amp;3)</td>
<td>2</td>
<td>3%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>61</strong></td>
<td><strong>100%</strong></td>
</tr>
</tbody>
</table>
Question #2 (Do you believe that teaching critical thinking skills is part of your responsibility as a School Library Media specialist?) provided some interesting results. A large portion (value: 31, 51%) strongly agreed that the teaching of critical thinking skills should be the responsibility of the SLM specialist. In addition, a significant number of individuals also agreed (value: 21, 34%) that the teaching of critical thinking skills was their responsibility. Only a small percentage of respondents checked either “Neutral,” “Disagree,” or “Strongly Disagree.” Figure #1 summarizes the results for question #2.

Figure #1

Responsibility For Teaching Critical Thinking Skills (n=61)

For question #3 (How many computers are in your school media center for middle school students to use?), the respondents had the following choices to select from: “Less than 5,” “Between 5-10,” “Between 11-15,” “Between 16-20, and “More
than 20." The largest category was "Between 5-10 computers" with 43% (26 out of 61). The lowest percentage was in the category with "More than 20 computers" (3 out of 61 or 5%). The results of question #3 are summarized in Figure #2.

Figure #2

For question #4 (Are all of the computers, for student use, Internet accessible?) the respondents had to select either "Yes" or "No" as a choice. If they selected, "No" then they were asked to give a percentage which would describe the number of computers that were Internet accessible. The majority of respondents (value: 46, 75%) indicated that all of their computers had the Internet. For those fifteen respondents who answered "No," the following percentages were given for computers with Internet accessibility: 0%, 20%, 25%, 25% 40%, 50%, 50%, 50%, 50%, 60%, 70%, 75%, 75%, 80%, and 85%.
Table #2 summarizes the results of question #4.

**Table #2**

**Computers and Internet Accessibility (n=61)**

<table>
<thead>
<tr>
<th>Choices</th>
<th>Value</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>46</td>
<td>75%</td>
</tr>
<tr>
<td>No</td>
<td>15</td>
<td>25%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>61</td>
<td>100%</td>
</tr>
</tbody>
</table>

For question #5 (How often does the typical middle school student get to use the Internet in your library media center?), there were five choices: “On a weekly basis,” “Once every two weeks,” “Once a month”, “Less than once a month,” and “Other”. The largest percentages went to the areas “On a weekly basis” (value: 24, 39%), and “Other” (value: 20, 33%). Table #3 provides the results to question #5.

**Table #3**

**Student Use of the Internet in the Media Center (n=61)**

<table>
<thead>
<tr>
<th>Choices</th>
<th>Value</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>On a weekly basis</td>
<td>24</td>
<td>39%</td>
</tr>
<tr>
<td>Once every two weeks</td>
<td>4</td>
<td>7%</td>
</tr>
<tr>
<td>Once a month</td>
<td>3</td>
<td>5%</td>
</tr>
<tr>
<td>Less than once a month</td>
<td>9</td>
<td>15%</td>
</tr>
<tr>
<td>Other</td>
<td>20</td>
<td>33%</td>
</tr>
<tr>
<td>No answer given</td>
<td>1</td>
<td>2%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>61</td>
<td>101%</td>
</tr>
</tbody>
</table>

(Table #2 adds up to 101% due to rounding up of percentages)
The comments that were listed under the “Other” choice were (typed as appeared in the surveys):

- On a as needed basis.
- Varies: Students must have an “Internet Pass” from a teacher for a specific search or be accompanied by their teacher as when entire class comes to LMC.
- Use Internet in classroom.
- Internet in classroom.
- 7th & 8th grade have access 4 days per week at lunch.
- Whenever they need to (in class or on their own).
- Students rarely use the media center computers— they have one in their classroom that they use.
- As needed (They also have access in their classrooms & computer lab).
- As often as they choose.
- Not at all.
- As needed.
- Newly opened media center.
- Daily.
- Whenever they come before or after school.
- When needed by 7th & 8th.
- If they ask & if there is time & if no one else is using them.
- Use it mostly in computer lab.
- Our superintendent has not issued our Acceptable Use Policy; therefore, we are
not allowed to use the Internet.

- 5th grade every other week and 6th, 7th, & 8th— one marking period per year.
- As needed.

