This study examined online library instruction provided by small, undergraduate colleges. Content analysis was performed on library Web sites at five baccalaureate colleges with student bodies ranging in size from 1,000 to 3,000. These Web sites were reviewed in order to determine what kind of patterns appeared in online library instruction at small colleges. Guiding questions related to information literacy standards, undergraduate learning styles, and principles of good Web and instructional design were applied to each library site. The results indicate that while these libraries show strengths in promoting information literacy standards through navigable instruction, there is a need for attention to undergraduate visual and kinesthetic learning styles.

Headings:

Library instruction
Web-based instruction
Undergraduate Colleges
Library Web site
WEB SITES AS FOUND OBJECTS: ONLINE INSTRUCTION AT FIVE UNDERGRADUATE COLLEGES.

by
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A Master’s paper submitted to the faculty of the School of Information and Library Science of the University of North Carolina at Chapel Hill in partial fulfillment of the requirements for the degree of Master of Science in Library Science.

Chapel Hill, North Carolina
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Approved by

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David Carr
# TABLE OF CONTENTS

- Introduction ........................................................................... 2
- Literature Review ...................................................................... 5
- Methodology ........................................................................... 17
- Results .................................................................................. 22
- Discussion ............................................................................. 32
- Conclusion ............................................................................. 37
- References ............................................................................ 40
- Appendices ............................................................................ 44
INTRODUCTION

The academic library Web site may be the first experience students have with an academic library, and if instructional library services are provided online, these tools may be students’ first exposure to library instruction. Research has found that today’s undergraduates often lack the skills and knowledge to navigate the vast array of information available; but has also found these same students reluctant to seek in-person assistance. If they do seek library research assistance at all it is often done remotely. If we are to assist students in navigating information (through information literacy and other instructional initiatives) we must find ways to reach out and build relationships between library instruction and undergraduates.

Today’s undergraduates are exposed to a wide array of information derived from a multitude of sources. It is the responsibility of libraries to help undergraduates develop probing questions and to build skills so they may critically evaluate the resources that can help them answer their questions. Because this array of resources continues to change, libraries must evolve to provide this assistance in a manner which meets the characteristics and styles of undergraduates who are themselves in motion. By acknowledging these wants and needs libraries increase the possibility of reaching undergraduates and helping them acquire skills that will extend far beyond the students’ undergraduate experience into a future that is sure to be information rich.
Information Literacy standards set by the Association of College and Research Libraries (ACRL) have influenced curriculum in academic libraries. The advent of the internet has changed the way instruction is provided. One of the main contentions in the library literature is that although today’s students are proficient with technology, they are not information literate. Recent literature identifies common characteristics and learning styles among this user group who are sometimes referred to as the “Web” or “Net Generation”. “Fragmented”, “visual”, “non-linear” and “kinesthetic” are a few of them. Although learning styles vary among all individuals, this group has exhibited common styles and behaviors that should be considered when creating instruction and developing resources. Research indicates that librarians and other instructors must address students’ learning styles in order to assist them effectively to think critically about information. Providing online instruction and graphical interfaces may be one way to meet the technological and visual inclinations of this group. Certainly it is an important start.

Libraries at larger research universities have been designing online tutorials and research guides to complement, and in some cases replace, classroom instruction. At these large institutions such online instruction is often designed for specific courses, subjects, information literacy initiatives, and first-year programs. Regardless of whether these guides and tutorials are used in concert with in-person instruction, or as stand alone instruction, they often leave the first impression students will have of library instruction and research.

My own experience in creating classroom and online instruction has provided me with insight into the shape online library instruction takes at large, academic, research institutions. Online instruction materials developed at these institutions may be for both
undergraduate and graduate students and are often well supported by financial, technological, and human resources. Resources in the form of library budgets, staff, and technological equipment (and in the case of schools with graduate library programs, graduate library assistants) are in greater supply at these larger institutions than at small academic colleges.

Much of the literature has been devoted to instruction provided by large academic libraries, but literature about the level of library instruction (and specifically online instruction) provided at smaller colleges with fewer resources has been limited. Although much of the user behavior literature has focused specifically on today’s traditional-aged undergraduates, the literature examining online library instruction often includes institutions that are not undergraduate specific. Smaller institutions have added case study articles to the literature, but a survey of library Web pages and online instruction at undergraduate specific institutions is lacking.

The present study examines online library instruction provided at five baccalaureate colleges with student bodies ranging in size from 1,000 to 3,000. The sample was chosen from baccalaureate institutions listed in the *Carnegie Classification of Higher Education Institutions* (2000) because (as stated in the Carnegie Classification), “these institutions are primarily undergraduate colleges”. The purpose of the study was to compare these five institutions using a list of guiding questions developed from the literature and my own experiences with information literacy standards, identified user learning styles, and principles of good Web and instructional design. My intention is to find out what level of online library instruction is occurring at “primarily undergraduate colleges”, and to see what patterns, if any, could be found.
The information collected in this study attempts to fill a gap in the literature and may form the basis for future research. By discovering how small institutions are using online library instruction, ideas for growth, areas of need, and opportunities for collaboration can be identified. A review of the current literature on online library instruction, undergraduates’ learning styles and behaviors, information literacy standards, and instructional design principles follows.

**LITERATURE REVIEW**

This paper is an investigation into online instruction provided on academic library Web pages; therefore I will examine the literature on the role of the academic library Web site and the instruction it provides. A review of the literature on the users (often referred to as “Millennials” and “the Net Generation”) with specific attention given to the identified learning styles and preferences of these “Net Gens” will follow. This section will conclude with a review of the literature on good instructional design and information literacy standards.

**The Library Web Site**

The “ubiquitous Web” (Harley, Dreger & Knobloch, 2001) permeates much of current academic life and has become increasingly important to academic librarians, both as something to educate students about, and as a tool we can use to inform them. The library Web site as gateway and first introduction is important in concept and in practice. As Susan Sharpless Smith notes in the second edition of her book *Web-Based Instruction*: “the Web has continued to grow as an avenue for the delivery of services by all types of
libraries” (2006, p.1). The library Web site may be the first introduction undergraduate users have to the college library.

Usability, or the design of Web sites in a manner that allows users to navigate them effectively without assistance, is an important factor in academic library Web sites (Thomsett-Scott, 2004). Practitioners have noted the importance of involving instruction librarians, who have a unique perspective and understanding of users’ mental models, in the creation of the library Web site (Vassiliadis & Stimatz, 2002). Web pages must be user-friendly for their target audience and, in the case of the academic library, they play an increasingly prominent role in providing instruction, as noted by Galvin (2005):

The library’s Web site should be an introduction to the library’s services and resources. If the academic library has as one of its goals the promotion of information literacy the library Web site should provide a way for students to experience appropriate information-seeking behavior. Librarians need to acknowledge that information skills are frequently learned at the point of need and that point may not take place at the library. (p.355).

