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Determining Standards for Sources of Free Information on the Internet for Inclusion in Academic Library Holdings by 2010

A dissertation

presented to

the faculty of the Department of Educational Leadership and Policy Analysis

East Tennessee State University

In partial fulfillment

of the requirements for the degree

Doctor of Education

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by

Douglas D. Cross

December 2002

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Dr. Russell Mays

Keywords: Information Retrieval—Evaluation, World Wide Web—Evaluation, Internet Content—Evaluation, Information Needs—Evaluation, Use Studies—Internet.

ABSTRACT

Determining Standards for Sources of Free Information on the Internet for Inclusion in Academic Library Holdings By 2010

by

Douglas D. Cross

The purpose of this study was to develop a consensus from a panel of experts composed of library deans/directors, reference librarians, and instructors with online teaching experience. The panel developed the methodology necessary for evaluating free sources of information on the Internet for inclusion in academic library holdings by the year 2010. The following areas were explored as they related to the forecast: 1) The changes in higher education institutions that will be necessary to prepare students to deal with free sources of information on the Internet; 2) The procedures that librarians need to develop and implement to ensure that free Internet materials will meet quality standards for inclusion in academic library holdings; and 3) The things that publishers of free sources of information on the Internet need to do to ensure that their materials will be considered for inclusion in academic library holdings.

The Delphi panel was composed of 24 members: eight library deans/directors, eight reference librarians, and eight instructors with online teaching experience. The members of the panel were selected from the community colleges of the Tennessee Board of Regents System.

In the first round of the study, panelists responded to 10 open-ended questions on an e-mail questionnaire dealing with free sources of information on the Internet. The narrative responses to the questions were specific and provided a basis on which to develop the Round 2 Questionnaire. In the second round of the Delphi study, panelists responded to 9 questions with 42 subparts.

The results of this study may be used to project the information needs of students as well as suggest strategies for publishers on the basis of the data collected in this study. A major finding of the study was the need for reliable information in documents on the Internet. The Delphi panel also listed the lack of permanence of Internet sites as a major reason librarians do not use free sources of information on the Internet. The Delphi panel recommended that educators assist students in dealing with Internet materials by teaching them how to use critical thinking skills.

INSTITUTIONAL REVIEW BOARD APPROVAL

This is to certify that the following study has been filed and approved by the Institutional Review Board of East Tennessee State University.

Title of Grant or Project Determining Standards for Sources of Free Information on the Internet for Inclusion in Academic Library Holdings by 2010

Principal Investigator Douglas D. Cross

Department Educational Leadership and Policy Analysis

Date Submitted _____

Institutional Review Board, Chair _____

DEDICATION

This study is dedicated to my mother, Cleo Cross, and my library mentor, Ms. Elise Barrett. Cleo Cross led her family by being the first to graduate from college and enter the teaching profession. Her character and fortitude throughout her life inspired others, particularly her children and grandchildren, to follow in her footsteps. Ms. Barrett encouraged me to enter the library profession and guided me during my career as a librarian. She served as my mentor and confidant for over three decades.

ACKNOWLEDGEMENTS

I would like to express my heartfelt appreciation to Dr. Terrence Tollefson, my committee chairperson. He has provided guidance, patience, encouragement, and served as mentor to me during my program. His assistance, guidance, and tutorage provided me with the stimulus needed to complete this degree and dissertation.

I would like to thank my committee members for their insight, guidance, wisdom, and assistance in completing this dissertation. Dr. Louise L. MacKay, Dr. Norma MacRae, and Dr. Russell Mays provided invaluable insight and expertise in the process of completing this dissertation.

Special recognition goes to my wife, Helen Cross, who has provided encouragement and support as I pursued my educational goals. She has my eternal love and appreciation.

A special thanks goes to my friends and colleagues Jim Damewood, Jackie Matthews, and Regina Hoskins who provided assistance, encouragement, and expertise in completing this dissertation.

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CHAPTER 1

INTRODUCTION

An assumption, bordering on a myth, has developed that the technology revolution will provide colleges with access to free information on the Internet, that libraries will no longer be needed, and that any academic information required by students or faculty will be immediately available via the Internet (Marcum, 2000). In his article entitled "Easy to Find but Not Necessarily True," Baule (1997) stated a second assumption: "Since it is on the Internet, it must be true" (p. 26). The problem is that these assumptions and myths are not supported by experience. In writing about the troubling myths regarding online information, Miller (1997) stated:

> [M]any myths about electronic information that are now widely accepted both in academic and society at large: All information is now available electronically. A related myth is just as dangerous: All information is available free somewhere on the World Wide Web, if only one is clever enough to find it. (p. A44)

The problem of growing misinformation is a result of the exponential growth of the information society. Traditional media sources such as newspapers, magazines, and books have always included some mistakes in spite of editing, but the Internet speeds the delivery and reach of information, often without any editing. In 1996, Pierre Salinger, press secretary to former President John F. Kennedy, provided an example. Salinger announced that he had proof that the tragic crash of TWA flight 800 was caused by a bomb. He later admitted that his source had been a document on the Internet, which had subsequently been debunked online by a leading aviation expert. In fact, the document had been based on an unsubstantiated rumor (Jurek, 1997). "What the Internet hucksters won't tell you is that the Internet is an ocean of unedited data, without any pretense of completeness. Lacking editors, reviewers or critics, the Internet has become a wasteland of unfiltered data" (Stoll, 1995, p. 41).

The growth of the Internet, in particular the World Wide Web, has made electronic publishing a reality. Anyone with a computer and an Internet connection can now write and

publish on the Internet. Traditional print-dominated libraries have long been held, if mistakenly, to be repositories of facts, truths, and honesty, whereas the Internet has often been associated with urban myths and legends (McMurdo, 1998).

From a practical perspective, the growth of information and the development of better electronic searching tools increase the possibility of finding informed answers to questions by using the Internet. Tillman (2001) said, "But, within the morass of networked data are both valuable nuggets and an incredible amount of junk" (p. 1). The Internet provides a mechanism for students, teachers, and researchers to search for information throughout the world. When using an academic library, the books, journals, and other resources have been evaluated by a variety of mechanisms established by professional librarians. The indexes or databases used to locate information sources are produced by professional or scholarly organizations that select peer-reviewed articles to be included in their publications. In traditional libraries, everything from the index to the actual information is evaluated by subject area scholars and professional librarians. However, when one uses the Internet, none of the evaluation criteria for traditional library sources generally applies. Information on the Internet is often not evaluated prior to its publication. The ease of publishing on the Web results in a wide variation in quality, ranging from the scholarly to the dubious (Kirk, 1996). "The Internet epitomizes the concept of caveat lector: Let the reader beware" (p. 1). Free information sources on the Internet are increasing at an incredible rate. The Internet is a global structure, which makes it unlikely that an individual or a nation could significantly change the chaotic state of flux that characterizes the Internet (Oliver, Wilkinson, & Bennett, 1999).

In the article, "Internet Keeping Most Reference Librarians Busier than Ever Before" (Mandak, 2000), the high expectations of the library patrons for information have been further increased by the Internet. Patrons call the library because they think the librarian can push a button on the computer keyboard and the information will be there. "In the old days people used to come in looking for information and say, 'I can't use the encyclopedia,' but nowadays people come in and say, 'My teacher says I have to find this on the Internet'" (p. D3). In "The Internet

as a Source of Academic Research Information: Findings of Two Pilot Studies" (Kibirige & Depalo, 2000), 91% of survey respondents indicated that they had used the Internet on a daily or weekly basis. Of that group, 84% indicated that search engines were the preferred tools for searching topical subjects on the Internet, as contrasted to online and CD-ROM databases. "Unfortunately, the average user seems to have the impression that the Internet is a be-all and almost a panacea to all information problems" (p. 12). In a study of veterinary medical students, the authors found that "[A]lmost 60% of the students reported using the Internet for locating current information" (Pelzer, Wiese, & Leysen, 1998, p. 346). Internet information sources are growing at an incredible rate; however, much of that information has not yet been evaluated. Educators need to evaluate Internet resources and teach their students to do the same (Oliver et al., 1999). Many students who primarily use the publicly accessible websites take them at face value without considering that these resources could be biased or inaccurate. "They have a kind of mystical faith that what they find on the net is true" (Block, 2001, p. 33).

It is also dangerous to assert – or assume – that all information is now online, free, and easy to use. Legislators, university presidents, and others hear the assertions that all information is free, may believe them, and may reduce library budgets. The results can be disastrous for higher education, robbing researchers of resources they need, and impoverishing all those who depend on future developments and breakthroughs in scholarship (Miller, 1997).

Statement of the Problem

According to Billings (1995), the United States of America has an information infrastructure called libraries. The role of the college library has been to select and provide the best information available. To ensure quality holdings of books, periodicals, reference materials, and bibliographies, such libraries have been evaluated by content experts, particularly college faculty members, using a comprehensive process. This process evolved over the centuries to the point that individuals engaging in research used such recommended sources as the *Education Index* to locate materials. The inclusion of sources in *Library Literature* and other indexes has

provided a degree of credibility because those publications and articles had been reviewed by peer groups composed of subject area experts.

These review procedures have been designed to build collections of high-quality materials. What is subsequently included in the library holdings is significant; however, just as important is the exclusion of materials that do not meet high standards of scholarship.

The introduction of the Internet in 1969 and the World Wide Web networking project in 1989 provided the mechanism for anyone to publish electronically on the Internet. Electronic publishing bypassed the standard review procedures for evaluating information. While some quality publications are published through the Internet, information on the Internet does not have to be evaluated prior to being published there.

Accordingly, educators, librarians, and publishers of Internet-based free materials need to develop the standards and procedures to ensure that free sources of high quality information on the Internet will be considered for inclusion in library holdings.

The purpose of this study was to develop a consensus from a panel of experts composed of library deans/directors, reference librarians, and instructors with online teaching experience. The panel developed a methodology appropriate for evaluating free sources of information on the Internet for inclusion in academic library holdings by the year 2010.

Research Questions

The following questions have guided this research:

Question 1. What changes in higher education institutions will be required to ensure that students will be prepared to deal with free information on the Internet by the year 2010?

Question 2. What procedures will librarians need to develop and implement to ensure that free Internet materials will meet quality standards for inclusion in academic library holdings by the year 2010?

Question 3. What can publishers of free sources of information on the Internet do to ensure that their materials will be considered for inclusion in academic library holdings by the year 2010?

Significance of the Study

The nation and the world are undergoing an information revolution. The Internet and access to computers have radically changed the ways that individuals acquire information. The importance of the Internet cannot be overstated; however, it contains questionable as well as accurate information. The Internet has now become established as a part of our educational system. The system cannot be deactivated so that the world can return to the former information structure. The Internet, online publishing, and computers are rapidly becoming universally available. Instead of trying to restrict access to the Internet, educators, librarians, and publishers need to work together to develop priorities and techniques to assist students and the public in their utilization of free sources of information on the Internet.

This study provides useful information to educators, librarians, and publishers regarding the nature and scope of the Internet that should assist them in their attempts to maximize information opportunities and challenges of the 21st century. The results of the study also may be used to project the information needs of students and to suggest strategies for publishers on the basis of a rational study and the analysis of the data collected in this study as well. This study could also support cooperative endeavors among educators, librarians, and publishers of free sources of information on the Internet. Curriculum revisions may also be developed and incorporated into the educational system in order to prepare students to effectively use information on the Internet.

Definitions of Terms

The following terms are defined for the purpose of this study:

1. Delphi technique involves anonymous forecasts made on two or more rounds by a group of independent heterogeneous experts who receive feedback between rounds. (Armstrong, 1999, p. 351)

2. Internet – An international network of computers originally designed by the U.S. Department of Defense to ensure continued communication abilities in the event of a catastrophe. The Internet today connects millions of individual users and organizations using telephone lines, fiber-optic cabling, Ethernet connections, and other means. The Internet is different from an internet (small i), which is any interconnected network of computers. (Walker & Taylor, 1998, p. 204)

3. Links – Hypermedia is accessed by means of a hypertext link (called simply a link), which is a special software pointer that points to the location of the computer at which the hypertext can be accessed. A link can make it possible for an Internet user in St. Louis, for example, to click on text or a picture that, by means of a special software, accesses and displays a document stored on a computer in San Francisco. (Fuller & Manning, 1999, p. 76)

4. Search engine – Computer programs designed to look through massive amounts of information in a database and retrieve a list of resources that match a query. (Rodrigues & Rodrigues, 2000, p. 171)

5. World Wide Web – WWW, or Web for short, was invented by Tim Berners-Lee in 1989. The HyperText Mark-up Language (HTML) makes it possible for one piece of information or idea to be linked to another by a link number. HTML is now the basis of all World Wide Web content. This standard enabled Web browser companies to agree on openly published protocols so that information remains available to all (Quittner, 1999).

6. Spider – A spider is an electronic software program that searches sites on the Internet for specific topics. This information is used to construct many publicly available Internet reference search engines such as the Google database (Untangling the Web, April 1, 1996).

7. URL – "The Uniform Resource Locator (URL) is used by a WWW browser (and gopher clients as well) to give the location and the means to get to a resource on the Internet". (Ackermann, 1995, p. 281)

Limitations of the Study

The following limitations apply to this study:

1. The members of the Delphi panel were chosen from library deans/directors, reference librarians, and instructors with online teaching experience who were employed in community colleges of the Tennessee Board of Regents System in the summer of 2002.
2. The methodology of this study limited the panel to a purposeful sample of 24 participants.
3. There were no face-to-face meetings of the panel.

Assumptions

The following assumptions are important to this study:

1. Members of the Delphi panel answered their questions candidly and to the best of their abilities.
2. The Delphi panel represented a cross-sectional sample of educators, librarians, library deans/directors, reference librarians, and instructors with online teaching experience.
3. Delphi panel members possessed levels of expertise necessary to reach consensus for developing the methodology necessary for evaluating free sources of information on the Internet.

Organization of the Study

The study is organized in the following manner:

Chapter 1 presents the introduction, statement of the problem, research questions, significance of the study, definitions of terms, limitations of the study, assumptions, and organization of the study.

Chapter 2 contains the review of related literature and research.

Chapter 3 describes the methodology and procedures that will be used to gather data for the study.

Chapter 4 presents the data, results, and findings for the first iteration.

Chapter 5 presents the data, results, and findings for the second iteration.

Chapter 6 includes conclusions and recommendations for future research and recommendations to improve practice.

CHAPTER 2

REVIEW OF THE RELATED LITERATURE

Internet History and Growth

The origin of the Internet can be traced to the Cold War era during the early 1960s. The U.S. Department of Defense needed a communication system that would enable them to issue orders to the armed forces in case all the traditional communication systems—television, radio, and telephone—were neutralized by a nuclear attack. The system had to be failsafe, even if most of the telephone lines and switching systems were disabled (Elmer-Dewitt, 1993).

This need required new technology and ways of combining existing technologies into an integrated system. In 1964, a researcher named Paul Baran developed a unique solution to the problem. He designed a decentralized computer communications system that had no central switcher or hub and was designed with the assumption that the connecting links were unreliable. Each message was electronically cut into small strips and placed into the equivalent of an envelope with the address of the sender and receiver. Such messages, termed "packets", were released and sent over the network along various routes. The messages were reassembled at each receiving unit. This concept was incorporated into the computers that came into use in universities and government laboratories in the 1960s and 1970s. This became the technological underpinning of the Internet (Elmer-Dewitt, 1993).

The Internet began in 1969, and initially involved only four computers (Smith & Gibbs, 1993). However, when the project was demonstrated in 1972, approximately 50 university and research facilities involved with military projects participated in the Advanced Research Projects Agency (ARPANET). The project was designed to demonstrate the feasibility of building networks to connect computers that were located over a wide geographical area. The system had to be able to send messages by any available route, rather than by one fixed route.

The second component of the Internet was made possible by the decision of the National Science Foundation to connect its five supercomputer systems. Using the Internet as its model

and incorporating the Transmission Control Protocol/Internet Protocol (TCP/IP), the National Science Foundation created the National Science Foundation's Network (NSFNET). This network established a system that allowed any computer on a subnetwork to access computers anywhere in the network. These two developments laid the foundation for the growth of the Internet (Smith & Gibbs, 1993).

> The Internet is a worldwide network of computer networks. It is comprised of thousands of separately administered networks of many sizes and types. Each of these networks is comprised of as many as tens of thousands of computers; the total number of individual users of the Internet is in the millions. This high level of connectivity fosters an unparalleled degree of communication, collaboration, resource sharing, and information access. (Ternnant, 1992, p. 1)

The United States government has played a major role in networking through the initiatives of various government agencies. A federal law passed in 1991, PL (102-194), served to advance this technology by promoting research to make supercomputers capable of handling and transmitting more data at even faster speeds. The increase in processing speed would be used by numerous universities. Four computers comprised the Internet in 1970 (Smith & Gibbs, 1993). This figure has risen to 109,574,429 hosts with registered IP addresses as of January 2001 (Zakon, 2001). From 1991 to 1996, the number of Internet users worldwide increased dramatically from 600,000 to 40 million. In 1999, approximately 150 million people logged on to the Internet on a weekly basis (Quittner, 1999). "An estimated 144 million Americans are plugged into cyberspace" (*The Web's Dark*, 2000, p. 36). A Nielsen//NetRatings report released in 2001 specified that the U.S. and Canada represented 41% of the 429 million people worldwide who had access to a computer (*Remember: It's a*, 2001).

The World Wide Web (WWW) was invented in 1989 by Tim Berners-Lee, a physicist who transformed the Internet from an esoteric domain used primarily by the academic community to a revolutionary medium for the 21st century (*The True Webmaster*, 1999). The WWW came online in 1991, and both the Internet and the WWW have experienced tremendous growth. The World Wide Web is a hypertext system that contains links to other texts, so that one can go from document to document as the researcher continues the exploration of a field of study

(Smith & Gibbs, 1993). The WWW was envisioned as an information system in which all information, regardless of format, could be accessed on any computer from anywhere in the world. “In effect, Mosaic has become a tour guide to cyberspace—a guide that speaks all the computer languages and knows the best sites” (Kehoe, 1994, p. 2). By following a trail of linked words that leads from one related subject to another, a hypertext document allows movement from place to place in an electronic document or to another related document. “The most fundamental technology underlying the Web is the Hypertext Transport Protocol, or HTTP, which is the set of rules governing communication between a browser, or client, and a web server” (Hayes, 1994, p. 4). This is one of the research tools that serves as an indexing system to access hypertext documents and media on the Internet (Kent, 1994). The World Wide Web's implementation in 1991 has been credited with bringing order and clarity to the chaos of cyberspace. It grew at an exponential rate, and at one time during this period of high growth, the number of users doubled every 53 days. In 1999, nearly 150 million people reportedly logged on to the Internet on a weekly basis (Quittner, 1999).

The use of the Internet has grown so rapidly and become so congested that the federal government and the Internet2 Consortium began to explore technology for the next generation of the Internet. The Abilene project was designed to test experimental technology on the Internet. Scientists demonstrated that “Data can rocket along this network at a speed of 2.4 billion bits, or gigabits, a second—1600 times faster than a T-1 line, or 45,000 times faster than a 56K modem” (*Warp Drive For*, 1999, p. 1).