Question #6 (Do you teach middle school students formal lessons about the World Wide Web?) had the choices “Yes” and “No” for the respondents to select.

It was almost an even split between “Yes” and “No” responses for formal lessons about the World Wide Web. Table #4 shows the results of question #6.

**Table #4**

**Formal Lessons About the World Wide Web (n=61)**

<table>
<thead>
<tr>
<th>Choices</th>
<th>Value</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>30</td>
<td>49%</td>
</tr>
<tr>
<td>No</td>
<td>31</td>
<td>51%</td>
</tr>
<tr>
<td>Total</td>
<td>61</td>
<td>100%</td>
</tr>
</tbody>
</table>

If the respondents checked “Yes” to question #6, they were instructed to answer questions #7-#11. However, if they selected “No” then they were to skip to question #19.

Five respondents, out of the thirty-one who checked “No,” made reference to the fact that the computer teacher covers lessons about the World Wide Web.

For question #7 (When you teach middle school students about the World Wide Web, how are the lessons taught?), thirty respondents checked as many options that applied to how they teach lessons about the World Wide Web. Figure #3 summarizes the results of question #7.
(Results do not total to 30 because respondents could check all categories that applied)

There was a very close response between two categories in which the World Wide Web is taught. "Through the use of hands-on experience" seemed to be the most popular method of teaching with 21 responses. "By demonstration with technical equipment" was very popular with 20 responses. Some of the "Other" responses are listed below (typed as they exactly appeared in the surveys):

- Create Web hunts, etc.
- I do this in the computer lab, not in the library.
- Discussion, collaboration with regular classroom teacher.
Question #8 (What type of methods/search strategies do you use to teach middle school students to locate useful information on the Internet?) had eleven items to select from that dealt with the methods/search strategies that SLM specialists use to teach students to locate information on the Internet. The results of this question are summarized in Figure #4.

(Results do not total to 30 because respondents could check all categories that applied)

The most popular method/search strategy shared among the respondents were: “How to Navigate,” (22) “Use of Various Search Engines,” (25) and “Combination of Keywords” (19). Some of the responses that were provided for “Other” are listed below (typed as appeared in the surveys):
- Difference between search engines, meta search engines & search directories
- School district Web Site
- I teach search skills/Boolean logic utilizing kid-friendly databases, not the Web.

For the Web, with the 5th & 6th graders, I preselect sites or only allow them to use Mega sites & search tools for kids.
- Use of my Web site.
- District research on Home Page.
- Use of Gateway & quality Web sites via library Web site.

For question #9 (Do you require your middle school students to locate information in print sources prior to using the Internet?) there were 15 “Yes” responses, 10 “No” responses, and 5 individuals hand wrote their own answer. Results are presented in Table #5.

Table #5

<table>
<thead>
<tr>
<th>Choices</th>
<th>Value</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>15</td>
<td>50%</td>
</tr>
<tr>
<td>No</td>
<td>10</td>
<td>33%</td>
</tr>
<tr>
<td>Own Answer</td>
<td>5</td>
<td>13%</td>
</tr>
<tr>
<td>Total</td>
<td>30</td>
<td>99%</td>
</tr>
</tbody>
</table>

(Table #5 does not total to 100% because of rounding up of percentages)

The following were the four comments that were written for this question (typed appeared in the surveys):

40
• It depends on the project.
• Depends on what is needed & if I have the print sources.
• This varies according to the information needed: see Joyce Valenza’s column in the Philadelphia Inquirer on 1/25/01 pg. F4.
• Sometimes.

Question #10 (In your opinion, how do middle school students perceive the information they find on the Internet?) had the following choices for individuals to selected from: “Factual and Accurate,” “Questionable,” “Inaccurate,” “Current and Up-to-Date,” “Outdated,” and “Other.” The respondents were instructed to check as many choices that applied to their students. Figure #5 summarizes the results for question #10.

Figure #5

Students’ Perception of the Internet (n=30)
“Factual and Accurate” (value: 24) and “Current and Up-to-Date” (value: 21) were the most popular responses of how the thirty SLM specialist thought that the students perceived the information that they found on the Internet. The “Other” responses that were provided by some of the SLM specialist are listed below (typed as appeared in the surveys):

• I do, however teach Web evaluation though for 5th grade (my school is K-5th), they don’t always fully embrace/comprehend concepts.