**The Net Generation: Learning Styles/Preferences**

The concept of the library Web site as the “point of need” is particularly relevant to undergraduate learning preferences. Undergraduates as a user group have received considerable attention in the information and library science literature over the years and their behavior has come under even closer scrutiny with the advent of the internet and increase in use of various forms of technology. The focus on user instruction for undergraduates has also increased. Reviewing the user behaviors, learning styles and information retrieval processes of traditional-aged college undergraduates can help us aid Net Gens in their information pursuits. Specifically, identifying and examining these
characteristics may be valuable to undergraduate reference and instruction librarians when developing and assessing online instruction.

User Characteristics

“The Net Generation”, “Generation Y”, “The Web Generation”, “The Nintendo Generation” and “Millennials” are all terms that have been used to describe current undergraduates. The technology they have grown up with is directly tied to their identity as information seekers and users. Harley et al. (2001) find that these users are characterized by a set of behaviors they identify as “postmodern,” identifying behaviors they associate with “consumerism, superficiality, and knowledge fragmentation (p.23)”. Sheesley (2002) identifies a learning style that is “kinesthetic”, “non-linear”, and “hands-on”. A kickoff session at the most recent ACRL conference devoted a number of hours to the behaviors of what was identified as the “Millennial Generation”. Richard Sweeney, university librarian at the New Jersey Institute of Technology identified these behaviors from his own experience with undergraduates: "They multi-task, think parallel and think graphically, not textually" (Smetanka, 2005).

Harley et al. (2001) contend that the Web “illustrates knowledge fragmentation” and that “Students’ superficial approach to research is reinforced every time they use Web-based resources” (Harley et al., 2001, p25). Sheesley (2002) argues that although students do lack certain skills when dealing with information, “the finger cannot be pointed solely at technology and the Internet” (p.30). She points out that college students today are in a very different position in terms of information acquisition than college students who did not have the same technological advances at their fingertips. Prior to the advent of the World Wide Web, students in academic settings were usually limited to
printed scholarly works. Sheesley questions whether students in the past were any better at evaluating, or if they simply had fewer options. She proposes that librarians must work with technology to meet the needs of these students and cites her own experience with the redesign of The College of New Jersey’s library home page as an example. The Library found that students “overwhelmingly preferred” the newer image-based home page, incorporating visuals that the students found to be more intuitive (Sheesley, 2002, p.34). By meeting students’ preferences they increased the likelihood of use.

**Learning Styles and Behaviors**

Recent research supports the assertion that there is a pattern of identifiable behaviors and needs expressed by Net Gens. Practitioners and researchers have gathered observational, interview, content-analysis, and experimental data on undergraduate research behaviors to identify specific characteristics and learning styles. Some of this research has focused on specific aspects of the search and retrieval process while other studies have focused on the research process as a whole.

**Evaluation of Materials**

Much research has focused on citation behavior and evaluation abilities. Sources from the World Wide Web have been a particular focus. Students often seem to lack the ability (or even awareness of the need) to evaluate resources. Davis (2002, 2003) conducted an ongoing study of undergraduate citation analysis at Cornell University. In 2000 he analyzed 63 undergraduates’ term paper bibliographies and found a significant increase in the use of non-scholarly resources in research papers and a decrease in the citation of scholarly sources from previous years. He attributes this difference to the introduction of the Web and also notes that the class professor had not given clear
direction as to what sources to use. In a follow-up study he analyzed 69 bibliographies and found that when the professor provided clear citation guidelines the number of scholarly citations rose (Davis, 2003).

Grimes and Boening (2001) also analyzed citations in undergraduate papers, but limited their analysis to the Web sources cited. The authors interviewed undergraduates and professors from two English composition classes, and analyzed the Web resources cited in student bibliographies. Their citation analysis revealed that students included Web resources with no scholarly or authoritative value (such as promotional sites and sites authored by junior high students) (Grimes and Boening, 2001, p.17). The authors concluded that students did not evaluate the cited Web resources for quality or authority, and the resources were counter to what the course instructors were looking for. When interviewing both students and professors they found that instructors had provided no clear evaluation guidelines, and that this was in part due to instructors own unfamiliarity with Web resources.

Hung (2004) describes his study of the specific criteria students used to evaluate the quality of Web resources. Working with 35 students from the school’s information technology department he administered a pre-test questionnaire which assessed students’ experience with the Internet. He then asked the same students to evaluate five Web pages and had them write at least four sentences about why they had or had not found the pages to be valid to a specific research topic. He found that students used only one or two key criteria to evaluate Web sites. Further, they paid attention mainly to surface elements and largely ignored the actual content of the sites. Coverage (how much information the site provided, use of statistics and graphs, and links to other sites) was the highest ranked
criterion (Hung, 2004, p.7). Authority ranked well below this and currency was rarely considered in judging the quality of Web pages. Fifty-one percent of the sample reported using “the Web resources for academic purposes frequently” (Hung, 2004, p.10). Hung concludes by proposing that information literacy skills, defined as ability to evaluate and discern (Hung, 2004 p.11), must be fostered in undergraduates. All of the citation analysis studies support the trait of “superficiality” that Harley et al. (2001) describe, but also indicate that often it is lack of direction, not motivation, that contributes to this.

Searching

Other research has extended beyond citation and evaluation behavior. Fitzgerald (2001) examined how students used GALILEO (Georgia Library Learning Online), which is Georgia’s virtual library. She interviewed and observed ten high school and ten undergraduate students “thinking aloud” during their search processes. She found that both groups had difficulty distinguishing GALILEO from the Internet and several college students expressed confusion about the differences between GALILEO, the local OPAC, and the Internet. Students had difficulty searching (from difficulties with Boolean features to undetected spelling errors), and “expressed frustration that GALILEO was more difficult to use than Yahoo” (p.11). Students also spent a great deal of time trying to determine whether works were relevant to their paper topics. From this study Fitzgerald concludes that “students needs a great deal of help in achieving competence in this most basic of information skills” (p.11).

Valentine (2001) examined undergraduates’ research process from assignment to completion of project. She interviewed 31 students and 5 professors in humanities and social science classes from several small colleges. Desire for good grades seemed to
drive most students’ research processes and students spent much of the research process trying to determine “WPW” (what the professor wanted). Valentine found that when students came to the library they were most concerned with what they perceived to be the most cost and time effective methods of finding information, and in turn used what was most familiar (such as Yahoo) and easiest to obtain (often full text online). Students were more likely to use only what they could find online or in a nearby location and they avoided interlibrary loan and articles that had to be retrieved from more remote locations. They were also hesitant about asking librarians or their professors for help and were more likely to ask peers.