For example, using the new technology, a 30-volume set of encyclopedias could be transmitted from one site to another remote site in less than a second. Former U.S. President Bill Clinton explained the rationale for the need for continuous improvement of the Internet in his 1998 State of the Union Address:

> We should enable all the world’s people to explore the far reaches of cyberspace. Think of this—the first time I made a State of the Union speech to you, only a handful of physicists used the World Wide Web. Literally, just a handful of people. Now, in schools, in libraries, homes and businesses, millions and millions of Americans surf the Net every

> day….I ask Congress to step up support for building the next generation Internet. It's getting kind of clogged, you know. And the next generation Internet will operate at speeds up to a thousand times faster than today. (*Warp Drive For*, 1999, p. 4)

Internet Users

Prior to the technology advances relating to the Internet, the library was an intimidating place for undergraduates. Professors and teachers routinely sent students to the library. The library was regarded as an academic resource that contained authoritative resources for academic study. Typically, members of the freshman class were given a tour and instructions on how to locate information. Students were generally on their own for their academic careers and only consulted librarians when they encountered problems or needed additional information. However, the era of accessing information via the traditional resources in paper format and limited access to electronic databases, subscribed to by libraries, has been rapidly replaced by computer access to the Internet. By 1999, students in secondary schools and colleges reportedly no longer depended exclusively on the campus library facility for information but used the Internet for a major part of their research for academically related projects on their own initiatives (Smith & Phillips, 1999). The online digital environment has provided students with tools needed to engage in global learning and research. However, "Few research studies have examined youth and their information seeking on the Internet" (Dresang, 1999, p. 1123). Marchionini (1989) had previously noted, "Only a few studies have focused on the online searching behavior of children and young adults" (p. 54). In 2001, 429 million people had Internet access worldwide and 41% of those users lived in the United States or Canada (*Remember: It's a,* 2001). Authors of a survey noted that the art of estimating the number of worldwide users of the Internet is an inexact one. An educated estimate of 407.1 million worldwide users was listed as of November 2000 (How Many Online, 2001). On August 31, 2001, a Nielsen//NetRatings report indicated that there were 459 million people with Internet access in the 30 countries studied by Nielsen (Nielsen//NetRatings: Global, 2001). Authors of a Jupiter research study predicted that in 2005 there would be 47 million children and teenagers in

the United States using the Internet (Internet News: Web Vital, 2001). The results of a survey by the Internet Software Consortium completed in January 2000 showed that the Internet consisted of over 72 million interconnected computers (hosts). The annual connectivity growth rate was 63% in that study. Based on the Internet Software Consortium's survey calculation, it was projected that in the year 2000 the 100 million host level would be reached and the 1 billion host level was projected for 2005. The expansion rate of the Internet was calculated at 69 new hosts per minute (Rutkowski, 2000).

Analysis of a survey conducted by Greenfield Online revealed that 78% of college students had been accessing the Internet for at least three years, and 90% of those students spent three hours a day online (Gannett News Service, 2001).

In 1999, the publicly indexable pages on the Internet were estimated at approximately 800 million pages. This was more than double the previous estimate of 320 million pages in 1997 (Laurence & Giles, 1999). According to Goldsborough (2001), however, the research firm Cyveillance placed the number of pages on the Web at 3 billion. Sauers (2001) estimated that there were 2 billion pages on the Internet at the end of the year 2000, which was more than double the number of pages on the Internet in 1999. "Add to this the statistic that there are three new pages appearing on the Internet every second and you can just imagine how fast this collection is growing" (p. 6). Bright Planet released a study in 2000 estimating that the WWW was 500 times larger than the areas covered by standard search engines. The company estimated that there were 550 billion documents and that search engines indexed a total of 1 billion pages (*Study Finds Web*, 2000). The amount of information varies widely regarding the estimated number of pages available on the Internet because of varying methodologies, terminology, password-protected pages and non-HTML documents that may or may not be included (Dahn, 2000). As the 21st century began, the quantity of data potentially available to use in the decision-making process were projected to possibly overwhelm individuals and corporate users. The information overload was a drawback as all data in various formats are needed to ensure that optimum decisions are made. One possible solution to this problem is the development of

institutional websites that could guide users to the links for which the website is designed (Kibirige, 1999).

Analysis of data from the U.S. Department of Education reveals that 98% of all public schools in the United States have access to the Internet. "Internet penetration in U.S. public schools has grown from 35% in 1994, 50% in 1996, 78% in 1998, and 95% last year" (*Almost all U.S.*, 2001, p. 1). Students were monitored by their teachers 94% of the time when they used the Internet at school. In addition to teacher supervision, 74% of schools had some type of blocking or filtering software (*Almost all U.S.*, 2001). Fifty percent of the respondents to a 1998 AT&T survey said "Yes" to the following statement: "The Internet has become a necessary tool for success in school." Seventy-seven percent of the people responding indicated that use of the Internet had improved grades in school and college. "Sixty-eight percent of parents, 69% of students, and 69% of teachers said that they had personally witnessed grades improve as a result of the Internet" (*AT&T: Net Improves*, 1998, p. 21). According to a survey by the U.S. National School Boards Foundation, the Internet improved student's attitudes about attending school. Almost half of the children in homes with Internet connections reportedly went online for schoolwork. Thirty-seven percent of the parents indicated that their children had spent less time watching television since they were introduced to the Internet (*National School Boards*, 2000). Seventeen million teenagers between the ages of 12 and 17 were estimated to use the Internet. Learning to use the Internet was listed as essential by 55% of parents in the United States. Another 40% of parents indicated that learning how to use the Internet is important (*Pew Internet & American*, 2001). In a study on the Internet searching behavior of high school students, participants were asked a question related to methods to improve the Web. The students indicated they wanted to make it faster and shorten URLs. However, one student..."lamented the large amount of useless information on the Web. The student suggested that some central authority should develop standards or guidelines by which all Web pages would be evaluated and approved before publication online" (Fidel et al., 1999, p. 33). Two findings from a study involving the search habits of high school students have implications for producers of Internet

materials. The first finding indicated that the initial "home" page should contain all of the critical information concerning the site. This is necessary because students often do not read beyond the first screen. The second finding revealed that students often rely on information in graphical forms. These findings suggest that producers of documents on the Internet need to adjust the designs of their sites to enhance the usefulness and ability of their sites to attract users (Fidel et al., 1999). However, an article entitled "*The Web's Dark Side*" emphasized that allowing children to use the Internet without supervision..."is like dropping them off in the worst part of the city in the middle of a gang war and saying, 'I'll pick you up later'" (*The Web's Dark*, 2000, p. 38).

In contrast to high school students, a Harris Interactive news release in May of 2001 revealed that college seniors were the most active Internet users as a group in the United States. College seniors reportedly used the Internet an average of 11 hours a week, which was almost double the time that they had used the Internet as freshmen. Nine out of 10 seniors revealed that they used electronic e-mail daily or frequently, versus 13% who said they sent hand-written letters. Over half of college seniors reported having used Monster.Com and other employment recruiting sites. Eighty percent used online sources to obtain news and information (*Harris Interactive: Soon*, 2001). However, findings of a study conducted at Rensselaer Polytechnic Institute in Massachusetts replicated similar studies indicating that nearly 10% of American college students spent so much time on the Internet that they had placed their academic careers in jeopardy. This study involved 1,300 students in the survey. Eight percent of those students reportedly had spent 400 minutes, or nearly 7 hours daily, on the Internet and were classified as Internet-dependent. Students who spent 70 minutes or less a day on the Internet were classified as non-Internet dependent. On a gender basis, both sexes were about equally represented in the study; however, 88% of the students classified as Internet-dependent were males majoring in hard sciences, particularly computer science. When asked to respond to the statement, "My grades have declined because I have been putting more time into Internet related activities" (p. 4), 28% indicated that the statement applied to them. More than 10% of the Internet-dependent

group indicated that they had dropped a class in order to spend more time on the Internet (Study Renews Debate, 2000). Provost W. Richard Ott at Alfred State College in New York, in his remarks to the press, stated that, "We've put all this money in for an educational tool, and some students are using it for self-destruction" (p. 5).

According to a January 2000 study by Forester Research, Inc. in Cambridge, Massachusetts, 16-to-22 year old Internet users were likely to: "send and receive email (96%), access instant messaging (69%), play games (59%), download music (54%), read news (52%), and conduct job searches (42%)" (Substance Over Style, 2000, p. 1).

Internet Use

The Internet is having a major impact on libraries. However, opinions about the nature and magnitude vary from the elimination of the library to the library's being equipped with electronic equipment that will be used to provide services. The elimination of the library on a college campus was described by Hafner (1995) in "Wiring the Ivory Tower." When California State University officials designed plans for their newest campus, which opened in the fall of 1995 at the Fort Ord site in Monterey Bay, they did not include plans for a new library. They designated the funds that would have been spent on the building to house a new library for acquiring technology to enable the access of information via computer. A library was not built for the new campus; however, the university is connected electronically to computers to enable faculty members and students to access information resources for faculty and students.

Other higher education institutions have been trying different approaches when it comes to existing libraries. At the University of Texas at Austin, 85,000 books were displaced from the existing stacks. Using funds from a $150 per-student computer fee, 200 microcomputers were placed in the modified stacks that once held books. Other schools wired dormitories to provide access to the Internet via the campus network. At the University of Michigan, students could remain in their residence hall rooms and access online card catalogs, reserve a book, and determine which of the 27 libraries that constitute the University of Michigan's library network

has the book (Hafner, 1995). Brevard Community College in Cocoa, Florida, which spent $14 million for the construction of a new library, is being lauded for its use of technology. There are 1,600 computer ports in the library building which has been described as a bridge between the print-dominated library of the past and the digitized library of the future. The library will have 120 state-of-the-art terminals for students. These terminals will have the software and network capability to bring in multi-media, including CD-ROM, video, and sound for teleconferencing. The goal of the library is to ensure that their students are "information-literate" so that they can transfer to a four-year institution or become lifelong learners (Bourque, 1995).

Stern (1997) expressed a concern that "an almost obsessive emphasis on cyberspace is really the solution for providing a proper education in the 21st century" (p. 29). The influence of the Internet on the educational system cannot be overestimated, because it enables educators to provide simultaneous learning opportunities any place at any time where access to a computer is available. However, the Internet too often provides access to unreliable information. Students have not learned to evaluate information from documents on the Internet. All students will have to be taught to deal with these technological problems in the 21st century. Teachers and students need to develop critical thinking skills, and…"if cyberspace is not the final answer to the problems of education in the next century, it is considered an indispensable vehicle on the pathway to tomorrow" (p. 30). Mangan (2001) pointed out that for many years, universities and colleges spent hundreds of thousands of dollars to wire their campuses, including classrooms. However, many colleges and universities, including business schools with graduate programs, have underestimated the "addictive" powers of the Internet. Access to the Internet has become a nuisance in many classes to the point where in some classrooms, switches have been installed to disable Internet connections to the classroom. Some teachers have indicated that disabling the Internet connection enabled them to regain the attention of students so they could teach. With the advances in wireless technology; however, the proliferation of laptops and devices such as palm pilots, it may be almost impossible to block Internet access to students in a classroom.

"Libraries are under attack as never before, and none more than the academic library" (Gorman, 1994, p. 130). Our learners expect quality information in a short time period. The potential for student frustration is high as students become aware of the proliferation of information on the Internet at millions of sites. However, traditional selection and collection development procedures of libraries have not been applied to the online information. Students will need assistance from librarians in the form of the identification, evaluation, and use of relevant sites on the Internet as academic resources (Green, 2000).

Perry (1995) undertook a study in the spring of 1994 to identify the different types of Internet users. The accuracy and verifiability of the information retrieved from documents on the Internet was considered by participants in Perry's study. Participants indicated that they wanted standardization of entries and basic bibliographical information (Perry, 1995).

The Internet may be more likely to generate full-text articles, in contrast with conventional databases, which are associated with less desirable citations. In many cases, a user with persistence can retrieve full-text information, which has provided the equivalent of one-stop shopping on the Internet. This may partially explain the tendency for most users to explore the Internet first. However, a searcher must wade through an incredible amount of useless verbiage in the attempt to gather information from a multitude of sites on the Internet (Kibirige & Depalo, 2000). The high school students involved in a study conducted by Fidel et al. (1999) indicated that information on the Internet was more up-to-date than information in books. The students reasoned that it was easier to update a document on the Internet than to publish a new book.

Critical thinking skills are necessary for undergraduate students to succeed in college-level academic assignments, as well as in the job market. The need is documented in the 1992 United States Government report from the Department of Labor and the Secretary's Commission on Achieving Necessary Skills (SCANS) entitled *Skills and Tasks for Jobs*: *A SCANS Report for America 2000*. The library can assist students in developing critical and learning skills needed for information competency. The *SCANS Report for America 2000* concludes that employees need to be able to "acquire and evaluate information, organize and maintain information,

interpret and communicate information, and use computers to process information (The Secretary's Commission, 1992). This challenge is particularly difficult for an incoming freshman student inundated with data both in print and electronic formats. The traditional print sources can be judged in part based upon the editor or name of the publisher or author, but the Internet has become a more popular choice for research among students and has developed a reputation for one-stop shopping and information, in full-text format, available at one's fingertips. Freshman students reportedly have not had the instruction that would enable them to discern what is reliable and appropriate (Kibirige & Depalo, 2000). Mr. Gary Knell, chief executive officer of the Children's Television Network, which financed the study of how American families use the Internet stated,

> The Internet itself is neither good nor bad. It has potential for great reward and great risk.…To skeptics about the use of the Internet in education, he added: Stopping the Internet is not going to happen. It's up to us to create great content and move forward. (Trotter, 2000, p. 6)

Need for Evaluating Information on the Internet

A former president of the United States, Bill Clinton, once called the Internet the Information Highway. The problem is that most people think that information means facts. Therefore, if a document is on the Internet/Information Highway, it is assumed to be factual (Safford, 1996). "Indeed, a strength (but also, some would have it, a weakness) of the Internet is that almost anyone can put anything online" (Brandt, 1996, p. 1). Kovacs (1999) used the terms "stuff" and "good stuff" to describe the quality of information on the Internet. "Most information on the Internet is just 'stuff.' Good stuff is any of the information that is relevant to the information needs of your client, and meets basic quality-of-information standards" (p. 17). The Internet contains valuable information that is lost in the vast mass of documents that are self-promotional, trivial, and sources of misinformation. One simple search can result in 10,000 citations that could take a day or longer to sift through in the search for useful information. Even

with a fast Internet connection, separating the wheat from the chaff is a time-consuming process (Vendetti, 1997).

> It is important to remember that anyone can publish on the World Wide Web. This means that the quality of the information you find on the Web must be evaluated very carefully. For a journal article to be published it usually goes through some peer review before it is accepted for publication. With a book you can judge quality by the reputation of the publisher. I would be more likely to trust information from O'Reilly & Associates (a well reputed computer science company) than a small publisher I may never have heard of. (Westera, 1996, p. 1)

The ease of editing an Internet document and republishing the document on a bogus site contributes to the problem of misinformation on the Internet. If, for example, one wanted to print a book based on an outrageous falsehood, it would be very expensive. The author would have to locate a publisher who would cooperate and secure financing for the project. However, on the Internet there is very little cost associated with publishing the project, particularly when compared with the traditional cost of publishing in paper format (Kelley, 1999).

> After all, anyone with an Internet service provider and a quarter to call it can set up a Web page that looks as official as a 1040 form without the quality control that used to come from editors, fact checkers, and large publishing houses. There are few barriers to bad information on line. (p. 4)

December (1994) asserted that even the best Web spiders would not be effective if the Internet continues to be flooded with poor quality, redundant, and incorrect information. This flood of raw information has not been filtered by peer review or the collaborative efforts of the traditional publishing industry. In addition to the need for better browser software, we need to develop skills and procedures to select and present information on the Internet. A major problem involved in evaluating information on the Internet is that often search engines link to ephemeral pages. These documents often simply move, vanish, or undergo changes after the database was completed. It is important to note that most databases are not updated daily (Notess, 1998). Over 50,000 books are published annually in the United States and over 400,000 journals are published yearly on a worldwide basis. In comparison, the number of World Wide Web sites

now number in the millions. This is an avalanche of information that is available for public use (Achenbach, 1999). Kelley (1999) stated:

> On the World Wide Web, straight facts can be hard to find. After plowing through dense and recalcitrant search engines that offer more sites than you can point a mouse at, after enduring delays, lost links and dead ends and arriving at a site that looks just right, Web surfers must deal with uncertainty: Is the information true, unbiased and free of hidden sales pitches. (p. 1)

Spoofs can fool the Web users. For example, someone posted a fictitious story about sunny beaches, an underground city, and whale watching on the Minnesota River in winter on the Mankato University website. A disclaimer was also posted on the site. However, the town received a lot of negative publicity because of the website. According to Maureen Gustafson, head of the Mankato Area Chamber Convention Bureau "There was a guy who drove here from Canada with his son who was really ticked and another one from Kansas" (p. 3).

Stoll (1995) pointed out that on the Internet a person cannot readily discern what is worth reading or ignoring. For example, in searching for the date of the Battle of Trafalgar on the Internet, he uncovered hundreds of files, but none answered his question. However, he did find a biography prepared by a student in the 8th grade and a photograph of a monument in London. Kapoun (1998) reported that the college faculty members at Southwest State University were demanding more information from Internet resources in their courses. In practice, some faculty members excluded traditional print resources in preference for Internet resources. However, Zumalt and Pasicznyuk (1999) reported in an experiment that reference librarians were able to answer 61% of 209 patron-generated questions using publicly accessible sources on the Internet. In terms of reference services alone, the reference librarians concluded that the Internet was worth the investment, particularly for smaller libraries. Bates (1997) stated:

> As an online researcher, I find distressing the lack of standardization, the unreliability of information, and the disappearance of useful information as an Internet subscriber drops her account or changes her email address. Even the best Internet search engines regularly retrieve pointers to files that no longer exist, directories that have been renamed or deleted, or sites that are no longer available. These are times when I appreciate the peer-evaluation, indexing, and organization of information available in a professional online service. (p. 52)

Bao (1998) discovered in a survey of Internet users at Seton Hall University that the Internet users encounter three major problems; they "do not find information needed (387, or 49%), no full-text information can be cited for academic study and/or research (344, or 44%), and there are too many hits (302, or 39%) when searching for information" (p. 539).

Jones (1998) identified information overload as an Internet problem when he stated:

> More information does not necessarily lead to a better or more satisfying life. Nor does it even lead to a more "knowledgeable" existence. Just as too much food can lead to gluttony, or as with any other substance abuse, a surfeit of information won't make us "smarter." Information overload can make us anxious. It has been argued that drowning ourselves in information is actually crippling in that we become incapable of differentiating the meaningful from the meaningless; thus any true value is lost. (p. 3)

King (1997) identified the need for evaluation of sources on the Internet when he asserted:

> In the case of Internet sources, no pre-evaluation can be assumed. Since end-user searching is here to stay, it is necessary to teach researchers traditional evaluation techniques in a way that would make them useful and relevant to virtual media. (p. 53)

Maxymuk (2001) acknowledged that the Web was a great advance in the Information Age. Governments, particularly the United States federal government, used the Internet to reduce printing costs and reach a broader audience. However, the author emphasized the good and bad components of information on the Internet when he stated:

> The good news was that so much information was being presented freely to the public and still is. The bad news is that there were more being served than anyone could easily digest and there still is…Ultimately, we are all trying to establish some sort of bibliographic control over the flood of electronic government information. (p. xviii)

Katz (1997) emphasized that the computer with its enormous, expandable storage capacity, could be considered both a wonder and a curse.

> The ability to store data without much evaluation can result in piling up more and more junk, but among the data there may be a gem or two. The problem is finding ways to discover the jewels in the garbage. Here, the reference librarian becomes the trained magician to extract the desired data. (p. 33)

Black (1999) pointed out that students need to be trained in the basics of scholarly research when he declared:

> The range of scholarly accomplishment is vast, and the level to which students are expected to achieve varies. But at all levels, scholarship requires basic factual knowledge and familiarity with themes, methods, and important lines of inquiry. Students do not always readily buy into the scholarly frame of reference, and when they do, it can take more than a few semesters of encouragement for the message to sink in. Many students are not easily enculturated, and tend to resist accepting the workload that scholarship requires. The time that must be invested in approaching an issue in a scholarly fashion, including gaining sufficient background knowledge to meaningfully evaluate information, is far from trivial. (p. 19)

According to Kibirige and Depalo (2000), the student's ability to locate academically related information on the Internet was put to the test when attempting to complete a term paper. The entire process of writing a college term paper may be a new experience involving resources and procedures that students may not have encountered in high school. Traditionally, students would approach a librarian who would assist them in groups and as individuals in the intricacies of locating information for term papers. This process has been ignored by students who have been mesmerized by their ability to access information via computer, thereby circumventing traditional sources in the library. Unless the student is well versed in searching the Internet, this may result in hours of unproductive roaming on the Internet without locating any relevant information. Much of the information needed by students is proprietary and available to students only through information databases subscribed to by the library. The use of search engines to locate information needed for academic programs may lead to frustration on the part of a student. This type of situation could be avoided through the use of information specialists to conduct library orientation programs and work individually with students. Royce (1999) pointed out that anyone could publish anything on the Internet because it has no editorial board. When information is located on the Internet, there may be no author or publisher listed. We have no way to check the credentials of the publishers. We must teach students to verify the academic credibility of their sources.