• Mixture of the above, they feel it’s the easiest to locate, but often see it is not.

• They think it eliminates their need to do much reading.

• Confusing— not always what they’re looking for too much information to weed through.

• Can validate all on Profusion (http://wwwprofusion.ukans.edu).

• Depends on the site.

Question #11 (Do you teach skills about Web site evaluation to your middle school students?) was a “Yes” or “No” type of question. Of the 30 respondents who taught formal lessons about the WWW, there were 22 “Yes” responses and 8 “No” responses for this question. According to these results, only 36% of the original 61 SLM specialists, who responded to this survey, taught skills about Web site evaluation to their middle school students. Table #6 summarizes the results.
The twenty-two respondents who answered “Yes” to question #11 were instructed to continue to answer questions #12-#20. However, respondents who answered “No” to question #11 were informed to skip to question #19. Therefore, results from questions #12-#18 were based upon 22 respondents.

Question #12 (Is teaching the skills of Web site evaluation to middle school students required as part of the school and/or library curriculum?) was the type of question that required a “Yes” or “No” response. Out of twenty-two SLM specialists, there were 7 (32%) “Yes” responses and 14 (64%) “No” responses for this question. In addition, one respondent skipped this question. Results are summarized in Table #7.

Table #7

<table>
<thead>
<tr>
<th>Choices</th>
<th>Value</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>7</td>
<td>32%</td>
</tr>
<tr>
<td>No</td>
<td>14</td>
<td>64%</td>
</tr>
<tr>
<td>Skipped question</td>
<td>1</td>
<td>5%</td>
</tr>
<tr>
<td>Total</td>
<td>22</td>
<td>101%</td>
</tr>
</tbody>
</table>

43
It is interesting to note that out of the original 61 SLM specialists surveyed, only 11% have Web site evaluation skills required as part of the school and/or library curriculum.

Some of the individuals who responded with a “No” answer included a comment. These comments are listed below (typed as appeared in the surveys):

- I do it because I’m also the middle school computer teacher.
- Not a district requirement, but I teach it.
- No, but I feel it is necessary for safety & successful results.
- Not specifically.
- It will be in the future.
- We, as of yet, don’t have a district curriculum. I also teach though.

For question #13 (From your experience, what relevant criteria do middle school students use to evaluate information found when searching the Internet for useful information?), the respondents were to check all the choices that they felt applied to their students. The choices were “None,” “Distinguish between fact & opinion,” “Compare & contrast information from different sites, sources, and search engines,” “Identify & detect bias,” and “Other.” Figure #6 summarizes the results of question #13.
The most relevant criteria that the SLM specialists felt that their students used to evaluate information found on the Internet was to “Compare & contrast information from different sites, sources, and search engines,” (10). Some of the comments that were described under “Other”(5) are listed below (typed exactly as they appeared in the surveys):

- Look for indicators: authority, date site was created & last updated, ability to e-mail questions, etc., ease of navigation.
- Note source for information.
- I’m not really sure.
- They must be taught these skills.
- Know from where information originates (.com, .edu, etc.).
Question #14 (Do you typically teach a lesson in which you show middle school students samples of inadequately designed Web sites as compared to well-designed?) was a “Yes” or “No” type of response question. There were 9 “Yes” responses and 13 “No” responses. Therefore, amongst the 22 SLM specialists, only 41% show their middle school students samples of inadequately designed Web sites as compared to well-designed. Out of the original 61 SLM surveyed, only 15% show their middle school students samples of inadequately designed Web sites as compared to well-designed Web sites.

Table #8

<table>
<thead>
<tr>
<th>Choices</th>
<th>Value</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>9</td>
<td>41%</td>
</tr>
<tr>
<td>No</td>
<td>13</td>
<td>59%</td>
</tr>
<tr>
<td>Total</td>
<td>22</td>
<td>100%</td>
</tr>
</tbody>
</table>

Three individuals wrote comments next to the “No” response. The comments are below (typed as appeared in the surveys):

- Used to, but no time for it this year.
- Not yet, my class is scheduled for March.
- No, but that is coming—it is very important.