Curtis (2000) reports on undergraduate research behavior at the University of Georgia. A total of 33 students, ranging from freshmen to seniors, participated in focus groups. Curtis identifies key findings from these groups. The first finding is that most undergraduates start their research on the Internet, and as many of the other studies have revealed, they do not know how to evaluate sites or identify the difference between scholarly and popular sources. Her second finding is that most use of library resources is done remotely and students generally do not seek in-person assistance. Finally, students’ ability to retrieve from the Internet does not transfer to databases and other library sites. Students were comfortable with the way search engines group by relevance and were surprised and confused when they were arranged alphabetically or chronologically (Curtis, 2000, p.122). Also, they were looking for graphical interfaces which most databases did not provide. The students Curtis interviewed found the library’s Web site to be boring and frustrating. Curtis argues that there is a real disconnect between the way
bibliographic instruction is taught and what the students want (Curtis, 2000, p.125). She argues that instruction must address visual and kinesthetic needs.

These studies are generally small in sample size and have relied heavily on observation and interview feedback for their data. Yet, they all reflect common behaviors among undergraduates and a need to improve retrieval and evaluation skills. Library instruction should address the visual and non-linear learning style of undergraduates; and it should take into account their reluctance to approach librarians, their willingness to seek material and assistance on-line, and their need for assistance in evaluating and searching for materials. As Veldof (2001) points out in his study of an online tutorial for undergraduates, “Undergraduates’ mental models often differ significantly from mental models of librarians creating online instruction for them” (Veldof, 2001, p.3).

**Library Instruction and Online Library Instruction**

As argued by Galvin (2005), the library Web site needs to provide services and resources, including those related to instruction goals such as information literacy. In her book, Susan Smith discusses the prominence of library instruction via the Web in academic libraries (2006, p.4).

But, before discussing *online* library instruction we must first define library instruction in general to understand how it translates to the online environment. Smith (2006) defines library instruction as “…instruction designed to teach library users how to use the library and its resources effectively. Increasingly, library instruction goals are expanding to encompass a more comprehensive concept – information literacy…” (p.1).

The purpose of online library instruction is to assist users in thinking about and using information resources. Online library instruction has taken the form of
research guides and (increasingly) tutorials designed to teach both skills and concepts related to library research and (as will be discussed in more depth later in this chapter) information literacy. In 1999 Nancy Dewald wrote an article in which she identified principles of good library instruction and argued these same principles could be translated to online library instruction. According to Dewald (1999) good library instruction:

- is best received when it is course related,
- involves active and collaborative learning,
- offers information in more than one medium,
- states clear educational objectives at the beginning,
- teaches concepts not just mechanics,
- includes the option for asking the librarian for help at any future time.

Why is online library instruction valuable and perhaps as important as in person instruction? Online instruction meets the users at their chosen point of access. Today’s students are often unlikely to seek in-person librarian assistance (Curtis, 2000; Valentine, 2001). Not only can students access library assistance remotely through the library Web site, but “Students can access the instruction twenty-four hours a day from wherever they can connect to the internet” (Smith, 2006, p.2). Ragains (2001) argues that online instruction through academic libraries is logical:

Since academic libraries are increasingly identified by their Web presence, it is logical for instruction librarians to use this medium to deliver information to students that is both general (i.e., navigating the library’s Web site) and highly specific in the form of course-related Web pages. (p.91)

Online instruction has been used to supplement or complement in-class instruction at many academic institutions; and several studies have found online instruction to be as effective as classroom instruction (Holman, 2000; Galvin, 2005). Galvin (2005), in a study with undergraduates at Johns Hopkins, found research guides more effective than classes, and found that students who would not seek library assistance would use online
research guides (p.363). He identifies this as “point-of-use help” and finds that when it is “provided by a well-constructed Web site it is found to be preferable to classes which seem to focus on making the students expert users” (p.355).

The literature on the use of online library instruction at small academic colleges is limited, perhaps due to the lack of resources at small institutions. Tricarico, Tholl, and O’Malley (2001) describe their experience developing online instruction at Emmanuel, a small liberal arts college in Massachusetts. They found that while there can be long-term benefits from creating online instruction, there is great initial expense when developing these tools. Although the long-term benefits may be very satisfying the resources required to develop such tools in the first place may not be available.

Good online library instruction should appeal to users and meet their needs, and it should also fulfill instructional goals and objectives (such as meeting information literacy standards and Dewald’s instruction principles). To determine usability we must reflect on our users’ learning styles and preferences.

**Usability Issues**

Research has produced several key suggestions for structuring good online design for undergraduates. Navigational abilities that cater to Net Gens’ need to move around and graphics that meet their visual learning style are two such suggestions. Veldof (2001) found that students learn through games and simulations and suggests making instruction interactive with quizzes. He also recommends a design that provides a linear structure, but also enables students to leave the linear sequence if they choose. Similarly, Galvin (2005) found students learned best when they could go at their own pace, and Germain and Bobish (2002) also encourage design that allows the user to jump around in
navigation. Providing visuals and graphics has also been seen as key to responding to these learning styles (Sheesley, 2002; Curtis, 2000). Manuel’s (2002) research provides further support for both the navigational and visual needs identified by these studies. In a study of undergraduates (2002) she found that students were able to better focus their paper topic when a series of questions was provided in a graphic layout as opposed to the previous, sequentially ordered text based questionnaire; thus highlighting the need for graphic, navigational design.

Further research has found that use of non-library language, ability to seek further help, and consistency in design are all important to well designed online tools. The use of library terminology has long been a concern in library instruction and researchers examining online instruction have found that students still encountered excessive library jargon, which was confusing to them (Augustine and Greene, 2002; Galvin, 2005). A focus group conducted during the process of redesigning the library Web site at the University of North Carolina confirmed that students find words such as “index”, “catalog”, “collections”, and “interlibrary loan” puzzling. Researchers have also found that students using online instruction tools want ways to contact librarians in order to seek further assistance (Augustine & Greene, 2002; Galvin, 2005). Ragains (2003) and Augustine and Greene (2002) also argue that inconsistency in page design is disconcerting to students.

Information Literacy

Beyond creating design that will engage students is the need to create content that will assist students with research concepts. Authors such as Harley et al. (2001) have argued that undergraduates lack critical thinking and problem solving skills. The
development of information literacy instruction has been seen as a way of addressing these concerns. According to standards established by The American Library Association and the Association for Educational Communications and Technology, “The student who is information literate evaluates information critically and competently” (Curtis, 2000, p.132). Students’ inability to distinguish between scholarly and non-scholarly sources, and internet and other sources, indicates a clear need for education.