> We must work to make sure they are very aware of the pitfalls and the shortcomings, we must never lower our standards of critical thinking and awareness. This has always been so, regardless of the medium which carries our information. In the age of infoglut, it is more important than ever. (p. 126)

Fidel et al. (1999), in their study involving high school students, discovered that students constantly had sought advice from teachers, classmates, librarians, or whomever was closest to them whenever they had problems locating information on the Internet. However, "The students explained that their first choice for help was the librarian" (p. 24). Two pilot studies dealing with the Internet as a source of academic information revealed that an overwhelming majority of users employed the search engine for locating information on the Internet versus online databases provided by libraries. Ninety-one percent of the subjects, who used the Internet at least once a week, including daily users, preferred the search engines as a means to locate information. Those individuals, who represented 45% of the total number of users and only used the Internet on a weekly basis, had a higher correlation with use of online databases provided by libraries. Daily users of the Internet had higher correlations with use of search engines (Kibirige & Depalo, 2000). Peter Mayer, former head of Penguin, now publisher of Overlook Press, told a roomful of librarians:

> I fear we may well wind up in a situation in which most of the world's literature and information is theoretically accessible from the home or the office but with much of it barely usable - or even findable. It is much harder to find electronically available information, said Mayer, than it was to work through the shelves and stacks in the library (as he did as a student). (Fialkoff, 2001, p. 2)

Nancy Kranich, president of the American Librarian Association, and Pat Schroeder, president of the Association of American Publishers, expressed their concerns that users were not able to locate information they needed within the electronic morass of documents on the Internet and that if they were successful, they would still be unable to judge the authority of the articles on the Internet (Fialkoff, 2001). The study, "The Internet as a Source of Academic Research Information: Findings of Two Pilot Studies," identified several implications for information professionals. The Internet user needs to be re-educated concerning the reality of the Internet. First, search engines only index one half or less of the available sites on the Internet. Second, a great deal of factually inaccurate information, which can be mistaken for reliable sources, is located on the Internet due to the ease of self-publishing. Third, much of the information on the

Internet is available for unspecified and often short periods of time and may not reappear. Fourth, information professionals need to stress the academic online databases that libraries provide for students. And finally, information professionals need to begin library instructional programs at the freshman level and provide them in a systematic methodology through the academic careers of students (Kibirige & Depalo, 2000).

A Duke University undergraduate student in a study conducted by Lubans (1998) stated:

> As a college student I can hardly remember life before I was born into the world of e-mail. I use electronic mail and the World Wide Web to communicate with family and friends…, to ask questions of professors, to gather information about current events and to learn about topics ranging from Shakespeare to strawberry Pop-Tarts. (p. 1)

Faculty and librarians have differing views on students using the Internet without guidance to locate information for academic use. However,

> What seems to be a majority, claim that there are too many unvalidated, unconventional, and unstable sites on the Internet for academic purposes and that students lack the ability to discern what is good and bad on the cyber frontier. (p. 2)

Stover (2000) conducted a qualitative study using library list serves to gather data concerning information professionals and technology. The survey consisted of three specific questions.

Question 1. "Where would you go first (generally speaking) to answer a fact based question: value-added (and subscription-based) databases (like Lexis-Nexis), or one of the search engines on the Internet (such as Infoseek or AltaVista), or a reference book or journal? Why? Forty-six percent indicated that the question was ambiguous. One individual stated:

> It depends on the type of question. If it's very general, and info is needed immediately, I would open a book. If they wanted me to dig deeper, I'd run a search in a database like Medline or PsycINFO. If they still wanted more, I'd search the Internet (via Alta Vista or Hotbot). (p. 41)

However, 32% of the librarians would start with print resources as their first choice. A preference for electronic resources as their first choice was indicated by 22% of the respondents. Within this group, most respondents preferred databases over generic search engines. However, a significant minority indicated that they would go to Internet resources as their first choice.

Question 2. “Do the majority of your patrons and/or clients seem to have an appreciation for the distinction between authoritative, high quality information versus ephemeral unfiltered information (such as can be found on the Internet)” (p. 41)? Twenty-nine percent of information professionals responded positively to this question. One librarian said that, “Our patrons are researchers and know the difference [between filtered and unfiltered information]” (p. 41). However, the majority of information professionals (63%) who responded to this question gave a negative response. One of those responding wrote, “From my observation, many people do not understand the distinction. They think that if a fact is published, whether in an authoritative source or undocumented on the Internet, it is actual fact” (p. 42).

Question 3. “Has the Web become a useful conduit of communication for you? Or, is it more like the oft-used metaphor of ‘drinking from a fire hose’? Can you think of a recent experience that would illustrate the answer” (p. 43)? A high number of respondents (73%) gave a positive response to the question. Only 17% were ambivalent concerning the Internet. These respondents indicated the Web was both helpful and overwhelming.

In conclusion, information professionals indicated that they did not have a rigid system of tools to use in answering reference questions. The information sources and their hierarchy of use would vary according to the reference question. As a group, information professionals were concerned that their patrons did not distinguish between high quality information resources, such as printed materials and library-provided academic databases, and unfiltered information located on the Internet. Information professionals as a group have found, however, that the Internet is a useful conduit of information. Stover (2000) indicated that in a study, 63% of librarians indicated that their patrons would not be able to judge whether information on the Internet was authoritative.

Lubans (1998) conducted a study in 1997-98 that included male and female undergraduates at Duke University to discover how freshman students were using the Internet for academic purposes.

When students were asked how the library could assist their use of the Web, they responded by making three major responses. Students want the library to provide reliable, live links between the library's catalog and selected Web resources. This response received a combined ranking of 77% by combining scores of 4 and 5 on the rating scale. Students want the library to rate the various search engines, noting the relative strengths and weaknesses of each. Over 70% ranked their need at 4 or 5 for this proposed library service. Students want the library to notify them regularly, via e-mail, of the best new sites in subject areas. Fifty-five percent of students in the survey wanted this service, as indicated by the combined rankings of 4 and 5 on the scale.

Lubans (1999) explored key questions based on student library surveys at Duke University in 1997, 1998, and 1999. When the students were asked how they learned to locate information on the Internet, they listed three primary methods. "They rated surfing as the most important influence. Next came learning from classmates, followed by learning from library staff" (p. 3). When asked what students want from librarians, they listed the top three services in order of priority: "live links in a catalog, best site lists by subject, and search engine ratings" (p. 4).

Students did not make a distinction between materials a library owns versus materials accessible through links to the Internet listed on the library home page. Live links in the card catalog were listed as the number-one choice. One student in a focus group indicated that if a live link to the Internet was in the catalog, it was a good source. Students expressed a strong desire for information relating to search engines, particularly information as to which were the best and under what conditions one should use specific search engines.

Lubans (1999) indicated that students need assistance with their approach to research when he stated:

> We have a disciplined rational approach to research that most students lack. The key is basing our help on what students want and need. Instead of just doing what we've always done, let's experiment with new ways to serve kids in the new world of the Internet. (p. 5)

Lubans (2000) conducted his fourth Internet-use study of college juniors. The study focused on all aspects of student Internet use instead of limiting the study exclusively to students' academic use of the Internet. Lubans emphasized that the library's Web page should be designed to attract students by incorporating features students use on the Internet.

As a result of four Internet surveys of students at Duke University, Lubans stated that:

> Internet access to the library is but one facet of the multiple approaches students now use to learn. What may have been an exclusive role for the library as information gatekeepers is now shared with bookmarked news and subject sites, search engines and other Internet sources. Students use the Internet independently, without intermediation. (p. 1)

In the summary and conclusion of the survey, Loite (2000) stated, "It verifies that our students are heavy users of the Internet and that they generally exercise critical skills in evaluating the sources they find" (p. 13). In a survey of student users at Emory and Henry College, women (31%) indicated that they used the Internet for educational purposes versus men (12%). However, when citing an Internet source in a school paper, 59% of men versus 33% of women indicated they had used an Internet-based resource. Men used the Internet for recreation 28% of the time they spent on the Internet versus 12% for women (Mitchell, F., 1998).

The need for the library to change was emphasized by Creighton and Jensen (2001) when they stated, "The tools change. The communities change. The library must make a sincere effort to keep up with these changes and reinvent itself perpetually" (p. 57).

Evaluating Information on the Internet

> To the earliest literate people, the ability to access knowledge means first collecting under one roof, information in some kind of physical format. Four of the most successful formats throughout history have been clay tablets, papyrus rolls, parchment and paper codices. (Young, 1997, p. 2)

The early libraries were considered to be storehouses of knowledge and the book was the primary storage medium for knowledge. Dewey (1876) stated that:

> From the first, libraries have commanded great respect, and much has been written of their priceless worth; but the opinion has been largely prevalent that a librarian was a keeper only, and has done his full duty if he preserved the books from loss, and to a reasonable extent from the worms....He must see that his library contains, as far as possible, the best books on the best subjects, reading carefully the wants of his special community. (p. 5)

The development of electronic media for storing and accessing information has changed this concept of the library. Rutstein, DeMiller, and Fuseler (1993) emphasized, "Librarians and information specialists are fully aware that a metamorphosis is occurring in the way we produce, store, and disseminate information, due largely to the impact of computerized technologies" (p. 56).

"Librarians, of course, were among the first inhabitants of the Web and, following their professional instincts, immediately began to create link collections of all sorts of subjects, including librarianship" (O'Leary, 2000, p. 38). Librarians discovered a wide range of materials on the Internet. Ury, Ury, and McFarland (1999) explored the wealth of materials on the Internet and stated, "If you put garbage in a computer, nothing comes out but garbage. But this having passed through a very expensive machine is somehow ennobled and none dare criticize it, author unknown" (p. 1). However, Brandt (1996) declared that, "Evaluative quality control has been applied to the print-on-paper world for hundreds of years, and it is recognized as increasingly relevant for the electronic world of the Internet" (p. 1). A survey from the Markle Foundation released July 11, 2001, dealing with Internet users indicated that "Seventy percent say they question the truth of what they read online …only 42% believe the Internet is an accountable medium…" (Markle Foundation: U.S., 2001, p. 1).

Sauers (2001) identified the major problem with the Internet when he stated:

> I like to ask my students the following two questions: What is the best thing about the Internet? What is the worst? The answer is the same for both questions: anyone can publish whatever they want with little effort or expense. This is the central paradox to the power of the Internet. (p. 12)

Lubans (1999) provided a list of what students indicated in a library survey in response to a question on how they evaluate an Internet site. The list is arranged in descending order of importance. The students evaluated the site to determine whether it:

> is based on a respected print source; was referred to sites by peers or teachers; ownership is explicit; displays a recent date; URL includes "org" or "edu"; has links to other sites; includes e-mail link to owner; looks professional; and has a lot of pictures. (p. 4)

McMurdo (1998) advocated evaluating the quality of Internet-related documents because publishing was open to anyone with computer and a connection to the Internet. The ease of publishing has re-emphasized the need for critically evaluating the quality of published information. Librarians and information science professionals have spearheaded the endeavor to develop criteria for evaluating Internet resources. Two leading works in the area of evaluating Internet resources are: (a.) Bibliography of Evaluating Internet Resources and (b.) Testing the Surf: Criteria for Evaluating Internet Information Resources.

Tillman (2001) advocated that librarians apply the traditional evaluative techniques that are used for print sources to Internet related documents.

> I see most of my talk as pure common sense from a librarian standpoint. We need to use the same critical evaluative skills in looking for information on the Internet that we would do in a book, a paper index, a musical score, or on an online commercial database. The content of the Internet is only more diverse because of the potential of interaction with more media. By media, I mean, not just audio and video but all forms of technology-assisted communication. (p. 1)

A noted authority on evaluating print resources is Katz, who is the author of *Introduction to Reference Work* (McMurdo, 1998). Katz (1997) lists criteria for evaluating reference works as "purpose, authority, scope, audience, cost, and format" (p. 26). These six criteria are the core elements used by noted authorities in their methodologies for evaluating Internet information sources (McMurdo, 1998). The list includes Auer, 1997; Brandt, 1996; Rettig, 1996; Sauers, 2001; Smith, 1997; Tate and Alexander, 1996; and Tillman, 2001.

In the evaluation process, all of the key evaluation criteria are important. The significance of a comprehensive evaluation was emphasized by Sauers (2001) when he stated, "I only mean

to stress that no single element should be considered in isolation, a final determination of the worth of a document can only be made after weighing all of the relevant issues" (p. 27).

Fidel et al. (1999) emphasized the future implications of information and the Internet when they stated, "The potential of the World Wide Web as a tool for information gathering and learning is enormous, and much of it has not been envisioned as yet" (p. 36). However, December (1994) warned, "Without tools and methodologies for gathering, evaluating, managing, and presenting information, the Web's potential as a universe of knowledge could be lost" (p. 1).

CHAPTER 3

METHODS AND PROCEDURES

This chapter includes an overview of the research design, associated advantages and disadvantages, discussions of the Delphi group selection, panel size, instrumentation, and the pilot study.

Research Design

The Delphi technique was the method I used to develop the sources of free information on the Internet that will be used by the year 2010 to evaluate librarian criteria for possible inclusion of these sources in academic library holdings. In addition, I attempted to predict the procedures that librarians will need to develop and follow to ensure that free Internet materials meet quality standards for inclusion in library holdings. I also attempted to identify what publishers of free sources of information should do to ensure that their materials will be considered for inclusion in library holdings.

Education professionals frequently employ one of three methods for decision making: single expert, multiple experts, and roundtable consensus to obtain information to make decisions. Each of these methods has limitations. The Delphi technique is designed to overcome the weakness inherent in using a single expert, a one-shot average, or roundtable discussion (Rasp, 1973). Face-to-face discussion is the standard procedure for obtaining and combining individual opinions. However, Uhl (1983) pointed out three problems associated with such a process:

> While group opinion is highly influenced by dominant individuals, who usually monopolize a discussion, there is little correlation between verbosity and knowledge of the subject matter under consideration; much discussion in group situations, while appearing to be problem-oriented, is either irrelevant or biased because it is usually more concerned with individual and group interests than with problem solving; individual judgment can be distorted by group pressure to conform. (p. 83)

Martino (1983) stated, "It should be remembered that Delphi represents a distinct improvement over either individual experts or face-to-face panels" (p. 27). Thomas (1980) emphasized that committees were known for debating, not thinking.

> The use of expertise is not a retreat from objectivity. Judgement and informed opinion have always played a crucial role in human enterprises. Expert judgement can be incorporated into the structure of an investigation and can be made subject to some of the safeguards that are commonly used to assure objectivity in any scientific inquiry. (p. 14)

Anonymity provides an equal chance for each participant to present and react to each idea without being biased by the identity of other participants. The repetitious aspect of the Delphi process calls for idea identification separate from and prior to the evaluative process. This enables individuals to modify previously held positions without having to do it publicly (Whitman, 1990).

Mitchell (1998) conducted a study to assess the Delphi technique as a viable method for forecasting future events in nursing education. "According to the findings, the Delphi technique was a valid method for forecasting events in nursing education" (p. 307). In a study designed to replicate a Delphi study conducted 16 years earlier, Ono and Wedemeyer (1994) stated "that the results show the findings of the Delphi technique 16 years earlier reflected present findings which were accurate in terms of forecasting communication development" (p. 290).

> Throughout the 1960s and 1970s, the technique was refined and developed until its efficacy in various situations was well established. Since the 1970s, the technique has been used in [Library Information Science] LIS research with findings published in journals, such as the *Journal of the American Society for Information Science* and the *Journal of Academic Librarianship.* (Westbrook, 1997, p. 211)

Rosenbaum (1991), in his research of the Delphi technique, discovered, "For example, in the five-year period from 1985 to 1989, 80 doctoral research studies employed variations of the Delphi technique. Most (54) were in educational areas, led by administration (12) and curriculum and instruction (11)" (p. 3).

The origin of the term Delphi can be traced to an ancient Greek myth concerning a 'chosen one' on the island of Delphi who was able to predict the future with accuracy on a

consistent basis. One of the first uses of a Delphi study was to forecast technological developments and, like the ancient oracle, it looked into the future (Clayton, 1997). According to Moore (1987), Olaf Helmer at the Rand Corporation invented the Delphi technique. However, Delbecq, Van de Ven, and Gustafson (1975) attributed credit to Dalkey and his associates at the Rand Corporation in 1950 for developing the Delphi technique. Dalkey and Helmer (1963) acknowledged that the Delphi method was used intermittently at the Rand Corporation to obtain a consensus of opinion from a group of experts. Sackman (1975) traced the origin of the Delphi technique to the Rand Corporation, citing related studies starting in 1948. Turoff and Hiltz (1996) stated that the term "Delphi" was not a term that the inventors of the methodology really desired. However, because early studies used the technique to predict future occurrences, the name Delphi was used in jest by some at the Rand Corporation. The name stuck and the non-academic image did not inspire confidence in the methodology. "The resulting image—of a priestess sitting on a stool over a crack in the earth, inhaling sulfur fumes and making vague and jumbled statements with possible interpretations—did not exactly inspire confidence in the Delphi method" (Turoff & Hiltz, p. 56).

Between the years 1948 and 1963, 14 documents were produced at Rand dealing with the fundamentals of the Delphi technique. The Delphi technique has been used in hundreds of studies by governments, corporations, and members of the academic community all over the world. Helmer (1966) stated:

> The so-called Delphi technique is a method for the systematic solicitation and collation of expert opinions. It is applicable whenever policies and plans have to be based on informed judgments, and thus to some extent to virtually any decision-making process. (p. 1)

Hasson, Keeney, and McKenna (2000) stated, "The Delphi survey is a group facilitation technique, which is an iterative multistage process designed to transform opinion into group consensus" (p. 1008). Sackman defined the Delphi as, "an attempt to elicit expert opinion in a systematic manner for useful results" (1975, p. xi). Brown (1968) described the Delphi method as a technique used to gather opinions from a panel of experts in order to obtain a group

response. “Delphi may be characterized as a method for structuring a group communication process so that the process is effective in allowing a group of individuals, as a whole, to deal with a complex problem" (Lindstone & Turoff, 1975, p. 3).

Gordon (1972) indicated that the Delphi technique avoided some of the problems involved in face-to-face meetings when he stated:

> The Delphi technique is a method of seeking a group consensus which avoids some of the problems of face-to-face confrontation. Generally a Delphi exercise engages experts in an anonymous debate, their opinions being exchanged through an intermediary. Anonymity exists at two levels; not only are participants unknown to each other, but the individual responses are never attributed to particular respondents. (p. 170)

When compared to other planning procedures, the Delphi technique has been deemed efficient because it focuses attention on the desired topical areas and permits a high degree of control by the survey manager. Another merit is that the procedure has often been viewed as an interesting and useful task (Weatherman & Swenson, 1974).

The Delphi process is also a widely used forecasting technique for incorporating the knowledge of experts. The heart of the procedure is a structured anonymous interchange between selected experts, with controlled feedback using a questionnaire (Twiss, 1992). The Delphi technique can be described as a series of questionnaires. The initial questionnaire asks participants to write responses relating to broad questions. Each follow-up questionnaire is developed using the responses from the previous questionnaire. This process is completed when consensus has been determined or when a sufficient exchange of information has taken place (Dalkey & Helmer, 1963).

The popular method to achieve consensus is a round table among individuals. The final decision is often a compromise that is made due to factors unrelated to the topic or to the problem under consideration. Some of the key round table decision factors are persuasiveness of the group leader with the most authority, unwillingness of individuals to retreat from a publicly expressed opinion, the dominance of the individual with the loudest voice, and the "bandwagon effect" of the majority opinion. The Delphi technique attempts to negate these influences by not

bringing the individuals together in a meeting. This eliminates committee activity with its related problems (Cyphert & Gant, 1971).

"The rationale for the Delphi technique is "that 'n' heads are better than one. It is logical that if you properly combine the judgment of a large number of people, you have a better chance of getting closer to the truth" (Helmer, 1966, p. 83). Delphi can also be used to; "(1) identify goals and objectives, (2) array possible alternatives, (3) establish priorities, (4) reveal group values, (5) gather information, and (6) educate a respondent group" (Moore, 1987, p. 50).

Hartman (1981), in an article entitled "Reaching Consensus Using the Delphi Technique", emphasized that the Delphi technique has a proven track record for long-range educational planning. "A modified Delphi technique can be used to reach consensus in decision making and conflict resolution" (Hartman, p. 495). The most common version of the Delphi process is a paper-and-pencil version. A small monitor team usually designs a questionnaire which is sent to a larger group. The results are analyzed, and a new questionnaire is developed based on information obtained from the first questionnaire. The new survey is sent to the larger respondent group. In the first use of the Delphi method at the Rand Corporation, five rounds of polling were conducted in the study (Dalkey & Helmer, 1963). The classic Delphi included four rounds (Young & Hogben, 1978). However, recent research also indicates that two or three rounds are now being used (Beech, 1997; Dean, 1999; Green, Jones, Hughes, & Williams, 1999; Proctor & Hunt, 1994; Rice & Miller, 2001).