Question #15 (When you teach Web site evaluation to middle school students, do you use checklists or rubrics?) was a “Yes” or “No” type of response question. There were 11 “Yes” responses (50%) and 10 “No” (45%) responses for this question.
Also, one respondent skipped this question. Table #9 summarizes question #15 results.

### Table #9

**Use of Checklists or Rubrics** (n=22)

<table>
<thead>
<tr>
<th>Choices</th>
<th>Value</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>11</td>
<td>50%</td>
</tr>
<tr>
<td>No</td>
<td>10</td>
<td>45%</td>
</tr>
<tr>
<td>Skipped question</td>
<td>1</td>
<td>5%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>22</strong></td>
<td><strong>100%</strong></td>
</tr>
</tbody>
</table>

If the respondents selected “Yes” for an answer, they were asked to describe the type of checklists or rubrics that they used with their students. The following comments were provided (typed as appeared in the surveys):

- (See #13) Look for indicators: authority, date site was created & last updated, ability to e-mail questions, etc., ease of navigation.
- List words to describe site such as below (question #16–Authority, Accuracy, Credibility, Authenticity, Currency, and Other).
- Checklist I received, in an evaluation class I took at Camden County Library.
- Time, who produced it.
- Joyce Valenza’s Power Tools.
- AABCC–hints to determine.
- I don’t use a formal checklist as of now, but as students are working on projects, I go over the terms in question #16– Authority, Accuracy, Credibility, Authenticity, Currency, and Other.
I use a checklist with all 5 of these criteria.

For question #16 (When you teach Web site evaluation, do you explain to the middle school students any of the following terms: Authority, Accuracy, Credibility, Authenticity, Currency, and Other.), the twenty-two respondents were to check as many terms that applied to their teaching of Web site evaluation. Figure #7 summarizes the results of question #16.

*Figure #7*

![Bar chart showing use of evaluative terminology for web site evaluation](image)

(Results do not total to 22 because respondents could check all categories that applied)

“Authority” was the most popular term selected (19) amongst the SLM specialists.

“Accuracy” (16), “Currency” (16), and “Authenticity” (15) were ranked very closely for being terms that were often explained during Web site evaluation. Finally, the term “Credibility” (11) was the least popular term.

Question #17 (Do you typically teach your middle school students the
importance of checking one source against another (print sources to electronic sources) for the validity of information presented?) was a “Yes” or “No” type of question. There were 17 (77%) “Yes” responses and 4 (18%) “No” responses for this question. One individual wrote his own answer, “Sometimes.” Table #10 summarizes the results of question #17.

Table #10
Checking Electronic to Print Sources (n=22)

<table>
<thead>
<tr>
<th>Choices</th>
<th>Value</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>17</td>
<td>77%</td>
</tr>
<tr>
<td>No</td>
<td>4</td>
<td>18%</td>
</tr>
<tr>
<td>Own answer</td>
<td>1</td>
<td>5%</td>
</tr>
<tr>
<td>Total</td>
<td>22</td>
<td>100%</td>
</tr>
</tbody>
</table>

Question #18 (How do you typically teach Web site evaluation?) had two choices for the SLM specialists to select from: “In isolation, without the assistance of teachers” and “Collaboratively, with teachers.” Table #11 summarizes the results of question #18.

Table #11
Teaching of Web Site Evaluation (n=22)

<table>
<thead>
<tr>
<th>Choices</th>
<th>Value</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>In isolation, without the assistance of teachers</td>
<td>14</td>
<td>64%</td>
</tr>
<tr>
<td>Collaboratively, with teachers</td>
<td>7</td>
<td>32%</td>
</tr>
<tr>
<td>Both</td>
<td>1</td>
<td>5%</td>
</tr>
<tr>
<td>Total</td>
<td>22</td>
<td>101%</td>
</tr>
</tbody>
</table>
Question #19 (Are you a New Jersey certified School Library Media Specialist?) was a question that all sixty-one SLM specialists answered. It was a “Yes” or “No” type of question. There were 52 (85%) “Yes” responses for this question which shows that the majority of middle school SLM specialists in Camden County are New Jersey certified School Library Media specialists. There were 9 (15%) that are not New Jersey certified SLM specialists. Out of these nine, two are working under the contingency of being “emergency” certified SLM specialists.