Just as technology has been blamed for a decrease in critical thinking skills, it has also been proposed as a way to improve these skills and meet the needs of undergraduates simultaneously. Valentine (2001) reports that students were unlikely to seek librarian assistance, therefore developing technologies that provide information literacy instruction is central to meeting undergraduates’ needs. Galvin (2005) argues that good information literacy instruction enhances skills and concepts learned over time both in and outside of the library (p.352). Creation of online tools that teach information literacy is a logical way of reaching students not in the library.

The ACRL has created specific guidelines to help achieve information literacy. The five core standards state that the information literate student can:

1. define and articulate the need for information and can determine the extent of information needed.
2. access needed information effectively and efficiently.
3. evaluate information and its sources critically.
4. use information effectively to accomplish a specific purpose.
5. understand many of the economic, legal, and social issues surrounding the use of information and ethically uses it (ACRL, 2001).

As we saw in the research cited, undergraduates are struggling with many of these areas. The difficulties with accessing and evaluating information are especially evident. Are libraries creating online tools that meet the needs expressed in this
literature review? By examining the Web sites of several small academic libraries, this study applies standards of user-based design, instruction, and information literacy to gain better insight into what kind of online library instruction is being produced by these institutions.

METHODOLOGY

Rationale

The present study was designed to contribute to the research on online library instruction and attempts to fill a gap by examining smaller academic institutions. The purpose of this study was to do a content analysis of library Web sites at baccalaureate institutions with student bodies between 1,000 and 3,000 in size. A special focus was given to instruction provided via these Web sites. Specifically, I intended to look at evidence given using found objects (the library Web sites) in order to determine what kind of patterns appeared. As I am familiar with the content and design of larger institutions’ library Web sites, and am involved in the design and content development of instruction and help tools at one such institution, I was interested to see what kind of design and content was provided by much smaller institutions that specifically addressed undergraduate students. By choosing baccalaureate institutions with student bodies under 3,000, the possibility of encountering design for graduate students was lessened.

Guiding Questions

As this is an exploratory study, a set of guiding questions was first created to evaluate the Web sites. The questions were operationalized based on the literature and my
own experiences as an instructor, and from this a data collection form (Appendix A) was created. The original guiding questions follow.

- What content do we find?
- What kind of patterns emerge? Are there differences?
- Does the page encourage or discourage? Engage/Disengage?
- Who is this for? Who is the audience?
- How is instruction occurring here? What are the underlying assumptions of the instruction?

**Method**

**Sample/Selection Process**

The selection process began by examining library Web sites at institutions classified as “Baccalaureate Liberal Arts Colleges” in *The Carnegie Classification of Institutions of Higher Education* (2000). The size of the baccalaureate institutions examined was narrowed to include schools with student bodies between 1,000 and 3,000 and the type of institution was limited to *private* to increase the likelihood of gathering a sample similar in size and support. A cursory examination of public institutions of similar size led the author to conclude no significant differences would be found. An in-depth investigation of these institutions may be merited.

The design of the study called for a purposive sample as certain elements must be present to fulfill the intent of the study which was not just to examine the sites, but to evaluate instruction provided by the sites. For inclusion the sites had to meet two key criteria. The site had to provide online instruction and the majority of instruction had to be created by the college being examined. Five colleges were chosen from the Carnegie list for inclusion in the study. The number five was chosen as a sufficient number for the emergence of patterns in qualitative content analysis. Nielsen (1993) found that the
majority of major usability patterns are established with five subjects. This study applied those findings to its sample, with institutions similar in size and nature.

**Pilot Evaluation**

I provided a list of library Web sites and a set of specific questions to two graduate students involved in classroom and online instruction. They were asked to determine if the sites provided online library instruction and if so, was the majority of the instruction developed by *that* library. Online instruction was defined as “instruction designed to teach library users how to use the library and its resources effectively” (Smith, 2006) through the library’s Web site. The difference between online help and online instruction has been fuzzy in the literature. For this reason technical or help guides related that answered questions such as “How do I check my library account?” were not considered sufficient for classifying a Web site as providing library instruction. Research assistance in some form had to be included on the library’s Web site. The evaluators also answered specific question about where the instruction was found and what form it took. This evaluation validated the sample chosen for inclusion in the study.

**Instrument**

The instrument used to assess the sites was a data collection form (Appendix A) consisting of a set of questions that evolved from the guiding questions. The specific questions were developed after consulting the literature on undergraduate learning styles and behaviors, information literacy, online instruction, and instructional principles.

**Procedure**

After initial analysis of the “Baccalaureate Liberal Arts Colleges” included in the *Carnegie Classification* for online library instruction, I applied the guiding and
operationalized questions to the five chosen Web sites. Content analysis or, “the study of recorded human communications” (Babbie, 2004) was performed. This method was chosen as an unobtrusive way to answer the study’s questions which required examination of the sites’ contents.

I began by assessing the ease with which the library home page could be accessed from the college’s main page. Once I had found the library’s Web site I identified links to instruction provided by the page. I also examined the page for general design, looking at ease of navigation, amount of text used, use of language, graphics, and visuals.

Once in the instruction section(s) I kept in mind the general guiding questions and set forth to answer the more specific questions (Appendix A). The first two guiding questions: What content do we find? and What kind of patterns emerge? were asked throughout the process of analysis. The next three guiding questions were answered both through observation and through operationalized versions of the questions.

The question does the site encourage or discourage, was answered by examining the accessibility and appeal of the pages’ content and design. I identified the links to access the library and instruction pages, and assessed the ease with which they were found. In order to determine the appeal of the page, I asked questions such as: Is it visually engaging? Is the page laid out in an understandable manner? How are different sections identified? How does the user find instruction on the page?

Who is this for? was modified to address the user group I was interested in. Who is this for? evolved to include Are the learning styles of today’s undergraduates being addressed? General and specific questions about types of language and examples used, interactivity, navigation, and visuals were applied to answer these questions in more
depth. For example when asking, *Who is this for?* I also asked, *What kind of language is being used, is there library jargon?* and sought specific examples.

To answer *How is instruction occurring here?* I addressed both principles of good instruction as identified by Dewald (1999) and standards for information literacy as identified by ACRL (1998). I asked specific questions such as, *Is there course related instruction?* and *Does this page provide a way to seek additional assistance?*. When searching for information literacy standards I looked to see if the site provided concepts and mechanics related to identifying, finding, accessing, evaluating, integrating and understanding issues related to information.

The questions constructed around the guiding questions were applied to all five Web sites and the answers and observations were compared to identify emerging patterns. General observations were also noted.