Participants in a Delphi procedure may suffer fatigue after several rounds. Fatigue is often a factor in poorly run committee meetings. In using the Delphi technique, the number of rounds can be limited, just as a time limit is often placed on discussion during a meeting. An extended number of rounds may not reflect the participant opinion, because fatigue may influence participants' input after several rounds. Consensus may then reflect choices as a means to an end (Whitman, 1990). The importance of knowing how many rounds of polling to use in a study is critical. If too few rounds are conducted, the results will not be meaningful, while too many rounds may result in "sample fatigue" (Schmidt, 1997). Martino (1983) advocated at least

two rounds of polling to reach a consensus and stated that if a consensus had been reached, there was no advantage in another round of polling. Lindstone and Turoff (1975) emphasized that "The respondent group is usually given at least one opportunity to reevaluate its original answers based upon examination of the group response" (p. 5).

Lindstone and Turoff (1975) identified seven properties to use as a guide when considering the appropriateness of using the Delphi. They said that one or more of the following seven criteria needed to be present before adopting the Delphi technique:

1. The problem does not lend itself to precise analytical techniques but can benefit from subjective judgments on a collective basis;

2. The individuals needed to contribute to the examination of a broad or complex problem have no history of adequate communication and may represent diverse backgrounds with respect to experience or expertise;

3. More individuals are needed than can effectively interact in a face-to-face exchange;

4. Time and cost make frequent group meetings infeasible;

5. A supplemental group communication process can increase the efficiency of face-to-face meetings;

6. Disagreements among individuals are so severe or politically unpalatable that the communication process must be refereed and/or anonymity assured; and

7. The heterogeneity of the participants must be preserved to assure validity of the results, i.e., avoidance of domination by quantity or by strength of personality ("bandwagon effect"). (p. 4)

The subject of this study, *Determining Standards for Sources of Free Information on the Internet for Inclusion in Academic Library Holdings by 2010*, met the majority of these criteria.

Uhl (1983) identified five conditions, of which any one or more would warrant the use of the Delphi technique:

1. The resolution of a problem can be facilitated by the collective judgments of one or more groups;
2. Those groups providing judgments are unlikely to communicate adequately without an intervening process;

3. The solution is more likely to be accepted if more people are involved in its development than would be possible in a face-to-face meeting;
4. Frequent group meetings are not practical because of time, distance, and so forth; and
5. One or more groups of participants are more dominant than another (p. 84).

Delbecq et al. (1975) identified three essential ingredients needed to conduct a successful Delphi. Those three ingredients were adequate time, participants who were skilled in written communication, and participants who were highly motivated to participate. A minimum of 45 days was considered necessary to complete the study. Participants must be able to effectively read and express themselves in written forms of communication. Delbecq et al. found that participants must have been highly motivated because they are alone and needed to motivate themselves to complete their agreed-upon tasks.

Meeting the majority of the criteria established by Delbecq et al. (1975), Lindstone and Turoff (1975), and Uhl (1983), the Delphi technique was selected as the methodology to use in this study. Wilhelm (2001) listed three procedures with rationale and instructions for applying the Delphi technique to research inquiry. They are (1) the creation of the research questions and the process of establishing a Delphi panel; (2) the step-by-step process of administering a multi-round Delphi, including data gathering and procedures for analysis; and (3) the preparation of the final report.

Delphi Advantages and Disadvantages

Lee and Fleming (1995) stated that…"a fundamental weakness of the Delphi is the lack of opportunity for panelists to question one another directly or seek clarification for statements previously made" (p. 25). Hasson et al. (2000) came to the conclusion that…"an extensive review of the Delphi literature identified that no universal guidelines exist" (p. 1009). "The primary disadvantages of the method are that it requires several months to complete a survey and imposes extensive time demands of the respondents" (Koenig, 2000, p. 679).

Armstrong (1999) raised the issue of validation studies, "In particular, there are few validation studies and these often omit descriptions of the relevant conditions" (p. 351). Ziglio (1996) emphasized several reasons why the Delphi technique had not been compared with other experimental methods of research. Some of the major reasons were changes in research priorities, a preference for discipline-oriented research, the fact that Delphi does not belong to any specific branch of science, and that during the 1950s and continuing into the early 1970s there was a much greater interest in group techniques and processes. The Delphi technique is difficult to study versus other techniques because of the difficulty of assembling groups of experts as laboratory subjects.

Delphi Group Selection

The selection of participants is a critical juncture in the process of conducting a Delphi study. Martino (1983) highlighted the critical nature of the panel, when he stated that it was "The most important decision the panel director will make" (p. 54). Cicarelli (1984) stated that "a Delphi is its panel" (p. 140). Moreover, Clayton (1997) stressed that a basic requirement in a Delphi study was the utilization of a panel of experts involved in the field of study that Delphi will explore. "Panelists are generally honored to be asked to serve on an expert panel, since it indicates that they are respected by their colleagues and their opinion is valued" (Fitch et al., 2001, p. 6). An expert is an individual who possesses the knowledge and experience required for participation in the study. In using the Delphi method, "Its object is to obtain the most reliable consensus of opinion of a group of experts" (Dalkey & Helmer, 1963, p. 458). The committee will assist the researcher in conducting the study and the individuals composing the committee will enhance the credibility of the study (Hartman, 1981). "The process of selecting experts is critical to the Delphi and serves to authorize the Delphi's superiority and validity over other less painstaking and vigorous survey procedures" (Clayton, p. 6). "Gatekeepers may need to be identified to help pinpoint those individuals who will have the knowledge of the topic under study" (Hasson et al., 2000, p. 1010).

Delbecq et al. (1975) listed four critical prerequisites necessary for individuals to effectively participate in a Delphi study. Participants must:

> feel personally involved in the problem of concern to the decision makers, have pertinent information to share, are motivated to include the Delphi task in their schedule of competing tasks, and feel that the aggregation of judgments of a respondent panel will include information which they too value and to which they would not otherwise have access. (p. 87)

The first two items describe the characteristics desired in individuals who serve on a panel. Once the qualifications are established, a nomination procedure is used to select the individuals to serve on the committee. Individuals should be selected from target groups that possess the relevant information or experience in the area of expertise that the Delphi study will explore. If the Delphi study is geared toward experts, participants should be selected from target groups of experts. A random sample could be used if representation is a criterion. Regardless of the method employed, nominations should be sought from a large and diverse set of target members in order to minimize the distortion of slots (Delbecq et al., 1975).

Nominations of well-known and respected members within target groups should be solicited to participate as panel members. Highly ranked members of the group become evident through a process of ranking and culling. The most highly ranked members emerging from the process become the basis for panel selection. The selection process itself can be flattering and motivational when potential participants are informed they have been nominated by their peers to serve on a Delphi panel (Clayton, 1997).

Items 3 and 4 listed by Delbecq et al. deal with motivation, and the interest in the information to be obtained through the study may be judged during the initial contact. It is critical that participants be convinced of the importance of their participation and the importance of the study. The initial contact of each potential panel member should be by telephone or in a face-to-face meeting with someone that the respondent respects. The contact person should fully explain the study and emphasize the objectives of the study, the nature of the respondent panel, expectations of participants, length of time to complete the Delphi project, and the information

that each participant will receive from the study. In order to facilitate the acceptance of potential panel members, a self-addressed, stamped envelope should be sent to each individual invited to participate in the study (Delbecq et al., 1975).

In this study, I used the guidelines of Lindstone and Turoff (1975) and Delbecq et al. (1975) in selecting participants for the Delphi panel. The library directors of the community colleges of the Tennessee Board of Regents System served as a nominating committee for this Delphi project. I contacted each member of the nominating committee by telephone and informed each of the purpose of the study and requested his/her assistance in nominating experts within the community colleges of the Tennessee Board of Regents System. Each member who agreed to serve on the nomination committee was requested to submit nominations via email for the Delphi panel. A cover letter and a nomination form were sent via email to each nominating committee member. These items are included in Appendix A. The cover letter was sent requesting nominees in the areas of library directors, reference librarians, and instructors with online teaching experience. The letter emphasized the qualities sought in panel members and described how their individual expertise would contribute to the study.

The individuals receiving multiple nominations from the library directors formed the nucleus of the panel. Additional panel members were selected from the nominating forms. Each panel member was contacted by telephone and the purpose of the study was explained. Follow-up communication between rounds was conducted by telephone and e-mail. A free Internet source, "Bluemountain.com," was used to send participants reminders in the form of electronic cards. One feature of the electronic card, if checked, would notify the sender when the receiver opened the card. This feature proved to be a valuable tool in the communication process.

Panel Size

"No optimal number of experts is dictated in the literature; however, a key variable in the use of the Delphi is a sufficient number of representative experts in each field" (Weatherman & Swenson, 1974, p. 104). However, a general rule would be 15 to 30 individuals selected from

experts in the same area of expertise (Delbecq et al., 1975). If fewer than 15 people are used, the results will not be representative. However, 25 participants is an ideal number, and 15 to 40 participants is the normal range (Twiss, 1992).

In this study, 24 experts were selected. A group of 24 meets the recommendation of Weatherman and Swenson (1974), Delbecq et al. (1975), and Twiss (1992). The 24 members of the panel were selected from representations of the community colleges of the Tennessee Board of Regents System. The group was composed of eight library directors, eight reference librarians, and eight instructors with online teaching experience. The members of this group had the expertise needed to make the forecast and predictions related to the study. The Delphi panelists' names and organizational affiliation are listed in appendix E with permission of the participants.

Instrumentation

The initial iteration allowed members of the Delphi panel to respond to broad issues in narrative form. The members of the panel were advised at the time of their first contact with regard to the time frame required to complete the task.

The purpose of the second iteration was to establish a consensus on the concepts that were most frequently mentioned in the first iteration. A Likert-type scale and a quantitative scale were used to analyze the results of the second iteration. A determination was made based on approval from the chairman of the dissertation committee that two rounds of polling were sufficient. Each round according to Sumsion (1998) should have a 70% return rate.

The primary areas from which the general questions were drawn for the first iteration, including supporting references with the topic of the question, were as follows:

1. The academic library in the 21st century (Feemster, 2000; LaGuardia, 1998);
2. Building electronic library collections (Kovacs, 1999);
3. Empowering end-users to evaluate information on the Internet for their research needs (King, 1997; Vincent & Norman, 1999);
4. How future libraries will be different (Marcum, 2000);

5. Using Internet resources by educational professionals (Golian, 2000);
6. How students use the Internet (He & Jacobson, 1996);
7. Evaluating the quality of Internet documents (Wehmeyer, 1997);
8. Using search engines on the World Wide Web (Kassel, 1999);
9. Locating information on the Internet (Wolinsky, 1999);
10. Electronic literacy (Conant, Garthwait, & Grant, 1999);
11. The world of electronic resources (Dickinson, 1994);
12. The negative side of the Internet (The Dark Side, 2000);
13. Integrating Internet resources into the higher education classroom (Freberg, 2000);
14. Distance education (Boettcher, 1999; Slade & Kascus, 1996);
15. Copyright law (Diotalevi, 1999);
16. The myth that all information is free and available on the Internet (Miller, 1997); and
17. Library portals to resources on the Internet (Block, 2001).

Pilot Study

A pilot study was conducted to field-test the questionnaire of the first iteration. Hasson et al. (2000) stated, "As with all good surveys, pilot testing with a small group of individuals should precede implementation" (p. 1010). Six librarians from East Tennessee who have work experience at the elementary, secondary, or college level participated in the pilot study.

Delbecq et al. (1975) emphasized that one of the critical factors in a Delphi study was to test the structure, content, and interpretation of the questions to eliminate ambiguity or vagueness prior to employing the instrument.

I hand-delivered the questionnaire, the proposal cover letter, and the Informed Consent Form, to each member of the pilot study group. According to Fowler's (1993) guidelines, each participant in the field pretest was requested to evaluate each question in regard to the whether; (1) it was easy to read as worded, (2) respondents understood the question in a consistent way, and (3) respondents could answer the questions accurately (p. 101).

I interviewed each member of the pilot group after the participants had read the questionnaire, nomination form, and the accompanying cover letter. Two members of the group discovered a punctuation error and one participant recommended minor changes in the cover letter and the nomination form.

The nomination form and cover letter were revised and presented to the pilot group. The members of the group expressed the opinion that the questionnaire, nomination form, and cover letter were ready for use in the survey. In addition, each member of the pilot study indicated that the questionnaire met the previously established criteria.

Summary

Chapter 3 described the methodology used to gather data for the study including the Delphi technique, the description of the research design, advantages and disadvantages of the Delphi technique, the selection of the Delphi group, and the construction of the questionnaire. This information provided the strategies needed to continue with the research. The pilot study provided a means to correct any deficiencies of the forms and procedures prior to the start of the first iteration.

Chapter 4 of this study includes the analysis and findings of the first iteration.

Chapter 5 includes the analysis and findings of the second iteration.

Chapter 6 presents a summary of findings and recommendations for further research and to improve practice.

CHAPTER 4

ROUND 1: FINDINGS AND ANALYSIS

This chapter contains a synopsis of the procedures and results in Round 1. Additionally, the findings emerging from Round 1 are reported. In this study I attempt to develop appropriate procedures for determining the standards for sources of free information on the Internet for inclusion in academic library holdings by 2010. The findings and analysis of Round 1 are organized in 5 major categories: the distribution of the survey, the response rate, the demographics of the Delphi panel, methodology of content analysis and initial findings, and a brief chapter summary.

Survey Distribution

The selection of the Delphi panel members was finalized in May 2002. Members of the panel were nominated by the Library/LRC directors of the community colleges that were member institutions of the Tennessee Board of Regents. All participants were interviewed via telephone in order to secure participation and preferred mailing and e-mail addresses. E-mail was used to distribute the introductory letter, a schedule for the Delphi panel, instructions for the iteration, and the instrument for Round 1. The Informed Consent Form and a self-addressed, stamped return envelope were mailed to each panelist. The deadline for returning these forms was June 12, 2002. These materials are included in Appendix B.

Response Rate

Ten of the 24 questionnaires were returned by May 13, 2002. E-mails and telephone calls were made to the remaining panel members to remind them of the proposed schedule for the return of the first iteration. The e-mails and telephone calls to panel members at the halfway point of the return deadline stimulated the return of the first round questionnaire. By June 12, 2002, 24 questionnaires were returned with a response rate of 100%.

Demographics of Panel

The 24 panelists possessed 453 cumulative years of experience. Eight panelists were library directors with 196 cumulative years of experience. The average years of experience for library directors was 25 years. The minimum years of experience for this category was 12 years with a maximum of 36 years of experience. Eight panelists were reference librarians with 126 cumulative years of experience. The average years of experience for reference librarians was 16 years. The minimum years of experience for this category was 4 years with a maximum of 27 years of experience. Eight panelists were college instructors with online teaching experience with 131 cumulative years of experience. The average years of experience for online instructors was 16 years. The minimum years of experience for this category was 1 year with a maximum of 36 years of experience. Although gender was not an issue for inclusion in the Delphi panel, 13 panelists were female and 11 were male. The average female panelist had 21 years of experience and the average male panelist had 16 years of experience.

Methodology of Content Analysis: Round 1 Questionnaire

Round 1 required the participants to provide narrative responses to the 10 open-ended questions listed below:

1. In your judgment, what will be the five most important criteria that will be used to determine whether particular free sources of information on the Internet should be included in library holdings by the year 2010?
2. In your opinion, what are the three most important things that a library can do to ensure that free information sources on the Internet meet the same standards as print materials?
3. In your opinion, what are the changes that publishers of free sources of information on the Internet will need to make to ensure that their materials will be considered for inclusion in library holdings by the year 2010?

4. In your opinion, what are the three most important things that educators can do to prepare students to deal with the sources of free information on the Internet by the year 2010?
5. In your opinion, what are the three most important current initiatives by libraries to prepare students to deal with sources of free information on the Internet?
6. In your opinion, what will be the three most important forms of support that libraries will receive from federal, state, and/or local government to assist students in dealing with free sources of information on the Internet by the year 2010?
7. In your opinion, what will be the major differences between selecting free sources of information on the Internet and traditional print resources for inclusion in library holdings by the year 2010?
8. In your opinion, what are the major current reasons that librarians reject free sources of information on the Internet for inclusion in library holdings?
9. Please describe the idealized free document on the Internet that you would choose to be included in library holdings by the year 2010.
10. Please feel free to comment on any other aspect of dealing with free sources of information on the Internet to be considered for inclusion in library holdings by the year 2010.

Comments from several of the panel members indicated that they spent from 45 to 90 minutes to complete Round 1.

I initially read all questionnaires without any content analysis. During the process of analyzing the responses to the questionnaire, only one question at a time was considered. I then read all responses to question 1 to discover commonalities in the participants' answers. This process was repeated until all 10 questions had been analyzed.

I grouped responses made by the participants into categories for each question. Responses that were not made by three participants were defined as outliers. When several panelists made similar responses, a count was made of the similar responses. An item was

required to receive four responses to be considered for the Round 2 questionnaire. The categories that received the higher numbers of responses indicated consensus on the topic and served as a basis for forming the Round 2 questionnaire.

The majority of responses was complete and indicated that the participants had put a great deal of thought into their answers. The responses varied in the amount of detail they provided. Some panelists were concise and precise, whereas others included responses in broader terms. When all of the responses of the panel members were analyzed, the panelists had provided a foundation on which to build a consensus.

Round 1: Findings and Analysis

The panelists contributed valuable information through the survey. Their responses have been analyzed on a question-by-question basis. The contributors of individual statements are not identified. However, the name and organizational affiliation of each member of the Delphi panel is listed in Appendix E. The members of the Delphi panel were assured that individual responses would be used exclusively for data analysis. Each member of the Delphi panel was promised anonymity.

Question 1: In your judgment, what will be the five most important criteria that will be used to determine whether particular free sources of information on the Internet should be included in library holdings by the year 2010?

Six criteria emerged from the responses of the Delphi panel. The reliability of the information was an important consideration of the panelists. The other criteria that received multiple responses were quality of information, applicability to the curriculum, currency, long-term accessibility of the information, and a well-maintained Internet site. Receiving less support were criteria such as cataloging information, use of current Web technology, identification of site sponsor, and comparison of coverage of information on the Internet to print resources.

Question 2: In your opinion, what are the three most important things that a library can do to ensure that free information sources on the Internet meet the same standards as print materials?

Five items received multiple responses. The number-one concern of the Delphi panel was that the materials should be reviewed. The other items receiving multiple responses were the needs for collaborative efforts with other libraries to select sources, qualifications of the author or originator of the site, on-site review by librarians, and library policies for inclusion of materials. Other items receiving less support were the needs for feedback to the creator of each site, cataloging and reporting of suspicious sources.

Question 3: In your opinion, what are the changes that publishers of free sources of information on the Internet will need to make to ensure that their materials will be considered for inclusion in library holdings by the year 2010?

The panelists wanted publishers to provide information that had integrity. This was the number-one concern of the panelists. Four other concerns expressed by the panelists were the need to maintain currency in relation to the information, guarantee continued accessibility to the information, that the site be user-friendly, and list the author and related information. Other items mentioned for publishers to do were a statement giving libraries rights to use materials, complying with ADA requirements, and no advertisements or popups.

Question 4: In your opinion, what are the three most important things that educators can do to prepare students to deal with the sources of free information on the Internet by the year 2010?

The panelists listed three primary items: Teach students how to conduct research and evaluate materials, teach students how to use critical thinking skills with materials, and teach students by demonstrating good and bad Internet sites. Other things mentioned for educators to do, but not receiving multiple responses on the survey, were to encourage use of library resources, teach students how to use search engines, and include information literacy programs in each class.

Question 5: In your opinion, what are the three most important current initiatives by libraries to prepare students to deal with sources of free information on the Internet?

Four initiatives received multiple responses by the panelists: need for information literacy instructional programs including Internet-based resources, use of Web-based chat and e-mail to assist students, a library Web home page that provides links to information sources, and the continuous review of Internet information sources for students. Other desired items mentioned were public discussion, in-service for librarians, and making the fee-based databases free.

Question 6: In your opinion, what will be the three most important forms of support that libraries will receive from federal, state, and/or local government to assist students in dealing with free sources of information on the Internet by the year 2010?