Table #12

<table>
<thead>
<tr>
<th>New Jersey Certified SLM Specialists (n=61)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Choices</td>
</tr>
<tr>
<td>---------</td>
</tr>
<tr>
<td>Yes</td>
</tr>
<tr>
<td>No</td>
</tr>
<tr>
<td>Total</td>
</tr>
</tbody>
</table>

Question #20 (If yes, how many years have you been a School Library Media Specialist?) had four categories for the SLM specialists to select from. The following were the choices: “Less than 5 years,” “5-10 years,” “11-15 years,” “More than 15 years.” The majority of SLM specialists (value: 20, 33%) had “More than 15 years” of experience. The results of question #20 are summarized in Figure #8.
Summary

The results of this survey confirmed that there was a lack of teaching, by SLM specialists, in the area of critical thinking skills and Web site evaluation at the middle school level in Camden County. Even though a majority of the SLM specialists felt that it was their responsibility to teach these skills, only a small portion actually covered the skills with their middle school students. Some of the SLM specialists indicated that there was a lack of time in their schedules, that the computer or classroom teacher covered these skills, or that these skills were in the planning stage to be integrated into the school curriculum.
Chapter V

SUMMARY AND CONCLUSIONS

Summary

Anyone who works with children must realize that children believe much of what they see, hear, and read, unless they are specifically told that the information is inaccurate. With the popularity and usage of the Internet in education, students need to be able to critically evaluate Web sites for authority, accuracy, credibility, authenticity, and currency.

The purpose of this study was to determine the degree to which SLM specialists, in Camden County, New Jersey were teaching middle school students the appropriate skills to become critical thinkers when using Web sites on the Internet, and what methods/search strategies these SLM specialists used to teach. This study attempted to investigate useful Internet search strategies that were being taught to middle school students by SLM specialists. In addition, it attempted to disclose whether or not SLM specialists were teaching the necessary critical thinking skills to students in order for them to properly evaluate Web sites to determine credibility and validity.

Conclusions

The results of this study supported some assumptions that the researcher made prior to conducting this survey. Originally, the researcher expected to find that SLM specialists may not be using the most effective search strategies in teaching middle
school students to locate and use needed information on the Internet. In addition, the researcher suspected that Web site evaluation would not be a top priority to many SLM specialists for various possible reasons such as: lack of appropriate electronic resources; lack of knowledge dealing with appropriate search strategies and methods of evaluation; time restraints; and not being part of the required curriculum. Through the results of this survey, it has been verified (Table #6) that only a small portion (36%, 22 of 61) of middle school SLM specialists in Camden County, New Jersey teach Web site evaluation to their students even though 51% strongly agreed and 34% agreed (for a total of 85%) that the teaching of critical thinking skills should be their responsibility as a professional school librarian (Figure #1). In addition, 75% (Table #2) of the computers in the media centers did have Internet accessibility and SLM specialists reported that 39% (Table #3) of the middle school students supposedly used the Internet on a weekly basis. With such a high percentage of computer accessibility and availability to use the Internet, one would think that it would be a necessary requirement to teach formal lessons about the World Wide Web and Web site evaluation skills. Unfortunately, only 49% (Table #4) of the SLM specialists surveyed stated that they teach formal lessons about the WWW, and only 11% (7 out of 61) (Table #7) stated that it was part of the required library curriculum.

Amongst the SLM specialists who taught about the Internet, the most popular method/search strategy used (Figure #4) was the “Use of various Search Engines” (25 of 30) and “How to Navigate” (22 of 30). Only a small portion, taught “Use of Hot Buttons,” (6 of 30) “Use of Meta-Search Engines,” (12 of 30) “Trial and Error,”
(3 of 30) and “Truncation” (4 of 30) which would be helpful strategies to teach students to narrow a search (Figure #4).

It was not surprising to hear that the SLM specialists surveyed felt that a large portion of middle school students perceived the information on the Internet (Figure #5) to be “Factual and Accurate” (24 of 30) and perceive the information to be “Current and Up-to-date” (21 of 30). Only a few SLM specialists thought their students perceived Web information to be “Questionable” (3 of 30) and/or “Inaccurate” (2 of 30). If students are so gullible to the information that they see and read on the Internet, it is even more crucial that critical thinking skills and Web site evaluation be integrated into the library curriculum.