**Limitations**

The limitations of this study include the bias inherent in non-random sample selection and the subjective nature of the questions. As selections for the sample had to meet certain requirements such as providing online instruction, the study required a purposive sample which I selected. The limitation posed by the somewhat ambiguous definition of online instruction was minimized by having two fellow instructors confirm that the sample met the requirements of providing online, internally created instruction. The creation of the questions used to evaluate the content was based on the available literature and on my own experience in designing online instruction. The instrument was not tested for validity and I was the only individual analyzing the content, which is another limitation in the study design. However, I attempted to answer questions
consistently and equally throughout the data collection process. Finally, the dynamic nature of the medium analyzed must be taken into account. These Web pages could have been updated and changed since the original analysis of the Web sites.

RESULTS

Five baccalaureate institutions with student body populations ranging in size from 1,027 to 2,147 were included in the sample. All provide online library instruction, the majority of which was produced internally. The library Web sites at Agnes Scott College (Georgia), Bowdoin College (Maine), Davidson College (North Carolina), Illinois Wesleyan University (IWU) (Illinois), and Williams College (Massachusetts) were reviewed.

Did the Pages Encourage or Discourage?

Finding the Library Page

Two of the home pages contained a direct link to the library home page, specified by the word “Library”. One of these colleges (Bowdoin) even listed “Library” under the heading “Top Sites”. Two of the libraries’ Web pages were found by rolling over links on the home page, one (Williams) of which required rolling over two links, the direct link “students” and then over “academics” which was the first submenu that appeared when rolling over “students”. (Appendix B). The library Web site at Illinois Wesleyan was found by clicking on the link “Academic” which led to another page which linked to the library.

Though not completely buried, three of the links were not immediately accessible. This seems to be a common issue with college home pages. When examining the pre-
sample, there were occasions when I had difficulty locating the library at all through some institutions’ home pages. The library link seems to fall under the subheading of “Academic” at many colleges and universities, a term which may confuse many students, since everything on such sites might be presumed to be academic.

**Design of Library’s Home Page**

There were similarities among the sample sites (Appendix C, Figures 1-5). All of the libraries’ home pages were clearly labeled as belonging to the college library and all provided means of seeking additional assistance. Four of the five provided the option of searching the library Web site by keyword. Davidson also provided a keyword search option, but the search was not limited to the library site and instead included a search of the entire Davidson Web site.

Although all sites provided ways to get additional assistance from the main library page there were slight variations in the types of assistance. All of these links were identified the phrase “Ask a Librarian”. Additionally, Bowdoin had a link for “Live Reference Services Online” (through live chat and instant messaging services) from its main page. All of the libraries provided the following ways to obtain further help: calling the reference desk, visiting the reference desk, and sending an email to reference. Four out of the five provided the option of making an appointment with a librarian. Of these four, three provided contact information for the appropriate library liaison based on the student’s field of inquiry (i.e.: Anthropology, Chemistry, etc.).
Table 1: Ways of Getting Additional Assistance offered by the Library Web page

<table>
<thead>
<tr>
<th>Type</th>
<th>Agnes Scott</th>
<th>Bowdoin</th>
<th>Davidson</th>
<th>IWU</th>
<th>Williams</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stop by desk</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Phone</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Email</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Appointment</td>
<td>“Make an appointment”</td>
<td>“Schedule a research consultation”</td>
<td>“Make an appointment”</td>
<td>“Schedule a research appointment”</td>
<td></td>
</tr>
<tr>
<td>Live Chat</td>
<td>Yes</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The design and amount of information provided on the main pages ranged from clean and minimal to cluttered and extensive. Four of the five pages included graphics and provided the majority of information above the fold (on the screen). Williams’s (Appendix C, Figure 1) design was very clean, providing a minimum of text, but also providing roll-over links with further information, thus making the site very navigable. IWU and Bowdoin’s (Appendix C, Figures 2 and 3) main library pages provided much more extensive information, but still provided headings that distinguished different sections and allowed the eye to quickly scan the page. Agnes Scott (Appendix C, Figure 4) provided distinguishing headings with a manageable number of links following. Davidson’s page (Appendix C, Figure 5) was not as neatly laid out as the other four. Main links were in a column on the left side, but there was also information that trailed off the screen (or “below the fold”), making for an unappealing, and somewhat confusing appearance.

**Finding Online Instruction from the Main Library Page**

Online instruction could be accessed from all of the library’s home pages. Four of
the five pages used the word “research” on the library’s home page to direct the user to online instruction. This included two: “Research Advice”, one “Research Assistance”, and one “Need Help? Library Research”. Three of these pages also had separate, top links to library guides from the library main page. The less intuitive link “Reference” led to Davidson’s online instruction. Four of the libraries had links that led to separate pages dedicated to research with links to all of the research resources provided through that library Web site.

**How is Instruction Occurring Here?**

**Types of Instruction Pages**

Much like the variations among home pages, there were variations among library Web sites. All provided research guides; but the type and content varied as shown in the table that follows.

**Table 2: Instructional Guides provided through Library Web sites**

<table>
<thead>
<tr>
<th></th>
<th>Agnes Scott</th>
<th>Bowdoin</th>
<th>Davidson</th>
<th>IWU</th>
<th>Williams</th>
</tr>
</thead>
<tbody>
<tr>
<td>General Research</td>
<td>Yes</td>
<td>Yes</td>
<td>Partial</td>
<td>Yes</td>
<td>w/in others</td>
</tr>
<tr>
<td>Course</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td></td>
<td>Yes</td>
</tr>
<tr>
<td>Subject</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td></td>
<td>Yes</td>
</tr>
<tr>
<td>General Evaluation</td>
<td>Yes</td>
<td></td>
<td>Yes</td>
<td></td>
<td>Yes</td>
</tr>
<tr>
<td>Web Evaluation</td>
<td></td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Scholarly/Popular</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Citation Guide</td>
<td>w/in others</td>
<td>Yes</td>
<td>w/in others</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td>Annotated bibliography guide</td>
<td>Copyright, Primary and Secondary Sources</td>
<td>Library terms guide,</td>
<td>Primary and Secondary Sources</td>
<td></td>
</tr>
</tbody>
</table>
Three of the five libraries provided guides dedicated to assisting the user in the general research process. Davidson contained no guides that walked the user through the entire research process, but did provide guides that addressed parts of the search such as “how to narrow or broaden a search”. It also contained research planners available in PDF form which students could print and fill out (Appendix D shows one example).

Subject guides are research guides dedicated to a specific academic subject, such as economics or biology. Course guides are dedicated to a specific academic course or class within these subjects, such as “Econ 203 Gender and Economics”. Three of the five libraries contained both subject specific and course specific research guides. Four of the five library Web sites provided course specific instruction in the form of course guides, and four of the five library Web sites provided subject specific guides. At Williams course guides were found through their related subject guides. If a student was looking for the guide to “Econ 203 Gender and Economics”, they would first click on the Economics subject guide link (Appendix E, Figure 6). This would take the student to a general economics subject guide home page that includes links to course guides for economics classes. Bowdoin’s course guides were similarly connected to their appropriate subjects (Appendix E, Figure 7). These course and subject guides will be discussed in further detail in the following sections.