The major items receiving multiple responses by the Delphi panel members were federal funding, up-to-date computer-related equipment, staff development in Internet resources, and promoting projects listing Web resources. Other items mentioned varied from funds for free Internet access to developing guidelines for materials on the Internet by an authority such as the Library of Congress.

Question 7: In your opinion, what will be the major differences between selecting free sources of information on the Internet and traditional print resources for inclusion in library holdings by the year 2010?

Four items received multiple responses from the Delphi panel. The item receiving the most multiple responses was that the same standards should apply to both print and Internet-based information. The other three items mentioned were reasonable access cost, ease of use, and space for inclusion in the collection. Other items receiving less consideration were the library budget and the longevity of materials on the Internet.

Question 8: In your opinion, what are the major current reasons that librarians reject free sources of information on the Internet for inclusion in library holdings?

The Delphi panel members gave multiple responses to three items: lack of documentation on a site, lack of permanence for Internet sites, and the lack of credibility of information on

Internet sites. The other factors mentioned were advertising on sites, lack of time for librarians to identify sites, and the lack of computer-related technology expertise by librarians.

Question 9: Please describe the idealized free document on the Internet that you would choose to be included in library holdings by the year 2010.

The number-one response expressed by the panel members was a concern for the reliability of information on the Internet. Five other desired characteristics receiving multiple responses were availability of full-text documents, links to related academic resources, user-friendly and easy-to-navigate site, static URL, and information review by a panel of experts. Other items mentioned were historical documents, title information, contact information, and original material.

Question 10: Please feel free to comment on any other aspect of dealing with free sources of information on the Internet to be considered for inclusion in library holdings by the year 2010.

The majority of panel members did not respond to this question. The panelists who did respond stressed the need for academic materials and cooperation. One panelist stated:

> I suspect that librarians would probably appreciate getting a lot more input from faculty members about what type of sources they would like to have available for themselves and for their students. Also, I imagine that librarians have seen their roles as research advisors change significantly. These issues need to be taken into consideration in any discussion of sources being considered for inclusion by the year 2010.

Summary

The narrative responses to the questions forming Round 1 were specific and provided a firm basis on which to develop Round 2. The analysis of the data uncovered emerging areas of consensus concerning standards for sources of free information on the Internet for inclusion in library holdings by 2010. These elements formed the basis of Round 2 to further narrow the opinions and perceptions of the panelists.

CHAPTER 5

ROUND 2: FINDINGS AND ANALYSIS

This chapter includes a description of the procedure by which the Round 2 questionnaire was constructed, distributed, and analyzed. An explanation of the procedure used to organize and summarize the 9 question second round questionnaire is described. An explanation of the scale is also included.

Construction of Round 2 Questionnaire

The analysis of the 24 members of the Delphi panel's responses to the open-ended questions in Round 1 provided the information needed to develop the Round 2 questionnaire. The purpose of the Round 2 questionnaire was to narrow the responses and to increase the degree of consensus among panel members concerning the questions in Round 1. To accomplish this objective, I identified the opinions with the greatest degree of agreement among the Delphi panel members on the Round 1 questionnaire. The second Round consisted of 9 questions with 42 subparts. The second round questionnaire and cover letter was distributed via e-mail and is listed in Appendix C.

The answers to the first round questionnaire were analyzed inductively in order to identify emerging areas of argument among the Delphi panel members. This process involved analyzing statements of the panel members and arranging similar responses into categories for each question. A count was maintained each time a member of the panel expressed a similar idea. The results of these category counts determined what items would be included in the second round questionnaire. The inclusion of an item in the second round questionnaire was obvious because of the emerging degree of consensus on suggestions that received 4 or more responses. However, it was necessary to establish a cut-off criterion of four in order to set a standard for including and excluding statements. Any comment in Round 1 that was mentioned

by four panelists would be included in the Round 2 questionnaire. Items not receiving four responses were eliminated from future consideration.

The second-round questionnaire used a Likert-type scale and ranking scale in order to gauge the degree of consensus among panel members. The Likert-type scale was used to gauge the degree of agreement among the panelists concerning the qualities desired in determining standards of free information on the internet for inclusion in academic library holding by 2010. The panelists were requested to choose a number on a scale 1 to 5. A response of "5" indicated that the participant strongly agreed with the statement. A response of "4" indicated that the participant agreed with the statement. A response of "3" on the scale indicated that the participant was neutral about the statement. A response of "2" indicated that the participant disagreed with the statement. Choosing a "1" indicated that the panelist strongly disagreed with the statement. A table of the Likert-type scale results of the 9 questions and 42 related subparts is located in Appendix D.

In addition, a second procedure requested the panelist to rank the relevance of the items in each question. The items are listed in rank order under each question with the sum of the ranking points each item received in Appendix D. The ranking was used to determine the degree of consensus among the Delphi panel members.

Round 2: Findings and Analysis

This portion of the study includes a summary of the items as they related to each of the 9 questions. The statistical data to the 9 questions on the questionnaire number 2 is shown in table 1.

Question 1: In your judgment, the following important criteria will be used to determine whether particular free sources of information on the Internet should be included in library holdings the year 2010.

Item 1: Reliability of information

The Delphi panel indicated that reliable information was viewed as the most critical feature for including free information on the Internet in library holdings. This item was ranked first overall by the panel. Thirteen panel members ranked it number 1. On a Likert-type scale of 5, this item received a mean of 4.96, with a standard deviation of 0.08.

Item 2: Quality of the information

Quality of the information was ranked second out of six items related to this question. This indicates the consensus of the panel members that the quality of free information on the Internet should be a major consideration for including an item in library holdings. The mean value of this item is 4.83 with a standard deviation of 0.28.

Item 3: Applicability to the curriculum

This item was listed third by the panel, which indicated that this criterion is important. The mean value of this item is 4.17, with a standard deviation of 0.63.

Item 4: Currency of the information

Currency of information was ranked fourth when compared to the six items related to this question. This item received a mean of 4.17, with a standard deviation of 0.63.

Item 5: Long-term accessibility of the information

The panel members ranked this item fifth of six possible choices. Fifteen of the 23 panelists who responded to this question ranked it a 4, 5, or 6. This item received a mean of 4.50, with a standard deviation of 0.58.

Item 6: A well-maintained Internet site

Members of the Delphi panel ranked this item last out of six possible choices. Fifty percent of the respondents gave this item a number 6 rating. This item was ranked last by the participants of the six possible items on question 1. This item received a mean of 4.29, with a standard deviation of 0.53.

Question 2: In your opinion, libraries can/should implement the following important procedures to ensure that free information sources on the Internet meet the same standards as print materials.

Item 1: Search for review of materials

Sixty-seven percent of the Delphi panel ranked this item number 1 or 2. Searching for review of materials was indicated by panelists as the one way to ensure that free sources on the Internet would meet the same standards as printed materials. This item received mean of 4.21, with a standard deviation of 0.66.

Item 2: Review of author or originator qualifications

This item was ranked number two out of six possible choices. This is an indication that panel members gave this item a high priority. This item received a mean of 4.33, with a standard deviation of 0.61.

Item 3: Development of library policies dealing with Internet materials

Sixty-two percent of the panel members ranked this item either 1 or 2. This indicated that this item was judged to be important. The mean for this item was 4.33, with a standard deviation of 0.61.

Item 4: Collaborative efforts with other libraries to select sources on the Internet

No panel member gave this item a number 1 ranking, but 63% ranked the item number 2 or 3. The mean for this item was 4.29, with a standard deviation of 0.65.

Item 5: Review of Internet materials in individual libraries

Two panel members gave this item the highest ranking of 1. However, 75% of the panelists gave this item the lower rankings of 4 or 5 from five possible choices. This item has a mean of 3.88, with a standard deviation of 0.59.

Question 3: In your opinion, publishers of free sources of information on the Internet will need to make the following changes to ensure that their materials will be considered for inclusion in library holdings by the year 2010.

Item 1: Provide information that has integrity

Panel members ranked this item number 1 overall. Ninety-two percent of the members ranked this item number 1 or 2 out of five choices. The mean for this item is 4.78, with a standard deviation of 0.36.

Item 2: Verify continued accessibility to the site

Verifying continued accessibility to the site was ranked number 2 out of five possible choices by the panelists. This indicated that this item was important to the panelists. The mean for this item is 4.42, with a standard deviation of 0.58.

Item 3: List author

The importance of the author was indicated by 46% of the panelists who ranked this item with a 1 or 2 ranking out of five choices on the frequency of rank order scale. However, 42% of the panelists gave it a ranking or 4 or 5 out of five possible choices. This item received a mean of 4.52, with a standard deviation of 0.54.

Item 4: Maintain currency in relation to information

Panel members ranked this item number 4 out of five choices. However, only 3 ranking points separated items 2, 3, and 4. (See Appendix D, Table 1, Question 3, Item 4.) This indicates the panel members placed a high degree of importance on these three items. This item received a mean of 4.50 on the Likert-type scale of 5, with a standard deviation of 0.50.

Item 5: Determine user-friendliness of the site

Ninety-two percent of the panelists ranked this item 4 or 5 on the frequency of order scale with five possible choices. However, on the Likert-type scale this item received a mean of 4.25, with a standard deviation of 0.69.

Question 4: In your opinion, educators can/should do the following to prepare students to deal with the sources of free information on the Internet by the year 2010.

Item 1: Teach students how to use critical thinking skills with Internet materials

This item received the highest score given by the panel members for this question, which indicated it was a high priority, as 69% of the panelists ranked this item number 1 or 2 on the

frequency of rank order scale of four possible choices for this question. On the Likert-type scale this item received a mean of 4.88, with a standard deviation of 0.23.

Item 2: Teach students how to conduct research

The panel members ranked this item number 2 out of the three choices for this question. Seventy-nine percent of the panelists ranked the item 1 or 2 on the frequency of rank order. Analysis of this item revealed that it received a mean of 4.63, with a standard deviation of 0.50.

Item 3: Demonstrate good and bad Internet sites to students

Seventy-five percent of the panelists ranked this item number 3 on the frequency of rank order scale. Analysis of this item revealed that it received a mean on a Likert-type scale of 4.33, with a standard deviation of 0.61.

Question 5: In your opinion, libraries can/should continue the following current initiatives to prepare students to deal with sources of free information on the Internet.

Item 1: Provide information literacy programs including Internet-based materials

The panel members ranked this item number 1 for this question. Fifty percent of the panelist ranked the item number 1 out of four possible choices on the frequency of rank order scale. Analysis to responses to this item revealed a mean on the Likert-type scale of 4.50, with a standard deviation of 0.63.

Item 2: Continuously review the Internet for sources of information for students

The panelists ranked this item number 2 out of a possibility of four choices. Fifty percent of the panelists ranked this item number 1 or 2 on the frequency of rank order scale. On a Likert-type scale the mean was 4.21, with a standard deviation of 0.66.

Item 3: Maintain library home page that provides links to information sources

This item was ranked number 3 out of four possible choices on the frequency of rank order scale. Only two ranking points separate items 2 and 3 which indicate that this choice is important. On a Likert-type scale, the mean was calculated at 4.50 with a standard deviation of 0.54.

Item 4: Use Web-based chat and e-mail to assist students

The Delphi panel members ranked this item last overall out of a possible four choices. Seventy percent of the panelists ranked this item fourth out of four possible choices. On a Likert-type scale the item received a mean of 4.17, with a standard deviation of 0.69.

Question 6: In your opinion, the most important forms of support that libraries will receive from federal, state, and/or local government to assist students in dealing with free sources of information on the Internet by the year 2010 will be:

Item 1: Staff development Internet projects for training librarians and faculty.

This item received the number 1 response identified by the Delphi panel members. This is the most important item identified out of six possibilities on the frequency of rank order scale. On the Likert-type scale this item received a mean of 4.39, with a standard deviation of 0.64.

Item 2: Up-to-date computer related equipment.

This item was very significant to the panel as only 1 ranking point separated item 1 and item 2 on the totals produced by the frequency of rank order scale. A mean of 4.54 with a standard deviation of 0.57 was computer for the Likert-type scale.

Item 3: Federal funding

This item was ranked number 3 by the committee on the frequency of rank order scale utilizing six possible choices. Analysis of the responses to this item discovered a mean of 3.78, with a standard deviation of 0.96.

Item 4: State funding

The committee ranked this item number 4 out of six choices utilizing the frequency of rank order system. Analysis of the responses on the Likert-type scale revealed a mean of 3.71, with a standard deviation of 1.03.

Item 5: Promotion of projects listing selected Internet resources.

Only one panel member ranked this item number 1, but eight panelists ranked the item number 6. This item was ranked number 5 overall by the panelists for this question. Analysis of the Likert-type scale responses indicated a mean of 4.04, with a standard deviation 0.56.

Item 6: Local funding

This item was ranked last overall by members of the Delphi panel. The item was ranked number 6 out of a possibility of six choices by 50% of the panelists. A mean of 3.33 with a standard deviation of 0.97 was calculated using the Likert-type scale.

Question 7: In your opinion, the major differences between selecting free sources of information from the Internet and traditional print resources for inclusion in library holdings by the year 2010 are:

Item 1: Greater ease of use of the Internet

Greater ease of use of the Internet was ranked number 1 from four possible selections on the frequency of rank order system. The mean was 3.79 with a standard deviation of 0.78 on the Likert-type scale.

Item 2: No difference- same standards should apply

Only 2 ranking points separate the second selection from the first selection. Fifty-four percent of the panelists ranked number 1 on the frequency of rank order out of a total of four possible choices. Analysis of the Likert-type scale revealed a mean of 3.75, with a standard deviation of 0.98.

Item 3: Additional access cost associated with the Internet

This item was ranked third out of 4 possibilities on the frequency of rank order system. Seventy percent of the panel ranked a 3 or a 4 on this item. The mean was 3.29, with a standard deviation of 0.82.

Item 4: Freeing up of space for including paper materials in the collection

This item was ranked last overall by the members of the group. However, 33% of the group ranked this item number 1 or 2 out of a possibility of four items on the frequency of rank order system. Analysis of the Likert-type scale revealed a mean of 3.46, with a standard deviation of 0.75.

Question 8: In your opinion, the major current reasons that librarians reject free sources of information on the Internet for inclusion in library holdings are:

Item 1: Lack of credibility of information on Internet sites

This item was listed as the number 1 reason overall regarding why librarians reject free sources of information on the Internet for inclusion in library holdings. Seventy-five percent of the members ranked this item as number 1on the frequency of rank order scale out of four possible choices. An analysis of the Likert-type scale revealed a mean of 4.38, with a standard deviation of 0.78.

Item 2: Lack of documentation for information on Internet sites

This item was ranked number 2 overall out of a possible three choices on the frequency of rank order system. A mean of 4.17 with a standard deviation of 0.63 was calculated for the Likert-type scale.

Item 3: Lack of permanence on Internet sites

This item was ranked number 3 overall out of a possibility of three choices on the frequency of rank order scale. However, 11 out of 24 members ranked this item number 1 or 2. A mean of 4.17 with a standard deviation of 0.56 was calculated for the Likert-type scale system.

Question 9: The idealized free document on the Internet that you would choose to be included in library holdings by the year 2010 will contain the following characteristics

Item 1: Reliable information

Reliable information was selected number 1 overall by panel members from six possible choices. One hundred percent of the participants ranked the item 1, 2, or 3. Analysis of the Likert-type scale derived a mean of 4.79, with a standard deviation of 0.33.

Item 2: Full-text availability

Participants of the Delphi panel ranked this item number 2 overall out of a possible six choices on the frequency of rank order system. Analysis of the Likert-type scale derived a mean of 4.71, with a standard deviation of 0.41.

Item 3: Stable Uniform Resource Locator

This item was ranked number 3 overall by the panel. Forty-six percent of the panelists ranked the item 1 or 2 out of a possible six choices on the frequency of rank order system. Analysis of the Likert-type scale revealed a mean of 4.42, with a standard deviation of 0.53.

Item 4: Review of information by a panel of experts

This item was ranked number 4 overall out of six possibilities on the frequency of rank order scale. Analysis of the Likert-type scale revealed a mean of 3.96, with a standard deviation of 0.56.

Item 5: Academic-related resources

Although this item was ranked number 5 overall, no panelist ranked this item number 1 on the frequency of rank order system. An analysis of the Likert-type scale revealed a mean of 4.42, with a standard deviation of 0.63.

6: User-friendly site

This item was ranked number 6 overall out of six possibilities on the frequency of rank order system. Forty-six percent of the panelists rated the item number 6. A mean of 4.25 with a standard deviation of 0.69 was calculated for the Likert-type scale. This item received a low priority in relation to the question.

Summary

This chapter contains the analysis of Round 2. This information was used to narrow the consensus for *Determining Standards for Sources of Free Information on the Internet for Inclusion in Academic Library Holdings By 2010*. The 9 questions containing 42 subparts were related to the 3 research questions. The responses of the panelists were measured by two different methods. The panelists responded to each of the 9 questions and the 42 subparts on a Likert-type scale. Then the panelists responded to each of the 9 questions and the 42 subparts using a ranking system. Each question's subparts were ranked in priority order by the panelists.

An analysis of the data reveals changes that need to be made if the free materials on the Internet are to be included in academic library holdings.

Chapter 6 contains recommendations and conclusions for publishers of free materials on the Internet, instructional personnel, library personnel, and a summary of the study.

CHAPTER 6

CONCLUSIONS

Introduction

A comprehensive description of the Delphi methodology in this study was presented in Chapter 3. Chapter 4 included an analysis of the narrative response from Round 1 concerning sources of free information on the Internet. Round 2 narrowed the consensus among the members of the Delphi panel. The analysis and findings of Round 2 were presented in Chapter 5. A consensus of agreement was reached to varying degrees on all items in Round 2. The data obtained from this process were used in determining standards for sources of free information on the Internet for inclusion in academic library holdings.

Chapter 6 is arranged in relation to the three research questions. The professional opinions of the Delphi panel members that have been synthesized through two rounds of questionnaires have been used to develop conclusions and recommendations. A summary is also included.

Question 1 Conclusions

What changes in higher education institutions will be required to ensure that students will be prepared to deal with free information on the Internet by the year 2010?

The members of the Delphi panel expressed their professional opinion that the number-one reason that libraries reject free sources of information on the Internet is the lack of credibility of information on Internet sites. The need for reliable information was listed as the number-one item that the members of the Delphi panel desired in an idealized document on the Internet. The lack of credibility of free information on the Internet was confirmed in the literature of Baule (1997) and Oliver et al. (1999). Bolt (1998) discovered in a survey at Seton Hall University that students were not allowed to cite Internet resources for academic study.

The Delphi panel members expressed a need for reliable information for free documents located on the Internet to be considered for inclusion in library holdings. A major collateral concern was the lack of documentation for information on Internet sites. This validated the research by Oliver et al. (1999), Tate & Alexander (1996), and Tillman (2001). The researcher, a dean of libraries with over 30 years of experience, has also encountered the problem of a lack of documentation for free information on the Internet. The lack of documentation is frustrating for students. This problem has escalated over the years. To alleviate the problem, the library orientation program at Walters State Community College was modified to include the general documentation expectations of the faculty, particularly those in the English department.

Another major reason libraries reject free information on the Internet is a lack of permanence of materials that are published on the Internet. A stable Uniform Resource Locator (URL) for documents was listed by the Delphi panel as one of the criteria for an idealized free document on the Internet that would be considered for inclusion in library holdings. This authenticated the research of Sauers (2001) who identified the need for a stable URL for documents on the Internet.

The primary method educators can use to prepare students to deal with the sources of free information on the Internet is to teach students how to use critical thinking skills with Internet materials. This was the number-one recommendation of the Delphi members' mode in relation to educators preparing students to deal with free sources of information on the Internet. The training for students could also include activities such as demonstrating good and bad Internet sites to students. This confirmed the research by Stern (1997) who identified the need for teachers and students to develop critical thinking skills in order to be able to evaluate information from documents on the Internet.

The Delphi panel identified the need to teach students how to conduct research. This finding is consistent with the findings of Kibirige and Depalo (2000) who identified the need for freshman students to be instructed in the academic methodology on how to discern what is reliable and appropriate in relation to free sources of information on the Internet. King (1997)

identified the need to teach researchers traditional evaluation techniques that would be appropriate for information resources on the Internet. Black (1999) identified the need to train students to conduct research in a scholarly methodology. Fialkoff (2001) identified the need for library instruction programs to begin at the freshman level and to continue throughout the academic career of students.