**Importance of the Study**

In the twenty-first century, it is imperative that students learn how to acquire appropriate information that they need for personal reasons and educational requirements. Students who are information literate have an advantage over others because they have learned how to evaluate information critically and competently.

Students may know how to access and locate, interpret, and apply information. However, if they do not invest any time in evaluating the information they use, their efforts often result in a low-quality product. Worse, failure to evaluate may result in unfavorable outcomes due to bad decision making based on flawed information. (Fitzgerald, 2000, p.13)

Eventually, our students must independently apply critical thinking skills for personal
purposes in life. Therefore, it is essential that schools prepare students for this role.

SLM specialists must recognize their role in teaching the skills of Web site evaluation. Through the collaboration with classroom teachers, integration of projects across the curriculum, and regular use of technologies, SLM specialists can profoundly influence the critical thinking and evaluative skills of students. SLM specialists are the professionals in the best position to teach these skills because of their background experience and educational training.

The results of this study can be used to assist those SLM specialists who are not teaching critical thinking skills, and to offer valuable suggestions to those who may. In addition, common search strategies/methods of teaching that may be useful for SLM specialists are discussed.

**Recommendations for Further Study**

Students should be involved in inquiry projects from a very early age, and as often as possible in order to develop information literacy skills. School library media specialists need to be aware of how important and how complex the skill of Web site evaluation is since our educational future seems to be growing in the field of technology. As SLM specialists, we cannot assume that children know how to evaluate information. Students should understand that evaluation is a very difficult skill to master and that it does get easier by practicing this skill. Evaluation should be a skill that is incorporated into all research and inquiry projects at a very young age.

The topic of critical thinking skills and Web site evaluation is an area which needs to have further investigative studies conducted. There have been studies
conducted which analyzed the behavior and search methods of students at the elementary, middle, and high school level. However, little appears to be known about how children evaluate the information that they locate while searching on the Internet. Studies should be conducted on students' evaluative skills at the elementary, middle, and high school level.

Further studies need to be done to analyze and assess SLM specialists at the middle school level in other counties in New Jersey to present a more investigative analysis and comparison. Also, it would be very interesting to conduct a study on SLM specialists at the elementary, middle, and high school levels within the United States on the topic of teaching the appropriate critical thinking skills for navigating the Internet and Web site evaluation. A national survey of SLM specialists, taken from a more representative sample of school librarians, would yield more accurate results of the degree to which SLM specialists are teaching Web site evaluation, as well as a more accurate account of the search strategies/methods used to teach these skills.

Additional studies should be investigated on the role that SLM specialists play in developing information literacy skills; the methods of effective search strategies/methods that SLM specialists use to better plan searches as well as how to organize, structure, and manage the information they find on the Internet. Also, how SLM specialists integrate these skills into practical learning situations would be a valuable investigative study.

From an educational standpoint, if the Internet is to continue to be used as a credible resource, then children must learn how to challenge the quality of the information they confront. Evaluation is a skill that should be instilled in students over a
period of years. SLM specialists are in a unique position to ensure that critical thinking skills and Web site evaluation are developed in students because they often have contact with the same students over a period of several years. Teaching these skills should be an essential component of our responsibility as school librarians. The time is indeed upon us to rethink what and how we affect the lives of the children we teach. It is no longer sufficient to merely instruct students how to locate and retrieve information. SLM specialists need to assist them to develop the skills to information by questioning, challenging, analyzing, comparing, and synthesizing it. Critical thinking skills and Web site evaluation are essential skills that will assist our future citizens to be information savvy in a digital environment.
January 26, 2001

Dear School Library Media Specialist:

Students in the twenty-first century need to be able to think critically, rationally, and logically. Today, there are many more sources of information, both in print and electronic, available to students. It is becoming increasingly difficult to ensure that students can derive meaning from the massive amounts of information. It has become the central role of School Library Media Specialists to help provide the future leaders and citizens of our country with the necessary information literacy skills.

As a graduate student at Rowan University in the Program of School and Public Librarianship, I am conducting a research project under the supervision of Dr. Marilyn Shontz. The research serves as my Master’s thesis. The purpose of the research is to determine the degree to which School Library Media Specialists, in Camden County, New Jersey, are teaching middle school students the appropriate skills to become critical thinkers when using Web sites on the Internet, and what methods/search strategies these SLM Specialists teach. For this study, middle school students are defined as students only in fifth grade through eighth grade. Regardless of the grade levels in your school, you should complete my survey based on activities you directly conduct with your students in fifth, sixth, seventh and/or eighth grades only.