Other types of instructional tools included guides on accessing and evaluating various types of information, copyright, plagiarism, and citation. These will be discussed in more detail in the result’s section on information literacy.

**Information Literacy**

Although none of the Web sites explicitly stated it or used the phrase
“information literacy” in relation to the instruction guides, all of the libraries provided instruction aligned with ACRL’s information literacy competency standards.

The general research guides provided by three of the libraries assisted students in defining and articulating their information needs. IWU, Bowdoin, and Agnes Scott’s general research guides all provided information for identifying, researching and refining topics in order to determine what kind of information students would need to seek. Bowdoin and IWU did an especially good of providing guiding questions for the students to ask themselves throughout the process, ranging from “How many sources will I need?” to “Are you interested in the topic enough to produce something that will interest your audience?” Additionally, all three of these general research guides provided links to their institution’s Writing Center.

Davidson and Williams did not provide general guides that were as easily accessible or consistent, but did provide some support for defining information needs. Many (but not all) of Williams’s subject guides contained such general research assistance as well. Of the 31 subject guides provided by Williams, 23 provided some form of a general research guide. The nine subject guides that fell under math and science included the same “research checklist” to aid students in identifying their information needs. Nine of the other subject guides included in-depth “research basics” guides, and five include brief blurbs on how to determine topics and information needs. None of these basic research guides and checklists was tailored to the specific subject (with the exception of the inclusion of the subject librarian’s name in some) and could have stood separate from the subject guide. Davidson did provide a guide on “narrowing or broadening” your search which could be used to assist users in refining their topic to find
better information. Further, Davidson’s research planner could help students organize their thoughts and needs.

All of the libraries provided assistance in finding and accessing information. Links to information about finding materials could be found on all of the libraries’ home pages and all but Davidson used the word “find” to guide users to this information. The three general research guides previously mentioned all contained information about finding materials, and two (IWU and Bowdoin) directed students (through links) to the subject specific guides for finding subject specific materials. Course and subject guides from all of the colleges in the sample provided information about finding materials. All included information about books and journals, most cited reference works by title, and some included Web resources, associations and other sources.

Though varied, all of the libraries provided users tools for evaluating information sources (as displayed in Table 2). Types of tools included general evaluation guides, evaluating Web source guides, and guides for distinguishing between popular and scholarly materials (generally journals and journal articles). Additionally, Bowdoin and IWU provided guides on distinguishing primary and secondary sources. A similar guide was available in Williams’s History Subject Guide, and Agnes Scott’s general evaluation guide included primary source information.

The subject guides and especially the course guides assisted the users in finding information for specific purposes. The question of whether the user was assisted in using information effectively to accomplish a specific purpose is a bit more subjective. It could be argued that the general research guides assisted users in defining topics and gathering information for these topics in order to write effective papers. If the purpose of their
inquiry was to find scholarly or authoritative sources, the evaluation guides could be said
to assist in that endeavor. The library instruction at Bowdoin, IWU, and Agnes Scott also
directed students to the schools’ writing centers which could provide additional
assistance in using information effectively.

The instruction students received about the legal, social and economic issues
surrounding information ranged from very informative to completely absent. Information
about citing, plagiarism, copyright and publishing varied.

Citation information was not consistent throughout the libraries. Two library sites
provided comprehensive, stand alone citation guides. Two others included citation
information in their general research guides. One of these (IWU) linked to more
comprehensive citation guides created by IWU’s writing center, while Agnes Scott linked
to Dartmouth’s citation tutorial. Davidson included no citation guide or link to citation
guides, but did include a guide on how to use RefWorks (a bibliographic citation tool).
All of the libraries provided information about using either RefWorks or Endnote, both
bibliographic citation applications.

Additional tools included guides on copyright, plagiarism and publishing.
Bowdoin and Williams both had dedicated copyright guides and Bowdoin’s library
research page also linked to a plagiarism tutorial designed by the college. Agnes Scott’s
library had created a page on “Scholarly Publishing Issues”, which was essentially an
annotated bibliography (with direct links) to works discussing the debate about scholarly
publishing and open access.

**Principles of Good Instruction**

This evaluation was based on Dewald’s principles of instruction. The schools
were consistent with each other in how they succeeded or failed in these areas. The strengths and weaknesses, based on the sample as a whole, were evenly divided.

The strengths included attention to concepts and mechanics, providing course related instruction, and providing additional ways to seek assistance. All of the libraries in the sample provided instruction that taught concepts and mechanics such as encouraging students not just to identify a topic, but to think about what was related to that topic and how to focus or expand on that topic. Four of the five schools provided course related instruction. All instruction tools and guides (as did library home pages as shown in Table 1) provided additional ways to seek assistance.

Educational objectives, interactive learning tools, and graphics were generally lacking in these sites. While a few examples were found, clear educational objectives were rarely stated in any of the guides or instruction tools provided by any of the libraries. I could find no online active learning activities, interactive games, or quizzes at any of the sites. The information was mainly offered as text. These last two principles relate closely to the findings for the final guiding question.

Who Is This Page For? / Does It Meet User Learning Styles?

This is one area that the libraries seemed to be struggling with. They did meet the most important criteria for usability by Net Gen users in that they were available remotely and did not require (but did provide the option of) in-person contact. Many of the baccalaureate institutions I examined in the initial pre-sample did not provide any online instruction.

The sample was strongest in providing good navigation and links to additional resources. As recommended by the literature most tools were “linear but navigable”.
Additionally, the libraries were successful in the links they provided. They allowed users to open other valuable tools (internal and external in nature) through their online instruction and provided was to move around within guides. The way one can move around and jump from guide to guides at IWU is a good example of this (Appendix F, Figure 8). Bowdoin was extremely successful in providing navigation and links. Its “Getting Started” page (Appendix F, Figure 9) is a good example of layout that is not necessarily linear, but still understandable and easily navigable. Consistency within subject and course guides varied at all schools. Most had a basic template that was used within course and subject guides, but content varied greatly.

The sample had several strong usability weaknesses. It was weak in meeting the visual and interactive preferences of its users. Aside from students’ interaction with the mouse and possibly keyboard in moving to various links, there were no interactive features to any of these sites. Visuals and graphics were used sporadically. Bowdoin and IWU used screen captures and tables to make information more clear. Some of Agnes’ course guides incorporated images and some of the subject guides at Williams included photographs of the liaison librarian for that subject. Despite some use of visuals most of the screens were filled with text and little else.