The Delphi panel identified the need for staff development projects for training librarians and faculty members as the most important support that libraries will receive from federal, state and/or local government to assist students in dealing with free sources of information on the Internet. This conclusion confirmed the findings of Fidel et al. (1999) who emphasized that the potential for the World Wide Web is enormous, but without the tools and methods for gathering, evaluating, and presenting information, the Web may never reach its potential as the universe of knowledge.

The Delphi panel also identified the need for providing up-to-date computer equipment as a means of assisting students in dealing with free sources of information on the Internet. The electronic equipment needed to access the Internet effectively is a basic requirement, and without up-to-date equipment, students will be deprived of using the resources of the Internet.

Question 2 Conclusions

What procedures will librarians need to develop and implement to ensure that free Internet materials will meet quality standards for inclusion in academic library holdings by the year 2010?

Libraries historically have been concerned about providing only the best of available materials for their patrons to use. Dewey (1876) emphasized this need, and Katz (1997) and Sauers (2001) provided a mechanism for selecting the best materials available regardless of format.

Librarians traditionally have not been enthusiastic supporters of free materials on the Internet because of the following reasons:

1. Lack of credibility of information on Internet sites,
2. Lack of documentation for information on Internet sites, and
3. Lack of permanence for Internet sites.

These reasons were elaborated under research question one.

The Delphi panel emphasized that the Internet was easier to use to locate materials when compared to print materials; however, they also strongly agreed that there was no difference in the standards that should apply to free materials on the Internet and the traditional print resources. The same standards should apply to all materials that are selected for inclusion in library collections. In selecting the best materials from available resources, it is important to note that librarians were excluding resources that do not meet the criteria for being included in a library collection.

The panel described the characteristics of the idealized free document on the Internet that would be considered for inclusion in a library collection. The number-one characteristic the panel desired in a free document on the Internet was reliable information. This finding validated the research of Brandt (1996), Tillman (2001), and Ury et al. (1999) who pointed out the need for reliable information on the Internet.

The second characteristic of the idealized free document on the Internet selected by the panel was the availability of full-text of the document. This was documented in the literature because the availability of full-text was one of the underlying principles of the WWW because hypertext linking allows a researcher to go from document to document in the exploration of a topic (Smith & Gibbs, 1993). The Internet may be more likely to generate more full-text articles in contrast with conventional library databases that include citations to information that are not available in electronic format. However, the researcher must wade through an incredible amount of useless verbiage in an attempt to locate information on the Internet (Kibirige & Depalo, 2000).

The third characteristic of the idealized document on the Internet was the need for a stable URL. The need for stable URL's was identified by Notess (1998) in his research related to Internet users.

The fourth characteristic of the idealized free document on the Internet was the need for review of the information by a panel of experts. This validated the research of Kirk (1996), Miller (1997), Sauers (2001), and Tillman (2001) who identified the need for the review of sources of information on the Internet.

In order to accomplish the objective that free information sources on the Internet meet the same standards as print resources, the Delphi panel identified and ranked five procedures that would facilitate this process. The panel identified a search for reviews of materials as the number-one procedure that libraries should implement. There is an elaborate system for the review of materials in print format, particularly books that can be used as guides to the selection of materials for inclusion in library holdings. However, a comprehensive system of reviewing materials on the Internet has not fully developed. There are on-line journals and other documents that undergo a peer review process prior to being published on the Internet. There are guides to free sources of materials on the Internet, such as the ERIC Project. This conclusion authenticates the research of Katz (1997), Royce (1999), Tillman (2001), and Maxymuk (2001) who had previously identified the need for the evaluation of resources on the Internet because an overwhelming quantity of documents on the Internet has not been reviewed prior to being published.

The Delphi panel listed the review of author or originator qualifications as the number-two procedure that libraries could employ to ensure that free sources on the Internet meet the same standards as print materials, supporting research by Fialkoff (2001) and Royce (1999) who elaborated on the difficulty of finding information concerning the author and originator of the site in the review of literature.

The need for the development of library policies dealing with Internet materials was ranked number three by the Delphi panel. The establishment of such policies would enable libraries to establish the criteria they would use to consider the inclusion of free materials on the Internet in library holdings. This confirms the research of December (1994) who previously

emphasized that without methodologies for managing information on the Internet, the potential of the Internet could be lost.

The fourth item that the Delphi panel recommended that libraries implement is to develop collaborative efforts with other libraries to select resources on the Internet. This finding verifies the research of O'Leary (2000) who pointed out that librarians were one of the first inhabitants of the Web and began to create links to a variety of subjects. Lubans (1999) also previously pointed out that students wanted libraries to list the best sites by subject. This will be an enormous task since Goldsborough (2001) estimated the number of pages on the Internet at 3 billion and the total is increasing at the rate of three pages per second. However, collaborative efforts involving librarians, teachers, and college administrators will make this task feasible. The promotion of projects listing selected Internet resources was listed by the Delphi panel as an important form of support to assist students in dealing with free sources of information on the Internet.

The final item recommended by the Delphi panel was for the review of Internet materials in individual libraries. In his research, Goldsborough (2001) pointed out that this is an almost impossible task for individual libraries because there are approximately three billion documents on the Internet. This finding echoed results by Lubans (1999) who emphasized that students want the library catalog to provide links to Web resources. Students also want the library to inform them via e-mail of the best new sites in subject areas. Fidel et al. (1999) pointed out that librarians were the first preference of students when they sought assistance in searching the Internet.

The Delphi panel pointed out five specific areas in which libraries need to develop or implement procedural changes in order to ensure that Internet materials meet the quality standards for inclusion in library holdings in 2010 and beyond. This result supports the research of Creighton and Jensen (2001) who emphasized the need for libraries to change and reinvent themselves perpetually.

Question 3 Conclusions

What can publishers of free sources of information on the Internet do to ensure that their materials will be considered for inclusion in academic library holdings by the year 2010?

The publishers of free materials on the Internet need to examine the reasons why libraries have not included their materials in library holdings. The Delphi panel listed the lack of credibility of information on Internet sites as the number-one reason that librarians reject free sources of information on the Internet for inclusion in library holdings. This finding confirmed the research of Jurek (1997) who also pointed out the problem of misinformation on the Internet. Stoll (1995) identified the Internet as a wasteland of unfiltered data because of the lack of editors, reviewers, and critics. Tillman (2001) pointed out that there is valuable information on the Internet intermingled with an incredible amount of junk. Kirk (1996) credited the wide range of quality of Internet materials to the ease of publishing on the Internet.

The lack of documentation of information on Internet sites was listed as the second reason librarians reject free materials on the Internet for inclusion in libraries, supporting the results of work by Lubans (1999) who identified explicit ownership as one of 10 items students use to evaluate an Internet site.

The lack of permanence of Internet sites was the third reason the Delphi panel identified as a reason that librarians rejected free materials on the Internet for inclusion in libraries. This lack of permanence is a major problem for researchers, librarians, and students involved in using the Internet to access information. Librarians often use a resource daily with students. If Internet sources are not stable and have unreliable URLs, librarians will quickly find alternative reliable resources regardless of the medium. As a librarian, I prefer on-line resources because of the ease of accessibility through a computer. However, librarians working with students need reliable sources or they will find alternative dependable sources. Previous research was confirmed including work by Lubans (1998) who identified the problem of unstable sites on the Internet and Fialkoff (2001) who identified the problem of information on the Internet being available for unspecified short periods of time and may not be re-published on the Internet. In addition,

December (1994) identified the problem of search engines linking to ephemeral pages and documents that vanish or undergo changes after the database was completed, and Kelley (1999) identified the problems of lost links and dead-ends because of the lack of documentation.

The Delphi panel identified the characteristics of an idealized document on the Internet that would be considered for inclusion in library holdings. These characteristics are: reliable information, the availability of full-text, a stable URL, information that has been reviewed by a panel of experts, documents that are academic-related, and a site that is user-friendly. These characteristics are elaborated upon in research question number two.

The Delphi panel also listed changes that publishers of free information on the Internet need to do to ensure that their materials will be considered for inclusion in library holdings. The need to provide information that has integrity was identified as the number-one priority that publishers of Internet materials need to provide to ensure that their materials will be considered for inclusion in library holdings. The need for reliable information was listed as the number-one characteristic that the Delphi panel members desired in an idealized free document on the Internet. The need for reliable information was listed as the number-one criteria that would be used to determine whether free sources of materials will be included in library holdings. The need for publishers to provide materials with integrity was pointed out previously by Ury et al. (1999), Brandt (1996), and Tillman (2001).

The Delphi panel rated the need for verifying continued accessibility to the site as the second most important thing that publishers of free sources of information on the Internet need to do in order for their materials to be considered for inclusion in library holdings. Accessibility to the Internet site was listed as a key factor to be considered in determining whether to include free sources of information on the Internet for inclusion in library holdings. The need for a stable URL was listed by the Delphi panel as a key feature of an idealized free document on the Internet. This documents the research of Notess (1998) who identified the need for a stable URL. A stable URL is a critical feature for free sources of information on the Internet, particularly if the Internet was the only medium on which the document was published. Without the correct

URL, it is extremely difficult to trace a document. Materials published only on the Internet have one specific location where the document can be accessed. Print materials usually can be traced to several libraries; therefore, accessing the information is possible. For example, if one library loses its copy of a document, the document can usually be located at another library.

The Delphi panel identified the need to list the author of the free material on the Internet as an important criterion that publishers of free sources of information on the Internet need to do in order to ensure that their materials will be considered for inclusion in library holdings. The review of author or originator qualifications was listed as the number-two item that libraries should do to ensure that free sources of information on the Internet meet the same standards as print materials. The lack of documentation for information on Internet sites was listed as a major reason that libraries reject free sources of information on the Internet for inclusion in library holdings. This supports the research of Fialkoff (2001) and Royce (1999) who had previously identified the difficulty of finding information on the author or originator of the site when examining free sources of information on the Internet.

The Delphi panel identified the need for publishers of free sources of information on the Internet to maintain currency in relation to information. The currency of the information was listed as a key criterion when considering sources of free information for inclusion in libraries by the Delphi panel. This confirmed the findings of Fidel et al. (1999) who conducted a study in which students expected information on the Internet to be more up-to-date based on the assumption that it would be easier to update a document on the Internet than publish a book, and Lubans (1999), who found that students looked for recent dates on Internet documents as one of their evaluation criteria in judging Internet information.

The Delphi panel identified the need to determine the user-friendliness of a site as a characteristic that publishers need to develop in order to ensure that their materials will be considered for inclusion in library holdings. The Delphi panel identified a user-friendly site as one of the characteristics that they would want in an idealized document on the Internet. A well-maintained site on the Internet was listed as one of the criteria that the Delphi panel would

examine in order to determine whether a particular free source of information on the Internet would be included in library holdings. This is consistent with research by Fidel et al. (1999), who concluded from a study that the home page of an article on the Internet should contain all of the critical information concerning the site. Internet sites should be designed by publishers to enhance the usefulness and ability of their sites to attract users. Perry (1995), in a study of Internet users, also previously determined that participants wanted standardization of entries and basic bibliographical information.

Recommendations for Future Research

The following recommendations are offered for consideration.

This study should be expanded beyond Tennessee to the southeastern region of the United States, or a national study should be conducted.

This study examined the major changes and procedures in community colleges in Tennessee that will be needed to ensure that students are prepared to deal with free sources of information on the Internet. The following procedures and changes are worthy of additional study: evaluation of Internet resources, preparing librarians and teachers to select and utilize materials on the Internet, critical thinking skills, development of library orientation programs, and collection development policies involving Internet resources.

Summary

This study involved the study of free sources of information on the Internet. The changes in higher education that were needed to ensure that students are prepared to deal with free sources of information were examined. The procedures that libraries need to develop and implement to ensure that free sources of information on the Internet meet quality standards were explored. The academic expectations, standards, and basic information requirements expected by educators and librarians of producers of free information sources on the Internet were explored.

The results of this study could serve as a guide for librarians, educators, and producers of free sources of information on the Internet to serve as a guide for the development, evaluation, and effective use of a wealth of information sources on the Internet for students to use in their academic programs.

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APPENDICES

APPENDIX A

NOMINATION OF PANEL MEMBERS

Mr. John Doe
Dyersburg State Community College

Dear Mr. Doe,

Thank you for agreeing to serve on the nominating committee for my Delphi study. I am seeking to establish a panel of experts to reach consensus concerning determining standards for sources of free information in the Internet for inclusion in academic library holdings by 2010. The results will assist in the research for a doctoral dissertation. The nomination form below may be returned electronically by using your e-mail's 'Reply' feature. Your nomination will remain confidential. Please nominate individuals from your college or library directors from TBR community colleges. You may nominate yourself.

Please return the nomination form by April 23, 2002. If you have any further questions, you may contact me during the day at (423) 585-6901 or in the evening at (423) 581-2279.

Again, I appreciate your time and attention.

Sincerely,

Douglas D. Cross

Nomination Form

Please nominate three individuals in each of the following two categories: (1.) Library Dean/Director (2.) Reference Librarian. Only the first individual will be contacted and the other two will only be used if the first individual cannot serve on the Delphi panel. (**Simply click the 'Reply' button and then click in the field to the right of each requested item to enter data.)**

	Library Dean/Director			Reference Librarian	
1.	Name:		1.	Name:	
	College:			College:	
	Phone No:			Phone No:	
	E-mail:			E-mail:	
2.	Name:		2.	Name:	
	College:			College:	
	Phone No:			Phone No:	
	E-mail:			E-mail:	
3.	Name:		3.	Name:	
	College:			College:	
	Phone No:			Phone No:	
	E-mail:			E-mail:	

Ms. Jane Doe
Motlow State Community College
Dear Ms. Doe,

Thank you for agreeing to serve on the nominating committee for my Delphi study. I am seeking to establish a panel of experts to reach consensus concerning determining standards for sources of free information in the Internet for inclusion in academic library holdings by 2010. The results will assist in the research for a doctoral dissertation. The nomination form below may be returned electronically by using your e-mail's 'Reply' feature. Your nomination will remain confidential. Please nominate individuals from your college or library directors from TBR community colleges. You may nominate yourself.

Please return the nomination form by April 23, 2002. If you have any further questions, you may contact me during the day at (423) 585-6901 or in the evening at (423) 581-2279.

Again, I appreciate your time and attention.

Sincerely,

Douglas D. Cross

Nomination Form
Please nominate three individuals in each of the following two categories: (1.) Reference Librarian (2.) Online Instructor. Only the first individual will be contacted and the other two will only be used if the first individual cannot serve on the Delphi panel. **(Simply click the 'Reply' button and then click in the field to the right of each requested item to enter data.)**

	Reference Librarian			Online Instructor	
1.	Name:		1.	Name:	
	College:			College:	
	Phone No:			Phone No:	
	E-mail:			E-mail:	
2.	Name:		2.	Name:	
	College:			College:	
	Phone No:			Phone No:	
	E-mail:			E-mail:	
3.	Name:		3.	Name:	
	College:			College:	
	Phone No:			Phone No:	
	E-mail:			E-mail:	

APPENDIX B

ROUND 1 QUESTIONNAIRE AND CORRESPONDENCE

Ms. Jane Doe
121 East Main
Morristown, TN 37814

Dear Ms. Doe:

Thank you for agreeing to serve on a panel of experts who are being invited to participate in a series of questionnaires in a Delphi study. The purpose of this study is to establish a consensus concerning questions relating to the topic of determining standards for sources of free information on the Internet for inclusion in library holdings by 2010. E-mail will be utilized to distribute a minimum of two questionnaires to the panel in order to reach consensus. The collective answers to the first questionnaire will be analyzed, grouped by consensus, and used as a basis for developing the second questionnaire. The second questionnaire will be shorter and take less time to complete. The project will be concluded by July.

As I informed you during our telephone conversation, the results of the questionnaire will assist me in writing a doctoral dissertation at East Tennessee State University. The results of these efforts will be helpful to educators, libraries, and publishers on the Internet.

I know that you appreciate being nominated to serve on the panel by an LRC/Library Director at a TBR community college. Membership of the panel is limited to a few highly selective experts in your field. Your participation in the project is crucial to its success.

Your individual responses to this voluntary survey will be kept anonymous and confidential and used exclusively for data analysis. The names of the participants will be published in the dissertation. At the conclusion of the study, participants will be sent an executive summary of the study. In addition, the Internet URL of the online dissertation will be sent to each participant.

I have sent by separate cover an Informed Consent form, which must be signed and returned in the self-addressed envelope included with the letter in order to participate in the project.

Please return the questionnaire to me by May 10, 2002. (You may do this by using your e-mail's 'Return' feature.) If you have any further questions, you may contact me during the day at (423) 585-6901 or during the evening at (423) 581-2279. If you have an address or e-mail other than the one I am using, that you would prefer to use for this study, please provide that information on your questionnaire.

Sincerely,
Douglas D. Cross

(Simply click your e-mail's 'Reply' button and then click in the field to the right of each item or question to type your response.)

Determining Standards for Sources of Free Information On the Internet for Inclusion In Academic Library Holdings by 2010

Please complete these brief biographical questions:

Name: _____

Current Position: _____

College: _____

Profession: _____

Years of
Professional Experience: _____

Round One Questionnaire

Please respond to each of the following ten questions:

1. In your judgment, what will be the five most important criteria that will be used to determine whether particular free sources of information on the Internet should be included in library holdings by the year 2010?
2. In your opinion, what are the three most important things that a library can do to ensure that free information sources on the Internet meet the same standards as print materials?
3. In your opinion, what are the changes that publishers of free sources of information on the Internet will need to make to ensure that their materials will be considered for inclusion in library holdings by the year 2010?
4. In your opinion, what are the three most important things that educators can do to prepare students to deal with the sources of free information on the Internet by the year 2010?

5. In your opinion, what are the three most important current initiatives by libraries to prepare students to deal with sources of free information on the Internet?
6. In your opinion, what will be the three most important forms of support that libraries will receive from federal, state, and/or local government to assist students in dealing with free sources of information on the Internet by the year 2010?
7. In your opinion, what will be the major differences between selecting free sources of information on the Internet and traditional print resources for inclusion in library holdings by the year 2010?
8. In your opinion, what are the major current reasons that librarians reject free sources of information on the Internet for inclusion in library holdings?
9. Please describe the idealized free document on the Internet that you would choose to be included in library holdings by the year 2010.
10. Please feel free to comment on any other aspect of dealing with free sources of information on the Internet to be considered for inclusion in library holdings by the year 2010.

APPENDIX C

ROUND 2 QUESTIONNAIRE AND CORRESPONDENCE

E-MAIL

Dear John Doe:

Thank you for your excellent response to the first-round questionnaire. The quality of your responses provided an excellent narrative and met all my expectations.

As I explained in my earlier e-mail, this second questionnaire is much shorter and less time consuming to complete. The objective of this round is to further narrow the answers you as a panel generated in the first round. The statements in the attached questionnaire are the result of the content analysis of the answers of all twenty-four panelists in the first round.

Please return this questionnaire by June 27, 2002. (You may do this by using your e-mail's 'Reply' feature.) If you have any further questions, you may contact me during the day at (423) 585-6901 or during the evening at (423) 581-2279.

Again, I thank you for your cooperation and willingness to serve on this panel.

Douglas D. Cross
6832 Westgate Circle
Talbott, TN 37877
Doug.Cross@ws.edu
(423) 585-6901 (work) or (423) 581-2279 (home)

Determining Standards for Sources of Free Information on the Internet for Inclusion in Academic Library Holdings by the year 2010

Directions:

Section 1:

A. Please ***type the number of your choice in the space beside each statement.*** Select the number from the five possible choices listed below that best reflects the extent to which you disagree or agree with the statement.

1 = Strongly disagree

2 = Disagree

3 = Neutral

4 = Agree

5 = Strongly agree

Section 2:

B. For each of the statements below rank in priority order ***in the space to the left of the statement***. P***lace a #1 in the blank of the most important statement***, a #2 in the blank of the second most important statement and likewise continue until you have ranked each item for each statement.

Note: Each section requires a different type of response

SECTION 1

EVALUATION OF PROCEDURES AND CRITERIA

Please type the number of your choice in the space beside each statement. Select the number from the five possible choices listed below that best reflects the extent to which you disagree or agree with the statement.