Please complete the enclosed questionnaire, and return it to me in the envelope provided by February 9, 2001. Participation in this survey is strictly voluntary, and all responses will be kept anonymous and confidential. You need not respond to all the questions; however, every answer you provide will help my research to reflect the current situation accurately.

If you have any questions or concerns regarding this survey, please contact me at (856) 694-4575 or by e-mail at Mburt95@aol.com. You can contact Dr. Marilyn Shontz at (856) 256-4500 Ext. 3858 or by e-mail at shontz@rowan.edu. Thank you for taking the time to assist me with this research and for your valuable input.

Sincerely,

Michele L. Burton
APPENDIX B
Questionnaire

Critical Thinking Skills & Web Site Evaluation

This study is designed to investigate the teaching of critical thinking skills and Web site evaluation for students in elementary and middle school. "Critical thinking skills" are the skills needed to analyze or separate material into its component parts, to synthesize information or put its parts together to create a new whole, and to evaluate or judge material for a given purpose. "Evaluation" refers to the appraising or judging of Web sites for accuracy, credibility, authenticity of content, authority, and currency of information. Please answer this questionnaire in reference to any 5th, 6th, 7th, and/or 8th grade students that you instruct.

Please mark your answers with a "✓" in the appropriate boxes.

1. Do you teach scheduled classes or mini lessons to 5th, 6th, 7th and/or 8th grade students.
   - Yes, students are scheduled for library classes on a fixed basis
   - Yes, as requested or needed by teachers on a flexible basis
   - Yes, I teach some lessons, but infrequently
   - No, it is not part of my job

2. Do you believe that teaching critical thinking skills is part of your responsibility as a School Library Media (SLM) specialist?
   - Strongly Agree
   - Agree
   - Neutral
   - Disagree
   - Strongly Disagree

3. How many computers are in your school media center for 5th, 6th, 7th, and/or 8th grade students to use?
   - Less than 5
   - Between 5-10
   - Between 11-15
   - Between 16-20
   - More than 20

4. Are all of the computers, for student (5th, 6th, 7th, and/or 8th) use, Internet accessible?
   - Yes
   - No
   If "No," What percentage of them have Internet Access? ______%

5. How often does the typical 5th, 6th, 7th, and/or 8th grade student get to use the Internet in your library media center?
   - On a weekly basis
   - Less than once a month
   - Once every two weeks
   - Other: __________________________
   - Once a month

6. Do you teach 5th, 6th, 7th, and/or 8th grade students formal lessons about the World Wide Web?
   - Yes
   - No
   If you answered "Yes" to question #6, then please answer questions #7- #11.
   If you answered "No" to question #6, then please skip to question #19.
7. When you teach 5th, 6th, 7th, and/or 8th grade students about the World Wide Web, how are the lessons taught? (Check all that apply)
   - By demonstration (with technical equipment)
   - By demonstration (without technical equipment)
   - Through the use of hands-on experience
   - With paper and pencil worksheets
   - Other (please describe):

8. What type of methods/search strategies do you use to teach 5th, 6th, 7th, and/or 8th grade students to locate useful information on the Internet? (Check all that apply)
   - How to navigate
   - Use of bookmarks
   - Use of hot buttons
   - Use of various search engines
   - Use of meta-search engines
   - Trial and error
   - Browsing
   - Combination of keywords
   - Boolean logic
   - Truncation
   - Other (please describe):

9. Do you require your 5th, 6th, 7th, and/or 8th grade students to locate information in print sources prior to using the Internet?  
   - Yes  
   - No

10. In your opinion, how do 5th, 6th, 7th, and/or 8th grade students perceive the information they find on the Internet? (Check all that apply)
    - Factual and accurate
    - Questionable
    - Inaccurate
    - Current and up-to-date
    - Outdated
    - Other (please describe):

11. Do you teach skills about Web site evaluation to your 5th, 6th, 7th and/or 8th grade students?  
    - Yes  
    - No