Library jargon was found, but in most cases was not excessive. While most of the colleges seemed to be attempting to avoid using library jargon, it was still a presence on all of the sites. Davidson’s library home page was filled with jargon including “Indexes and Databases”, “Catalogue”, and “Interlibrary Loan Requests”. Interestingly Davidson did provide a guide to library terms called “Library Jargon”. However, students would need to know that clicking on “Reference” would take them to instruction tool in order to
find this. The other four libraries seemed to attempt to avoid overwhelming students with jargon by using basic terms such “Research Assistance” and “Find Books, Article, etc.” to identify main categories. Williams used the label “Borrowing from other Libraries” and only mentions interlibrary loan after this. Bowdoin did something similar in its “Getting Started’ guide by placing interlibrary loan service under the heading “Obtaining Materials not in the Library”. Still, some common jargon was found throughout the sites especially, “Interlibrary Loan”, “Catalog” (or at Davidson “Catalogue”), “Databases” “Collections” and “Indexes”. Most of the instruction pages attempted to define library jargon when it was used, although undefined jargon still appeared. Two examples are: the use of “periodicals” in Agnes Scott’s Guide to Library Research, and the use of “Boolean” (without explanation) in Davidson’s research planner (Appendix D).

DISCUSSION

This study contributes to the research on online library instruction at baccalaureate institutions. Despite the lack of online library instruction at many undergraduate colleges, the five libraries included in this study illuminate how small college libraries do create their own content and design pages to instruct students via the Web. This discussion reflects on the study findings in order to identify best practices and to make recommendations for the development of useful online instruction tools. The paper concludes with suggestions for potential research.

Findings

Users must be engaged if they are to make use of online instruction tools. In this study the question of engagement started with the college home page. Only two colleges in a sample of five provided direct links from the college home page to the library home
Lack of a direct link was also noted when examining the pre-sample. The questions of how a link arrives on an academic institution’s home page and of who has control over that decision are possible areas for future research. It is clear the user will be automatically discouraged if they cannot find the page. The choice to place the library under the “Academic” link seems to be a common one, but is in no way intuitive.

Page design also has the ability to invite the users in or turn them away. The majority of library home pages examined were laid in a grid-like manner with clear headings that allowed a quick scan of the page. Graphics were also included on most of these pages. The clean style of Williams’s in particular was appealing. Both of the evaluators for the pilot study commented on the layout of this site in particular, calling it “nice and clean” and a “clear, easy to navigate site”. Both also commented that IWU’s site was “nice looking” and “easy to navigate”. Although Bowdoin’s main library page was crowded, materials could still be easily found by distinguishing headings. Agnes Scott also employed simple headings and used a minimum of text; while Davidson’s layout failed to engage.

Instruction was accessed fairly uniformly across the sites. Using the “research” link to guide users to instruction was encouraging as it is a term users would be familiar with and it describes the function they are trying to execute. The one college that did not use the term “research” to guide users to instruction instead used the term “reference” which seems to reflect an approach from a librarian’s mental model and not a student’s.

There were identifiable patterns in the instruction provided. Course and subject guides were the most common offering. Three of the five libraries also offered general
research guides. Specific instruction on evaluating information was offered by all of the institutions examined, but surprisingly information about citing was not.

The design of, and content found in, the subject and courses guides ranged. The subject guides at Williams, Bowdoin and IWU were consistent in their design and structure even if content varied. This consistency is helpful for navigational and usability purposes. Bowdoin and Williams both listed existing course guides with the corresponding subject guides and this seems like an expedient way to guide users to more useful information. The course and subject guides sometimes took the form of what Galvin (2005) referred to as simply a “pile of sources” (Galvin, 2005, p.363) and inclusion of helpful annotation should be considered for future design. Davidson appeared to use similar templates for its course guides. There was much variation among course and subject guide templates at Agnes Scott. The variation in course and subject guides is likely due to the fact individual guides are designed by different librarians.

All sites assisted students in evaluating materials and thinking about the overall research process. Even though citation information was generally provided, it was surprising that all of the institutions did not provide specific guides, and that one institution completely ignored any discussion of the importance of citation. Interestingly, all of the libraries provided information about how to use bibliographic citation software. This seems to echo Harley et al.’s (2001) claim of superficiality. Students are provided tools to cite for them, but know nothing about the actual process or reasoning behind it. Creating and maintaining citation guides (especially in the dynamic online publishing environment) consumes time and other resources, but some mention of the importance of
citing or the implications of not citing (plagiarism) should be included as part of basic library instruction.

All of the libraries provided instructional tools that assist students with information literacy skills, but the inconsistency in instructional and usability principles may deter students from using these tools. There was little to let the students know they were in instruction guides and clear educational objectives were rarely used. There was no interactive learning and few visuals to stimulate learning. The pages were in general, easily navigable and allowed students to leave and return so as not to hinder their “parallel” thinking. But there was still too much scrolling and far too much text provided on screens without any visuals or graphics to aid in the learning. Also, in an attempt to avoid forcing students to become “expert users” use of jargon needs to be minimized.

Still, these libraries need to be commended for their strengths in providing options for further assistance, providing course related instruction, and including both concepts and mechanics in their instruction. All of the libraries included in the sample have taken the first step toward meeting users’ needs by providing an online presence. This sample is ahead of the curve as many similar institutions have not yet provided students such options.

**Lessons Learned: Creating a More Usable Tool**

We can begin to identify ways of creating successful tools for users by looking at these results. As these are smaller institutions with fewer resources to build such tools, we must imagine tools that are both promising and easy to create.

Williams’s library home page provides a good example of welcoming page layout and design. Little jargon is used, the page is not crowded with text, and users can roll-
over links for more in-depth information. Stand-alone general research guides supply basic principles that can be applied in many research situations and are a good first introduction to instruction once students have been engaged by the site. Bowdoin’s “Getting Started” page (Appendix F, Figure 9) is an excellent example of how to provide a navigable overview of library research, and IWU’s “Begin Your Research” guide (Appendix F, Figure 8) nicely chunks general library information for the user. Subject and course guides provide the engaged user with assistance for more specific research needs. Models for subject guides can be found by combining elements of Williams’s and Bowdoin’s subject guides. Both follow consistent templates throughout their subject guides. Combining elements of the content found in Williams’s and Bowdoin’s subject guides (such as an introduction with objectives, subject headings that link directly to materials in the catalog, primary source descriptions where appropriate, and referrals to reference materials, journals, Web resources, and books) in a template like Williams’s easily navigable subject guides, would provide a useable model. Annotation was not consistent throughout these guides, but should be provided consistently in the ideal guide. Materials should be explained in brief blurbs that will allow the user to quickly determine their usefulness for their research objectives. One issue found in Williams’s subject guide template was the inconsistent presence of the guide’s menu throughout specific guides. Some guides included the menu on every page of the guide while others included it only on the first page of the guide. The menu should appear on every page to provide ease of navigation. It is recommended that similar templates (with the modifications noted above) be created for course guides as well. Finding ways to connect course guides (as done by Williams and Bowdoin) to their corresponding subject guides is desirable.
Having a citation guide created internally is also highly desirable. Williams’s guide, which was designed around the citation styles most commonly used by their students, provides a nice model (Appendix G) for such a citation tool. The guide provides links to useful internal and external resources and provides the option of searching by style or material type. Davidson’s page on distinguishing between popular and scholarly materials is provide in table form, which is a clean and clear way to present the information. Adding images of relevant magazine and journal covers to the page may provide additional assistance for visual learners.