1 = Strongly disagree
2 = Disagree
3 = Neutral
4 = Agree
5 = Strongly agree

1. In your judgment, the following important criteria will be used to determine whether particular free sources of information on the Internet should be included in library holdings by the year 2010:

Reliability of information ___

1	2	3	4	5
Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

Applicability to the curriculum ___

1	2	3	4	5
Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

Currency of information ___

1	2	3	4	5
Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

Long-term accessibility of the information ___

1	2	3	4	5
Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

Quality of information ___

1	2	3	4	5
Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

Well-maintained Internet site ___

1	2	3	4	5
Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

2. In your opinion, libraries can/should implement the following important procedures to ensure that free information sources on the Internet meet the same standards as print materials:

Search for review of materials ___

1	2	3	4	5
Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

Collaborative efforts with other libraries to select sources on the Internet ___

1	2	3	4	5
Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

Review of author or originator qualifications ___

1	2	3	4	5
Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

Review of Internet materials in individual libraries ___

1	2	3	4	5
Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

Development of library policies dealing with Internet materials ___

1	2	3	4	5
Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

3. In your opinion, publishers of free sources of information on the Internet will need to make the following changes to ensure that their materials will be considered for inclusion in library holdings by the year 2010:

Provide information that has integrity ___

1	2	3	4	5
Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

List author ___

1	2	3	4	5
Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

Verify continued accessibility to the site ___

1	2	3	4	5
Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

Determine user-friendliness of site ___

1	2	3	4	5
Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

Maintain currency in relation to information ___

1	2	3	4	5
Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

4. In your opinion, educators can/should do the following to prepare students to deal with the sources of free information on the Internet by the year 2010:

Teach students how to conduct research ___

1	2	3	4	5
Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

Teach students how to use critical thinking skills with Internet materials ___

1	2	3	4	5
Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

Demonstrate good and bad Internet sites to students ___

1	2	3	4	5
Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

5. In your opinion, libraries can/should continue the following current initiatives to prepare students to deal with sources of free information on the Internet:

Provide information literacy programs including Internet-based materials ___

1	2	3	4	5
Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

Use Web-based chat and e-mail to assist students ____

1	2	3	4	5
Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

Maintain library home page that provides links to information sources ___

1	2	3	4	5
Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

Continuously review the Internet for sources of information for students ___

1	2	3	4	5
Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

6. In your opinion, the most important forms of support that libraries will receive from federal, state, and/or local government to assist students in dealing with free sources of information on the Internet by the year 2010 will be:

Federal funding ___

1	2	3	4	5
Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

State funding ___

1	2	3	4	5
Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

Local funding ___

1	2	3	4	5
Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

Up-to-date computer-related equipment ___

1	2	3	4	5
Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

Staff development Internet projects for training librarians and faculty ___

1	2	3	4	5
Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

Promotion of projects listing selected Internet resources ___

1	2	3	4	5
Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

7. In your opinion, the major differences between selecting free sources of information from the Internet and traditional print resources for inclusion in library holdings by the year 2010 are:

No difference—same standards should apply ___

1	2	3	4	5
Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

Additional access cost associated with the Internet ___

1	2	3	4	5
Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

Greater ease of use of the Internet ___

1	2	3	4	5
Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

Freeing up of space for including paper materials in the collection ___

1	2	3	4	5
Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

8. In your opinion, the major current reasons that librarians reject free sources of information on the Internet for inclusion in library holdings are:

Lack of credibility of information on Internet sites ___

1	2	3	4	5
Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

Lack of permanence for Internet sites ___

1	2	3	4	5
Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

Lack of documentation for information on Internet sites ___

1	2	3	4	5
Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

9. The idealized free document on the Internet that you would choose to be included in library holdings by the year 2010 will contain the following characteristics:

Reliable information ___

1	2	3	4	5
Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

Full-text availability ___

1	2	3	4	5
Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

Academic-related resources ___

1	2	3	4	5
Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

Stable URL ___

1	2	3	4	5
Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

Review of information by a panel of experts ___

1	2	3	4	5
Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

User-friendly site___

1	2	3	4	5
Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

SECTION 2

EVALUATION OF PROCEDURES AND CRITERIA

For each of the statements below rank in priority order in the space to the left of the statement. Place a #1 in the blank of the most important statement, a #2 in the blank of the second most important statement and likewise continue until you have ranked each item for each statement.

1. In your judgment, the following important criteria will be used to determine whether particular free sources of information on the Internet should be included in library holdings by the year 2010:

_____Reliability of information

_____Applicability to the curriculum

_____Currency of information

_____Long-term accessibility of the information

_____Quality of information

_____Well-maintained Internet site

2. In your opinion, libraries can/should implement the following important procedures to ensure that free information sources on the Internet meet the same standards as print materials:

_____Search for review of materials

_____Collaborative efforts with other libraries to select sources on the Internet

_____Review of author or originator qualifications

_____Review of Internet materials in individual libraries

_____Development of library policies dealing with Internet materials

3. In your opinion, publishers of free sources of information on the Internet will need to make the following changes to ensure that their materials will be considered for inclusion in library holdings by the year 2010:

_____Provide information that has integrity

_____List author

_____Verify continued accessibility to the site

_____Determine user-friendliness of site

_____Maintain currency in relation to information

4. In your opinion, educators can/should do the following to prepare students to deal with the sources of free information on the Internet by the year 2010:

_____Teach students how to conduct research

_____Teach students how to use critical thinking skills with Internet materials

_____Demonstrate good and bad Internet sites to students

5. In your opinion, libraries can/should continue the following current initiatives to prepare students to deal with sources of free information on the Internet:

_____Provide information literacy programs including Internet-based materials

_____Use Web-based chat and e-mail to assist students

_____Maintain library home page that provides links to information sources

_____Continuously review the Internet for sources of information for students

6. In your opinion, the most important forms of support that libraries will receive from federal, state, and/or local government to assist students in dealing with free sources of information on the Internet by the year 2010 will be:

_____ Federal funding

_____ State funding

_____ Local funding

_____ Up-to-date computer-related equipment

_____ Staff development Internet projects for training librarians and faculty

_____ Promotion of projects listing selected Internet resources

7. In your opinion, the major differences between selecting free sources of information from the Internet and traditional print resources for inclusion in library holdings by the year 2010 are:

_____ No difference—same standards should apply

_____ Additional access cost associated with the Internet

_____ Greater ease of use of the Internet

_____ Freeing up of space for including paper materials in the collection

8. In your opinion, the major current reasons that librarians reject free sources of information on the Internet for inclusion in library holdings are:

_____ Lack of credibility of information on Internet sites

_____ Lack of permanence for Internet sites

_____ Lack of documentation for information on Internet sites

9. The idealized free document on the Internet that you would choose to be included in library holdings by the year 2010 will contain the following characteristics:

_____ Reliable information

_____ Full-text availability

_____ Academic-related resources

_____ Stable URL

_____ Review of information by a panel of experts

_____ User-friendly site

APPENDIX D

ROUND 2 ANALYSES OF SECTION 1 AND SECTION 2

Table 1 Round 2 Questionnaire – Sections 1 and 2

Ranking Order for Section 2 and Means and Standard Deviation for Likert Scale for Section 1

Question 1

In your judgment, the following important criteria will be used to determine whether particular free sources of information on the Internet should be included in library holdings by the year 2010:

	Ranking Points	N	Frequency of Rank Order 1	2	3	4	5	6	Mean	Standard Deviation
Reliability of information	226	24	13	8	3	-	-	-	4.96	0.08
Quality of information	203	24	6	7	5	4	2	-	4.83	0.28
Applicability to the curriculum	175	24	1	4	7	5	3	4	4.17	0.63
Currency of information	170	24	-	3	4	10	6	1	4.17	0.63
Long-term accessibility of information	163	23	4	1	3	4	7	4	4.50	0.58
Well-maintained Internet site	129	22	-	1	2	1	7	11	4.29	0.53

Question 2

In your opinion, libraries can/should implement the following important procedures to ensure that free information sources on the Internet meet the same standards as print materials:

	Ranking Points	N	Frequency of Rank Order 1	2	3	4	5	6	Mean	Standard Deviation
Search for review of materials	207	24	9	7	1	4	3	-	4.21	0.66
Review of author or originator Qualifications	196	24	4	5	7	7	1	-	4.33	0.61
Development of library policies dealing with Internet materials	187	21	9	4	5	3	-	-	4.33	0.61
Collaborative efforts with other libraries to select sources on the Internet	185	24	-	8	7	3	6	-	4.29	0.65
Review of Internet materials in individual Libraries	167	24	2	-	4	7	11	-	3.88	0.59

Table 1 Round 2 Questionnaire – Sections 1 and 2

Ranking Order for Section 2 and Means and Standard Deviation for Likert Scale for Section 1

Question 3

In your opinion, publishers of free sources of information on the Internet will need to make the following changes to ensure that their materials will be considered for inclusion in library holdings by the year 2010:

	Ranking Points	N	Frequency of Rank Order 1	2	3	4	5	6	Mean	Standard Deviation
Provide information that has integrity	226	24	14	8	-	2	-	-	4.78	0.36
Verify continued accessibility to the site	193	24	6	3	6	4	5	-	4.42	0.58
List author	191	24	2	9	5	2	6	-	4.52	0.54
Maintain currency in relation to information	190	24	4	3	9	3	5	-	4.50	0.50
Determine user-friendliness of site	162	24	-	1	1	13	9	-	4.25	0.69

Question 4

In your opinion, educators can/should do the following to prepare students to deal with the sources of free information on the Internet by the year 2010:

	Ranking Points	N	Frequency of Rank Order 1	2	3	4	5	6	Mean	Standard Deviation
Teach students how to use critical thinking skills with Internet materials	230	24	15	8	1	-	-	-	4.88	0.23
Teach students how to conduct research	219	24	8	11	5	-	-	-	4.63	0.50
Demonstrate good and bad Internet sites to students	199	24	1	5	18	-	-	-	4.33	0.61

Table 1 Round 2 Questionnaire – Sections 1 and 2

Ranking Order for Section 2 and Means and Standard Deviation for Likert Scale for Section 1

Question 5

In your opinion, libraries can/should continue the following current initiatives to prepare students to deal with sources of free information on the Internet:

	Ranking Points	N	Frequency of Rank Order 1	2	3	4	5	6	Mean	Standard Deviation
Provide information literacy programs including Internet-based materials	219	24	12	4	7	1	-	-	4.50	0.63
Continuously review the Internet for sources of information for students	205	24	4	8	9	3	-	-	4.21	0.66
Maintain library home page that provides links to information sources	203	23	7	8	5	3	-	-	4.50	0.54
Use Web-based chat and e-mail to assist students	172	23	-	4	3	16	-	-	4.17	0.69

Question 6

In your opinion, the most important forms of support that libraries will receive from federal, state, and/or local government to assist students in dealing with free sources of information on the Internet by the year 2010 will be:

	Ranking Points	N	Frequency of Rank Order 1	2	3	4	5	6	Mean	Standard Deviation
Staff development Internet projects for training librarians and faculty	188	23	4	6	6	5	1	1	4.39	0.64
Up-to-date computer-related equipment	187	23	6	4	6	3	2	2	4.54	0.57
Federal funding	183	23	9	2	1	2	8	1	3.78	0.96
State funding	180	23	3	6	2	8	4	-	3.71	1.03
Promotion of projects listing selected Internet resources	157	23	1	4	5	1	4	8	4.04	0.56
Local funding	132	22	-	1	2	4	4	11	3.33	0.97

Table 1 Round 2 Questionnaire – Sections 1 and 2

Ranking Order for Section 2 and Means and Standard Deviation for Likert Scale for Section 1

Question 7

In your opinion, the major differences between selecting free sources of information from the Internet and traditional print resources for inclusion in library holdings by the year 2010 are:

	Ranking Points	N	Frequency of Rank Order 1	2	3	4	5	6	Mean	Standard Deviation
Greater ease of use of the Internet	217	24	7	12	4	1	-	-	3.79	0.78
No difference – same standards should apply	215	24	13	1	6	4	-	-	3.75	0.98
Additional access cost associated with the Internet	194	24	3	4	9	8	-	-	3.29	0.82
Freeing up of space for including paper materials in the collection	191	24	1	7	6	10	-	-	3.46	0.75

Question 8

In your opinion, the major current reasons that librarians reject free sources of information on the Internet for inclusion in library holdings are:

	Ranking Points	N	Frequency of Rank Order 1	2	3	4	5	6	Mean	Standard Deviation
Lack of credibility of information on Internet sites	232	24	18	5	-	1	-	-	4.38	0.78
Lack of documentation for information on Internet sites	209	24	3	11	10	-	-	-	4.17	0.63
Lack of permanence for Internet sites	206	24	3	8	13	-	-	-	4.17	0.56

Table 1 Round 2 Questionnaire – Sections 1 and 2

Ranking Order for Section 2 and Means and Standard Deviation for Likert Scale for Section 1

Question 9

The idealized free document on the Internet that you would choose to be included in library holdings by the year 2010 will contain the following characteristics:

	Ranking Points	N	Frequency of Rank Order 1	2	3	4	5	6	Mean	Standard Deviation
Reliable information	228	24	17	2	5	-	-	-	4.79	0.33
Full-text availability	192	24	1	10	5	5	2	1	4.71	0.41
Stable URL	180	24	4	2	7	3	5	3	4.42	0.53
Review of information by a panel of experts	169	24	2	4	3	3	8	4	3.96	0.56
Academic-related resources	166	24	-	4	3	9	3	5	4.42	0.63
User-friendly site	145	24	-	2	1	4	6	11	4.30	0.69

Table 2 Round 2 Questionnaire – Section 1
Means and Standard Deviation for Likert Scale

Control Number	Question 1 Part 1 Reliability of Information	Question 1 Part 2 Applicability of Curriculum	Question 1 Part 3 Currency of Information	Question 1 Part 4 Long-Term Accessibility of Information	Question 1 Part 5 Quality of Information	Question 1 Part 6 Well-Maintained Internet Site	Question 2 Part 1 Search for Review of Materials	Question 2 Part 2 Collaborative Efforts	Question 2 Part 3 Review of Author or Originator Qualifications
1	5	5	5	4	5	4	5	5	4
2	5	4	4	5	5	4	3	5	5
3	5	5	5	5	5	5	4	4	4
4	5	4	4	5	4	3	5	5	4
5	5	5	4	3	5	3	3	3	4
6	4	3	3	4	5	4	3	4	4
7	5	4	4	4	4	4	3	4	5
8	5	5	4	5	5	4	5	4	5
9	5	5	5	5	5	5	5	4	5
10	5	5	5	5	5	5	4	5	4
11	5	3	4	4	5	4	4	3	4
12	5	4	4	5	5	4	4	5	5
13	5	5	5	5	5	5	5	4	4
14	5	4	4	4	4	4	4	4	3
15	5	4	5	3	5	4	4	4	3
16	5	4	4	5	5	4	4	3	5
17	5	5	3	5	5	5	5	3	5
18	5	4	3	4	5	4	5	5	5
19	5	5	5	5	5	5	5	5	5
20	5	3	5	5	5	5	4	5	4
21	5	2	4	4	5	4	3	5	5
22	5	4	4	4	5	4	4	4	4
23	5	4	5	5	5	5	5	5	5
24	5	4	2	5	4	5	5	5	3
Mean	4.96	4.17	4.17	4.50	4.83	4.29	4.21	4.29	4.33
Std Dev	0.08	0.63	0.63	0.58	0.28	0.53	0.66	0.65	0.61

Table 2 Round 2 Questionnaire – Section 1
Means and Standard Deviation for Likert Scale

Control Number	Question 2 Part 4 Review of Internet Materials in Individual Libraries	Question 2 Part 5 Development of Library Policies with Internet Materials	Question 3 Part 1 Provide Information that has Integrity	Question 3 Part 2 List Author	Question 3 Part 3 Verify Continued Accessibility of Site	Question 3 Part 4 Determine User-friendliness of Site	Question 3 Part 5 Maintain Currency in relation to Information	Question 4 Part 1 Teach Students how to Conduct Research	Question 4 Part 2 Teach Students to Use Critical Thinking Skills
1	4	5	3	5	4	3	5	4	5
2	4	5	4	5	5	5	5	4	5
3	3	5	5	5	4	3	5	5	5
4	5	4	5		5	5	5	4	5
5	3	2	5	4	4	3	5	4	5
6	4	5	5	4	4	5	4	5	5
7	4	4	5	4	4	3	4	5	5
8	4	4	5	5	5	4	4	5	5
9	4	5	5	5	4	5	5	5	5
10	5	5	5	5	5	5	5	5	5
11	4	5	4	4	5	4	4	5	5
12	3	4	5	5	5	4	4	4	5
13	3	4	5	4	4	4	5	5	5
14	4	4	5	4	3	4	4	4	3
15	4	3	5	3	4	5	5	5	5
16	4	5	5	4	4	4	4	5	5
17	2	4	5	5	5	5	5	5	5
18	4	4	5	5	5	5	4	5	5
19	5	5	5	5	5	5	5	5	5
20	5	5	4	4	5	4	4	5	5
21	3	4	5	5	4	3	4	4	5
22	4	4		4	3	4	4	5	5
23	5	5	5	5	5	5	5	5	5
24	3	4	5	5	5	5	4	3	4
Mean	3.88	4.33	4.78	4.52	4.42	4.25	4.50	4.63	4.88
Std Dev	0.59	0.61	0.36	0.54	0.58	0.69	0.50	0.50	0.23

Table 2 Round 2 Questionnaire – Section 1
Means and Standard Deviation for Likert Scale

Control Number	Question 4 Part 3 Demonstrate Good and Bad Internet Sites to Students	Question 5 Part 1 Provide Information Literacy Programs Including Internet-based Materials	Question 5 Part 2 Use Web-based Chat and Email to Assist Students	Question 5 Part 3 Maintain Library Home Page that Provides Links	Question 5 Part 4 Continuously Review the Internet for Sources of Information	Question 6 Part 1 Federal Funding	Question 6 Part 2 State Funding	Question 6 Part 3 Local Funding	Question 6 Part 4 Up-to-date Computer-related Equipment
1	5	5	4	5	5	3	3	5	4
2	4	5	4	4	3	3	5	3	5
3	4	4	3	5	4	2	1	1	5
4	4	5	4	4	3	3	5	3	5
5	4	5	4	4	5	2	5	3	4
6	5	3	3	5	5	4	2	2	4
7	5	4	5	5	5	2	1	1	4
8	5	5	4	4	3	5	4	3	5
9	3	5	5	5	4	4	3	5	5
10	5	4	5	5	4	4	4	4	5
11	4	4	4	3	2	-	3	4	5
12	5	5	5	4	4	2	5	3	5
13	5	5	4	4	4	5	4	4	5
14	4	3	3	4	4	4	2	2	3
15	5	5	3	5	5	5	4	3	4
16	4	5	4	4	4	4	4	3	5
17	5	5	5	5	5	5	5	5	5
18	5	5	5	5	5	5	5	4	5
19	4	5	5	5	5	4	4	4	5
20	4	4	5	5	4	5	5	5	5
21	4	5	5	5	5	3	3	3	3
22	3	4	3	4	4	3	3	3	4
23	5	5	5	5	5	5	5	5	5
24	3	3	3	4	4	5	4	2	4
Mean	4.33	4.50	4.17	4.50	4.21	3.78	3.71	3.33	4.54
Std Dev	0.61	0.63	0.69	0.54	0.66	0.96	1.03	0.97	0.57

Table 2 Round 2 Questionnaire – Section 1
Means and Standard Deviation for Likert Scale

Control Number	Question 6 Part 5 Staff Development Internet Projects Training Librarians and Faculty	Question 6 Part 6 Promotion of Projects Listing Internet Resources	Question 7 Part 1 Same Standards Apply	Question 7 Part 2 Additional Access Costs with Internet	Question 7 Part 3 Greater Ease of Use	Question 7 Part 4 Freeing Up Space for Including Paper Materials	Question 8 Part 1 Lack of Credible Information	Question 8 Part 2 Lack of Permanence for Internet Sites
1	5	4	5	2	2	2	5	5
2	5	5	4	4	4	3	3	3
3	5	3	4	3	4	3	4	4
4	5	5	4	4	4	3	3	3
5	4	3	5	3	3	3	5	4
6	4	4	3	3	5	4	4	4
7	3	4	3	3	3	3	4	4
8	5	4	4	5	5	4	5	5
9	5	4	5	3	3	3	5	4
10	4	5	3	4	3	4	4	4
11	4	4	2	4	4	4	2	5
12	5	5	5	4	4	3	5	5
13	4	4	5	4	4	4	4	4
14	3	4	2	3	4	3	5	4
15	5	4	4	3	5	5	5	3
16	4	3	4	4	4	2	5	4
17	5	5	5	3	5	5	5	4
18	5	4	3	2	5	5	5	5
19	5	3	2	1	3	3	5	4
20	4	4	2	4	5	4	2	5
21	-	3	5	1	4	3	5	4
22	3	3	2	5	3	4	5	3
23	5	5	5	4	4	4	5	5
24	4	5	4	3	1	2	5	5
Mean	4.39	4.04	3.75	3.29	3.79	3.46	4.38	4.17
Std Dev	0.64	0.56	0.98	0.82	0.78	0.75	0.78	0.56