If you answered “Yes” to question #11, then please answer questions #12- #20.
If you answered “No,” please skip to question #19.
12. Is teaching the skills of Web site evaluation to 5th, 6th, 7th, and/or 8th grade students required as part of the school and/or library curriculum?
   □ Yes □ No

13. From your experience, what relevant criteria do 5th, 6th, 7th, and/or 8th grade students use to evaluate information found when searching the Internet for useful information?
   □ None
   □ Distinguish between fact & opinion
   □ Compare & contrast information from different sites, sources, and search engines
   □ Identify & detect bias
   □ Other (please describe): ____________________________

14. Do you typically teach a lesson in which you show 5th, 6th, 7th, and/or 8th grade students samples of inadequately designed Web sites as compared to well-designed?
   □ Yes □ No

15. When you teach Web site evaluation to 5th, 6th, 7th, and/or 8th grade students, do you use checklists or rubrics?
   □ Yes □ No

   If “Yes,” please describe the type of checklists or rubrics you use with your students.
   ______________________________________________________

16. When you teach Web site evaluation, do you explain to 5th, 6th, 7th, and/or 8th grade students any of the following terms: (Check all that apply).
   □ Authority □ Authenticity
   □ Accuracy □ Currency
   □ Credibility □ Other: ____________________________

17. Do you typically teach your 5th, 6th, 7th, and/or 8th grade students the importance of checking one source against another (print sources to electronic sources) for the validity of information presented?
   □ Yes □ No

18. How do you typically teach Web site evaluation?
   □ In isolation, without the assistance of teachers □ Collaboratively, with teachers
19. Are you a New Jersey certified School Library Media Specialist?
   - Yes
   - No

20. If yes, how many years have you been a School Library Media Specialist?
   - Less than 5 years
   - 5-10 years
   - 11-15 years
   - More than 15 years

Please return this questionnaire no later than March 9th by using the enclosed self-addressed envelope to:

   Michele L. Burton
   321 Blackwood Ave.
   Franklinville, NJ 08322

If you would like a copy of the results of this survey, please mail me a letter of interest, separate from this questionnaire. This will ensure your confidentiality for this survey. Please include a self-addressed envelope.

Thank you for taking the time to complete this questionnaire. It is greatly appreciated! © Michele L. Burton
APPENDIX C
February 9, 2001

Dear School Library Media Specialist:

About two weeks ago, you received a survey on Critical Thinking Skills & Web Site Evaluation. If you already completed and returned the survey, thank you for your answers and comments. If you have not yet completed the survey, I encourage you to fill out and return it to me in the envelope included with the survey as soon as possible. All responses will be kept anonymous and confidential.

Thank you for your time and cooperation to assist me with my research.

Sincerely,

Michele Burton
Graduate Student, School and Public Librarianship
Rowan University, New Jersey
APPENDIX D
Secondary Education / Foundations of Education

February 21, 2001

Dear School Library Media Specialist:

On January 26, 2001 you received a copy of a survey titled “Critical Thinking Skills & Web Site Evaluation.” I realize that you are a very busy professional; however, I desperately need your assistance! Please take a few minutes of your time to complete the enclosed survey. I hope that a second copy of the survey will help remind you to complete it.

As a graduate student at Rowan University in the Program of School and Public Librarianship, I am conducting a research project under the supervision of Dr. Marilyn Shontz. The research serves as my Master’s thesis. The purpose of the research is to determine the degree to which School Library Media Specialists (SLM), in Camden County, New Jersey, are teaching students the appropriate skills to become critical thinkers when using Web sites on the Internet, and what methods/search strategies these SLM Specialists teach. For this study, elementary and middle school students are defined as students only in fifth grade through eighth grade. Regardless of the grade levels in your school, you should complete my survey based on activities you directly conduct with your students in fifth, sixth, seventh and/or eighth grades only.

Please complete the enclosed questionnaire, and return it to me in the envelope provided by March 9, 2001. Participation in this survey is strictly voluntary, and all responses will be kept anonymous and confidential.

If you have any questions or concerns regarding this survey, please contact me at (856) 694-4575 or by e-mail at Mburt95@aol.com. You can contact Dr. Marilyn Shontz at (856) 256-4500 Ext. 3858 or by e-mail at shontz@rowan.edu. Thank you for taking the time to assist me with this research and for your valuable input.

Sincerely,

Michele L. Burton
REFERENCE LIST