There are many ways of meeting users’ learning styles without great expense or time. Awareness of language and monitoring for use of jargon in tools is one way. Stating the purpose of tools at the beginning would involve little extra effort, but would go a long way toward meeting principles of sound instruction. Incorporating more images and creating interactive quizzes into guides takes some knowledge and effort, but is not especially laborious or cost prohibitive. These are ways of meeting users at their point of learning. Davidson’s printable guide (Appendix D), which is an interactive tool for students, could be improved upon by creating a document that was editable online. This would allow students to save it to their computer and add to it while searching library resources online. Consistency in guide content may be a more difficult issue as content needs vary between subjects and between courses, but a general design consistency could be addressed by creating a general, modifiable global template.

**Conclusion: Future Research**

As the Web becomes increasingly important, libraries should consider it a viable means for connecting with and instructing users. A cursory examination of baccalaureate
institutions found a lack of original online instruction provided by many institutions similar in nature and size. There were even baccalaureate institutions that provided no library Web page.

These institutions may have limited resources and may be less likely to have a dedicated library instruction department. Research on how undergraduates at small colleges access the library is an area for future inquiry. Is online instruction limited due to lack of resources or do students at small college have enough opportunities for in-person contact and instruction with librarians that extensive online tools are considered less necessary?

Another possible area for future research is the use of larger institutions’ instruction materials by small colleges. Many smaller colleges forego designing their own instruction and instead guide user to tools at larger institutions by linking to their Web sites. Some libraries have attempted to create semi-original instruction by adapting or modifying instruction provided by larger libraries. Several small colleges have adapted the University of Texas’s information literacy, TILT tutorial, to include information about their specific institutions. The usefulness of these links and tools, and the relationship between library instructors at small and large institutions is another area for potential investigation.

As noted in the literature review, students are more successful in research and material evaluation when they understand what their professor requires. Collaborating with faculty to create and promote online library instruction is another area for further consideration. Not only can faculty help create and promote library instruction, but they
can assist in assessing instruction by providing feedback on their students’ research skills and knowledge.

This paper started with the idea that the academic library Web site may be the first experience students have with the library. The question then follows; *Does such a site have the ability to draw the user into the physical library?* A well developed site can make the user feel more comfortable with the library and perhaps lessen the anxiety of entering the physical space. Many of students’ needs are now met in the virtual environment, but online instruction can also guide them to assistance, reference works and other resources not available online. Ways to study the connection between the virtual and the physical include measuring use of Web sites, tracking the number of library liaison appointments made via the internet, and conducting surveys to identify physical library use due to online guidance.

As the online environment continues to grow, constant vigilance must be paid to its usefulness. Our students’ access to information and their need for assistance in navigating this information will also grow. We must continually assess our tools and be mindful of the tools created in our community of libraries in order to best aid our users.
REFERENCES


**Library Web Sites Analyzed**

*McCain Library, Agnes Scott College.* library.agnesscott.edu

*Bowdoin College Library.* library.bowdoin.edu

*Davidson College Library.* www.davidson.edu/administrative/library/little.htm

*The Ames Library, Illinois Wesleyan University.* www.iwu.edu/library/

*Williams College Libraries.* www.williams.edu/library/
Appendix A. Questions for Evaluation

Data Collection Form

Institution: ____________________________

Observations, Patterns,
What was going on here? What content do we find?

What do all of these pages have in common? What are the differences?

Did the page encourage or discourage, engage or disengage?

Is the Library Page accessible from the main library page?

If so, how?

What is the design of the library’s home page? Colors, graphics, text

How is online instruction accessed from the library page (what links are used)?

What is the design of the instruction page(s)? Colors, graphics, text.

How is instruction occurring here?

General observations

Are there:
  General Research Guides?
  Course Guides?
  Subject Guides?
  What other tools are provided?

Are Information Literacy standards being addressed?

  Is there assistance in defining and articulating the information need?

  Is there guidance on finding and accessing information?

  Is the user being assisted in using information effectively to accomplish a specific purpose?

Is the user assisted in evaluating information sources?

Are there evaluation tools?
General evaluation?
Web source evaluation?
Journal/Article evaluation?

Is the user being informed about the socio-political issues around information and being assisted in using information ethically and legally?

Is there information about citing sources, plagiarism, etc.?
Are there citation guides?

Are principles of good instruction being applied?

Are there clear educational objectives at the start?

Does it teach concepts not just mechanics?

Does instruction provide the option for additional assistance /provide a way to contact a librarian/ Includes the option for asking the librarian for help at any future time?

Is there course-related instruction?

Are there active learning activities/is it interactive (games, quizzes, etc.)?

Is information offered in more than one medium?

Who is this page for/ who is the audience? /Does it meet user learning styles?

What kind of language is being used? Library jargon?

What kinds of examples are used? What kind of links is provided?

Is active learning encouraged? Is the site interactive? Are there quizzes, etc.?

Is navigation linear, does it allow the user to move around and move at his/her own pace? (Is it linear, but navigable?)

Are graphics/visuals used?
Appendix B. Williams’s Home Page
Appendix C. Library Home Pages

Figure 1. William’s College Library
Figure 2. IWU’s Ames Library
Appendix C Cont. Library Home Pages
Figure 3. Bowdoin’s College Library

Figure 4. Agnes Scott’s McCain Library
Appendix C Cont. Library Home Pages
Figure 5. Davidson Library

Appendix D. Davidson Planner
Appendix E. Bowdoin and Williams Subject/Course Guide Examples
Figure 6. Williams’s Economic Subject Guide

Figure 7. Bowdoin’s Main Subject Guide Page

Appendix F. Bowdoin and IWU, General Research
Figure 8. IWU’s Begin Your Research Page

Figure 9. Bowdoin’s Getting Started Page

Appendix G. Williams’s Citation Guide
Figure 10. Williams’s Citation Guide Main Page

Figure 11. Williams’s Citation Guide, APA Page