Table 2 Round 2 Questionnaire – Section 1
Means and Standard Deviation for Likert Scale

Control Number	Question 8 Part 3 Lack of Documentation for Internet Sites	Question 9 Part 1 Reliable Information	Question 9 Part 2 Full-text Availability	Question 9 Part 3 Academic-Related Resources	Question 9 Part 4 Stable URL	Question 9 Part 5 Review of Information by Panel of Experts	Question 9 Part 6 User-friendly Site
1	5	5	5	4	5	3	3
2	3	4	4	5	5	4	4
3	4	4	4	4	4	3	4
4	3	4	4	5	5	4	4
5	4	5	5	5	4	4	3
6	3	5	5	4	4	4	5
7	4	4	4	4	4	3	3
8	5	5	5	5	4	4	3
9	4	5	5	3	4	4	5
10	4	5	5	5	5	4	5
11	4	5	5	4	5	3	5
12	5	5	5	5	4	5	5
13	4	5	4	4	4	4	5
14	4	4	4	3	4	3	4
15	4	5	5	5	4	3	5
16	5	5	5	4	5	4	4
17	5	5	5	5	5	5	5
18	4	5	5	5	5	5	5
19	5	5	5	3	3	5	4
20	2	5	5	5	5	4	4
21	5	5	5	5	5	3	3
22	4	5	4	4	4	4	4
23	5	5	5	5	5	5	5
24	5	5	5	5	4	5	5
Mean	4.17	4.79	4.71	4.42	4.42	3.96	4.25
Std Dev	0.63	0.33	0.41	0.63	0.53	0.56	0.69

Table 3 Round 2 Questionnaire - Section 1

Library Deans/Directors - Means and Standard Deviation for Likert Scale

Control Number	Question 1 Part 1 Reliability of Information	Question 1 Part 2 Applicability of Curriculum	Question 1 Part 3 Currency of Information	Question 1 Part 4 Long-term Accessibility of Information	Question 1 Part 5 Quality of Information	Question 1 Part 6 Well-maintained Internet Site	Question 2 Part 1 Search for Review of Materials	Question 2 Part 2 Collaborative Efforts	Question 2 Part 3 Review of Author or Originator Qualifications
1	5	5	5	4	5	4	5	5	4
2	5	4	4	5	5	4	3	5	5
3	5	5	5	5	5	5	4	4	4
4	5	4	4	5	4	3	5	5	4
5	5	5	4	3	5	3	3	3	4
6	4	3	3	4	5	4	3	4	4
7	5	4	4	4	4	4	3	4	5
8	5	5	4	5	5	4	5	4	5
Mean	4.88	4.38	4.13	4.38	4.75	3.88	3.88	4.25	4.38
Std Dev	0.22	0.63	0.44	0.63	0.38	0.44	0.88	0.56	0.47

Table 3 Round 2 Questionnaire - Section 1

Library Deans/Directors - Means and Standard Deviation for Likert Scale

Control Number	Question 2 Part 4 Review of Internet Materials in Individual Libraries	Question 2 Part 5 Development of Library Policies with Internet Materials	Question 3 Part 1 Provide Information that has Integrity	Question 3 Part 2 List Author	Question 3 Part 3 Verify Continued Accessibility of Site	Question 3 Part 4 Determine User-friendliness of Site	Question 3 Part 5 Maintain Currency in relation to Information	Question 4 Part 1 Teach Students How to Conduct Research	Question 4 Part 2 Teach Students to Use Critical Thinking Skills
1	4	5	3	5	4	3	5	4	5
2	4	5	4	5	5	5	5	4	5
3	3	5	5	5	4	3	5	5	5
4	5	4	5		5	5	5	4	5
5	3	2	5	4	4	3	5	4	5
6	4	5	5	4	4	5	4	5	5
7	4	4	5	4	4	3	4	5	5
8	4	4	5	5	5	4	4	5	5
Mean	3.88	4.25	4.63	4.57	4.38	3.88	4.63	4.50	5.00
Std Dev	0.44	0.75	0.56	0.49	0.47	0.88	0.47	0.50	0.00

Table 3 Round 2 Questionnaire - Section 1

Library Deans/Directors - Means and Standard Deviation for Likert Scale

Control Number	Question 4 Part 3 Demonstrate Good and Bad Internet Sites to Students	Question 5 Part 1 Provide Information Literacy Programs Including Internet based Materials	Question 5 Part 2 Use Web-based Chat and Email to Assist Students	Question 5 Part 3 Maintain Library Home Page that Provides Links	Question 5 Part 4 Continuously Review the Internet for Sources of Information	Question 6 Part 1 Federal funding	Question 6 Part 2 State Funding	Question 6 Part 3 Local Funding
1	5	5	4	5	5	3	3	5
2	4	5	4	4	3	3	5	3
3	4	4	3	5	4	2	1	1
4	4	5	4	4	3	3	5	3
5	4	5	4	4	5	2	5	3
6	5	3	3	5	5	4	2	2
7	5	4	5	5	5	2	1	1
8	5	5	4	4	3	5	4	3
Mean	4.50	4.50	3.88	4.50	4.13	3.00	3.25	2.63
Std Dev	0.50	0.63	0.44	0.50	0.88	0.75	1.50	0.97

Table 3 Round 2 Questionnaire - Section 1

Library Deans/Directors - Means and Standard Deviation for Likert Scale

Control Number	Question 6 Part 4 Up-to-date Computer-related Equipment	Question 6 Part 5 Staff Development Internet Projects Training Librarians and Faculty	Question 6 Part 6 Promotion of Projects Listing Internet Resources	Question 7 Part 1 Same Standards Apply	Question 7 Part 2 Additional Access Costs with Internet	Question 7 Part 3 Greater Ease of Use	Question 7 Part 4 Freeing Up Space for Including Paper Materials	Question 8 Part 1 Lack of Credible Information	Question 8 Part 2 Lack of Permanence for Internet Sites
1	4	5	4	5	2	2	2	5	5
2	5	5	5	4	4	4	3	3	3
3	5	5	3	4	3	4	3	4	4
4	5	5	5	4	4	4	3	3	3
5	4	4	3	5	3	3	3	5	4
6	4	4	4	3	3	5	4	4	4
7	4	3	4	3	3	3	3	4	4
8	5	5	4	4	5	5	4	5	5
Mean	4.50	4.50	4.00	4.00	3.38	3.75	3.13	4.13	4.00
Std Dev	0.50	0.63	0.50	0.50	0.72	0.81	0.44	0.66	0.50

Table 3 Round 2 Questionnaire - Section 1

Library Deans/Directors - Means and Standard Deviation for Likert Scale

Control Number	Question 8 Part 3 Lack of Documentation for Internet Sites	Question 9 Part 1 Reliable Information	Question 9 Part 2 Full-text Availability	Question 9 Part 3 Academic-Related Resources	Question 9 Part 4 Stable URL	Question 9 Part 5 Review of Information by Panel of Experts	Question 9 Part 6 User-friendly Site
1	5	5	5	4	5	3	3
2	3	4	4	5	5	4	4
3	4	4	4	4	4	3	4
4	3	4	4	5	5	4	4
5	4	5	5	5	4	4	3
6	3	5	5	4	4	4	5
7	4	4	4	4	4	3	3
8	5	5	5	5	4	4	3
Mean	3.88	4.50	4.50	4.50	4.38	3.63	3.63
Std Dev	0.66	0.50	0.50	0.50	0.47	0.47	0.63

Table 4 Round 2 Questionnaire – Section 1

Reference Librarians - Means and Standard Deviation for Likert Scale

Control Number	Question 1 Part 1 Reliability of Information	Question 1 Part 2 Applicability of Curriculum	Question 1 Part 3 Currency of Information	Question 1 Part 4 Long-term Accessibility of Information	Question 1 Part 5 Quality of Information	Question 1 Part 6 Well-maintained Internet Site	Question 2 Part 1 Search for Review of Materials	Question 2 Part 2 Collaborative Efforts	Question 2 Part 3 Review of Author or Originator Qualifications
9	5	5	5	5	5	5	5	4	5
10	5	5	5	5	5	5	4	5	4
11	5	3	4	4	5	4	4	3	4
12	5	4	4	5	5	4	4	5	5
13	5	5	5	5	5	5	5	4	4
14	5	4	4	4	4	4	4	4	3
15	5	4	5	3	5	4	4	4	3
16	5	4	4	5	5	4	4	3	5
Mean	5.00	4.25	4.50	4.50	4.88	4.38	4.25	4.00	4.13
Std Dev	0.00	0.56	0.50	0.63	0.22	0.47	0.38	0.50	0.66

Table 4 Round 2 Questionnaire – Section 1

Reference Librarians - Means and Standard Deviation for Likert Scale

Control Number	Question 2 Part 4 Review of Internet Materials in Individual Libraries	Question 2 Part 5 Development of Library Policies with Internet Materials	Question 3 Part 1 Provide Information that has Integrity	Question 3 Part 2 List Author	Question 3 Part 3 Verify Continued Accessibility of Site	Question 3 Part 4 Determine User-friendliness of Site	Question 3 Part 5 Maintain Currency in relation to Information	Question 4 Part 1 Teach Students How to Conduct Research	Question 4 Part 2 Teach Students to Use Critical Thinking Skills
9	4	5	5	5	4	5	5	5	5
10	5	5	5	5	5	5	5	5	5
11	4	5	4	4	5	4	4	5	5
12	3	4	5	5	5	4	4	4	5
13	3	4	5	4	4	4	5	5	5
14	4	4	5	4	3	4	4	4	3
15	4	3	5	3	4	5	5	5	5
16	4	5	5	4	4	4	4	5	5
Mean	3.88	4.38	4.88	4.25	4.25	4.38	4.50	4.75	4.75
Std Dev	0.44	0.63	0.22	0.56	0.56	0.47	0.50	0.38	0.44

Table 4 Round 2 Questionnaire – Section 1

Reference Librarians - Means and Standard Deviation for Likert Scale

Control Number	Question 4 Part 3 Demonstrate Good and Bad Internet Sites to Students	Question 5 Part 1 Provide Information Literacy Programs Including Internet based Materials	Question 5 Part 2 Use Web-based Chat and Email to Assist Students	Question 5 Part 3 Maintain Library Home Page that Provides Links	Question 5 Part 4 Continuously Review the Internet for Sources of Information	Question 6 Part 1 Federal funding	Question 6 Part 2 State Funding	Question 6 Part 3 Local Funding	Question 6 Part 4 Up-to-date Computer-related Equipment
9	3	5	5	5	4	4	3	5	5
10	5	4	5	5	4	4	4	4	5
11	4	4	4	3	2		3	4	5
12	5	5	5	4	4	2	5	3	5
13	5	5	4	4	4	5	4	4	5
14	4	3	3	4	4	4	2	2	3
15	5	5	3	5	5	5	4	3	4
16	4	5	4	4	4	4	4	3	5
Mean	4.38	4.50	4.13	4.25	3.88	4.00	3.63	3.50	4.63
Std Dev	0.63	0.63	0.66	0.56	0.47	0.57	0.72	0.75	0.56

Table 4 Round 2 Questionnaire – Section 1

Reference Librarians - Means and Standard Deviation for Likert Scale

Control Number	Question 6 Part 5 Staff Development Internet Projects Training Librarians and Faculty	Question 6 Part 6 Promotion of Projects Listing Internet Resources	Question 7 Part 1 Same Standards Apply	Question 7 Part 2 Additional Access Costs with Internet	Question 7 Part 3 Greater Ease of Use	Question 7 Part 4 Freeing Up Space for Including Paper Materials	Question 8 Part 1 Lack of Credible Information	Question 8 Part 2 Lack of Permanence for Internet Sites
9	5	4	5	3	3	3	5	4
10	4	5	3	4	3	4	4	4
11	4	4	2	4	4	4	2	5
12	5	5	5	4	4	3	5	5
13	4	4	5	4	4	4	4	4
14	3	4	2	3	4	3	5	4
15	5	4	4	3	5	5	5	3
16	4	3	4	4	4	2	5	4
Mean	4.25	4.13	3.75	3.63	3.88	3.50	4.38	4.13
Std Dev	0.56	0.44	1.06	0.47	0.44	0.75	0.78	0.44

Table 4 Round 2 Questionnaire – Section 1

Reference Librarians - Means and Standard Deviation for Likert Scale

	Question 8	Question 9	Question 9	Question 9	Question 9	Question 9	Question 9
	Part 3	Part 1	Part 2	Part 3	Part 4	Part 5	Part 6
Control Number	Lack of Documentation for Internet Sites	Reliable Information	Full-text Availability	Academic-Related Resources	Stable URL	Review of Information by Panel of Experts	User-friendly Site
9	4	5	5	3	4	4	5
10	4	5	5	5	5	4	5
11	4	5	5	4	5	3	5
12	5	5	5	5	4	5	5
13	4	5	4	4	4	4	5
14	4	4	4	3	4	3	4
15	4	5	5	5	4	3	5
16	5	5	5	4	5	4	4
Mean	4.25	4.88	4.75	4.13	4.38	3.75	4.75
Std Dev	0.38	0.22	0.38	0.66	0.47	0.56	0.38

Table 5 Round 2 Questionnaire – Section 1

Online Instructors - Means and Standard Deviation for Likert Scale

Control Number	Question 1 Part 1 Reliability of Information	Question 1 Part 2 Applicability of Curriculum	Question 1 Part 3 Currency of Information	Question 1 Part 4 Long-term Accessibility of Information	Question 1 Part 5 Quality of Information	Question 1 Part 6 Well-maintained Internet Site	Question 2 Part 1 Search for Review of Materials	Question 2 Part 2 Collaborative Efforts	Question 2 Part 3 Review of Author or Originator Qualifications
17	5	5	3	5	5	5	5	3	5
18	5	4	3	4	5	4	5	5	5
19	5	5	5	5	5	5	5	5	5
20	5	3	5	5	5	5	4	5	4
21	5	2	4	4	5	4	3	5	5
22	5	4	4	4	5	4	4	4	4
23	5	4	5	5	5	5	5	5	5
24	5	4	2	5	4	5	5	5	3
Mean	5.00	3.88	3.88	4.63	4.88	4.63	4.50	4.63	4.50
Std Dev	0.00	0.69	0.91	0.47	0.22	0.47	0.63	0.56	0.63

Table 5 Round 2 Questionnaire – Section 1

Online Instructors - Means and Standard Deviation for Likert Scale

Control Number	Question 2 Part 4 Review of Internet Materials in Individual Libraries	Question 2 Part 5 Development of Library Policies with Internet Materials	Question 3 Part 1 Provide Information that has Integrity	Question 3 Part 2 List Author	Question 3 Part 3 Verify Continued Accessibility of Site	Question 3 Part 4 Determine User-friendliness of Site	Question 3 Part 5 Maintain Currency in relation to Information	Question 4 Part 1 Teach Students How to Conduct Research	Question 4 Part 2 Teach Students to Use Critical Thinking Skills
17	2	4	5	5	5	5	5	5	5
18	4	4	5	5	5	5	4	5	5
19	5	5	5	5	5	5	5	5	5
20	5	5	4	4	5	4	4	5	5
21	3	4	5	5	4	3	4	4	5
22	4	4		4	3	4	4	5	5
23	5	5	5	5	5	5	5	5	5
24	3	4	5	5	5	5	4	3	4
Mean	3.88	4.38	4.86	4.75	4.63	4.50	4.38	4.63	4.88
Std Dev	0.91	0.47	0.24	0.38	0.56	0.63	0.47	0.56	0.22

Table 5 Round 2 Questionnaire – Section 1

Online Instructors - Means and Standard Deviation for Likert Scale

Control Number	Question 4 Part 3 Demonstrate Good and Bad Internet Sites to Students	Question 5 Part 1 Provide Information Literacy Programs Including Internet based Materials	Question 5 Part 2 Use Web-based Chat and Email to Assist Students	Question 5 Part 3 Maintain Library Home Page that Provides Links	Question 5 Part 4 Continuously Review the Internet for Sources of Information	Question 6 Part 1 Federal funding	Question 6 Part 2 State Funding	Question 6 Part 3 Local Funding	Question 6 Part 4 Up-to-date Computer-related Equipment
17	5	5	5	5	5	5	5	5	5
18	5	5	5	5	5	5	5	4	5
19	4	5	5	5	5	4	4	4	5
20	4	4	5	5	4	5	5	5	5
21	4	5	5	5	5	3	3	3	3
22	3	4	3	4	4	3	3	3	4
23	5	5	5	5	5	5	5	5	5
24	3	3	3	4	4	5	4	2	4
Mean	4.13	4.50	4.50	4.75	4.63	4.38	4.25	3.88	4.50
Std Dev	0.66	0.63	0.75	0.38	0.47	0.78	0.75	0.91	0.63

Table 5 Round 2 Questionnaire – Section 1

Online Instructors - Means and Standard Deviation for Likert Scale

Control Number	Question 6 Part 5 Staff Development Internet Projects Training Librarians and Faculty	Question 6 Part 6 Promotion of Projects Listing Internet Resources	Question 7 Part 1 Same Standards Apply	Question 7 Part 2 Additional Access Costs with Internet	Question 7 Part 3 Greater Ease of Use	Question 7 Part 4 Freeing Up Space for Including Paper Materials	Question 8 Part 1 Lack of Credible Information	Question 8 Part 2 Lack of Permanence for Internet Sites
17	5	5	5	3	5	5	5	4
18	5	4	3	2	5	5	5	5
19	5	3	2	1	3	3	5	4
20	4	4	2	4	5	4	2	5
21	-	3	5	1	4	3	5	4
22	3	3	2	5	3	4	5	3
23	5	5	5	4	4	4	5	5
24	4	5	4	3	1	2	5	5
Mean	4.43	4.00	3.50	2.88	3.75	3.75	4.63	4.38
Std Dev	0.65	0.75	1.25	1.16	1.06	0.81	0.66	0.63

Table 5 Round 2 Questionnaire – Section 1

Online Instructors - Means and Standard Deviation for Likert Scale

Control Number	Question 8 Part 3 Lack of Documentation for Internet Sites	Question 9 Part 1 Reliable Information	Question 9 Part 2 Full-text Availability	Question 9 Part 3 Academic-Related Resources	Question 9 Part 4 Stable URL	Question 9 Part 5 Review of Information by Panel of Experts	Question 9 Part 6 User-friendly Site
17	5	5	5	5	5	5	5
18	4	5	5	5	5	5	5
19	5	5	5	3	3	5	4
20	2	5	5	5	5	4	4
21	5	5	5	5	5	3	3
22	4	5	4	4	4	4	4
23	5	5	5	5	5	5	5
24	5	5	5	5	4	5	5
Mean	4.38	5.00	4.88	4.63	4.50	4.50	4.38
Std Dev	0.78	0.00	0.22	0.56	0.63	0.63	0.63

APPENDIX E

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VITA

DOUGLAS D. CROSS

Personal Data:

Date of Birth: April 25, 1942
Place of Birth: Appalachia, Virginia
Marital Status: Married

Education:

East Tennessee State University, Johnson City, Tennessee; History, B.S., 1965

East Tennessee State University, Johnson City, Tennessee; School Librarianship, M.S., 1970

Vanderbilt University, Nashville, Tennessee; Information Science, M.L.S., 1983

East Tennessee State University, Johnson City, Tennessee; Educational Leadership & Policy Analysis, Ed. D., 2002

Professional Experience:

School Librarian, Pound Combined School, Pound, Virginia, 1965 – 1969

Assistant Library Supervisor, Virginia State Department of Education, Richmond, Virginia, 1969 – 1970

Program Director, Clinch-Powell Educational Cooperative, Tazewell, Tennessee, 1970 – 1977

Associate Director, Learning Resource Center, Walters State Community College, Morristown, Tennessee, 1977 – 1990

Director, Learning Resource Center, Walters State Community College, Morristown, Tennessee, 1990 – 2000

Dean, Library Services, Walters State Community College, Morristown, Tennessee, 2001 to present

Honors and Awards:

Distinguished Administrative Staff Member, Walters State Community College, Morristown, Tennessee, 2000

Volunteer of the Year, Hamblen County Adult Education, Morristown, Tennessee, 2000