

DISCOVERING A DESCRIPTIVE TAXONOMY OF ATTRIBUTES OF  
EXEMPLARY SCHOOL LIBRARY WEBSITES

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This descriptive study examines effective online school library practice. A Delphi panel selected a sample of 10 exemplary sites and helped to create two research tools--taxonomies designed to analyze the features and characteristics of school library Websites.

Using the expert-identified sites as a sample, a content analysis was conducted to systematically identify site features and characteristics. Anne Clyde's longitudinal content analysis of school library Websites was used as a baseline to examine trends in practice; in addition, the national guidelines document, *Information Power: Building Partnerships for Learning*, was examined to explore ways in which the traditional mission and roles of school library programs are currently translated online.

Results indicated great variation in depth and coverage even among Websites considered exemplary. Sites in the sample are growing more interactive and student-centered, using blogs as supplemental communication strategies. Nevertheless, even these exemplary sites were slow to adopt the advances in technology to meet the learning needs and interests of young adult users.

Ideally the study's findings will contribute to understanding of state-of-the-art and will serve to identify trends, as well as serving as a guide to practitioners in planning, developing, and maintaining school library Websites.

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## CHAPTER 1

### INTRODUCTION

#### Significance of the Problem

School library websites have new potential to expand and reinterpret library service for learners. Through their websites, teacher-librarians can apply traditional skills—for instruction, collection development, collaboration, reference, and administration—in powerful new ways. They can apply these skills in highly populated, newly emerging information landscapes. They can offer 24/7 accessibility, just-in-time/just-for-me learning opportunities. As scalable strategies, school library websites allow librarians to guide unlimited numbers of students—onsite, at home, or otherwise distant.

Yet, after more than 10 years (Clyde, 2004), school library website development remains an emerging practice. Little research examines school library service online. No studies examine what models exist in current practice and the commonalities such models might share. Specific criteria have yet to be established for the evaluation of school library websites. No attempt has been made to classify features of these sites in order to propose taxonomies to guide practice.

Library websites can be important to learners. They allow students independence as they allow teacher-librarians opportunities for instructional intervention. Kuhlthau (1997, 1999) saw library websites as constructivist environments, as new zones of intervention for guiding learners in the information search process. Through these online interventions, Kuhlthau predicted, librarians

would customize instruction and reduce confusion as students navigate through the often overwhelming processes of accessing, evaluating, and using information. Clyde (1997) believed that the primary purpose of the library homepage would be instructional, delivering information skills would be the essential life skills for the information age.

Learners are largely online. The Pew Internet & American Life Study, *Teens and Technology: Youth are Leading the Transition to a Fully Wired and Mobile Nation* (Lenhart, Madden, & Hitlin, 2005) concludes that “teens are enveloped in a wired world,” using technology for communicating, shopping, game playing, and information seeking. Will that wired world link them to their libraries, and the quality resources they provide, as well as to their friends, their games, and their favorite shops? Will teacher-librarians, through their websites, be able to translate their programs to create hybrid experiences that reinforce students’ learning experiences in the physical realm, while extending the three roles as defined in the national standards document for school libraries, *Information Power* (American Association of School Librarians [AASL] & Association for Educational Communication & Technology [AECT], 1998): learning and teaching, information access and delivery, and program administration?

Library websites allow teacher-librarians new strategies for delivering their mission. *Information Power* (AASL & AECT, 1998) clearly defines the mission of the school library: “to ensure that students and staff are effective users of ideas and information” (p. 6). According to the document, this mission is accomplished:

- by providing intellectual and physical access to materials in all formats

- by providing instruction to foster competence and stimulate interest in reading, viewing, and using information and ideas
- by working with other educators to design learning strategies to meet the needs of individual students

To reach a generation of users who expect to seek information, learn, and communicate online, 21<sup>st</sup> century educators must retool and determine how best to accomplish this mission in new information landscapes (Levin, Arafeh, Lenhart, & Rainie, 2002). Teacher-librarians must build landscapes to meet their learners' needs online.

But what are the hallmarks of a useful and well-designed school library website? Despite the potential of these interfaces for learners, no existing studies suggest criteria for assessment of the quality of school library sites. This situation is not limited to school library sites. Chao (2002) notes in an examination of academic library websites, "existing studies are limited to the evaluation of general Internet sources, general library resources on the Web, and federal government Web sites . . . There is no proper framework to allow experts to perform an evaluation on the quality of academic Libweb sites" (p. 170). Chao argues that this research is critical, that academic sites should receive greater scrutiny and provide higher quality than other sites.

School library websites might be more practical to analyze than library interfaces serving other populations. School sites generally serve more homogeneous populations than other library Web efforts. With their clearly focused missions and smaller populations, they are perhaps more similar to business sites,

than to public and academic websites. Because teacher-librarians regularly collaborate with classroom teachers to plan instruction, assessments, and resources, these particular webmasters have clear understandings of the curriculum for the grade levels and content areas that are within the spheres of their limited learning communities.

Unlike larger university or public library efforts, school library websites are often one- or two-person operations, with no editors, other than perhaps a network administrator's concern for style or a school district's determinants of appropriateness for the educational setting. School library websites have the potential to provide extraordinary opportunities for customized online instruction and guidance, but the busy sole practitioner needs models and guidance to be successful in his or her emerging role online.

Practice in the area of creating and maintaining school library websites is irregular and likely inequitable for student users. Though Clyde studied the features of randomly selected sites longitudinally—in 1996, 1999, and 2002—her disappointment with the state-of-the-art is apparent. In all three studies Clyde's (2004) evidence described dramatically uneven practice. Sites ranged from a simple Web presence with little true usefulness, to "a few comparatively large school library Web sites, with more than 40 pages of information and many features designed to meet the needs of users," leading Clyde to conclude that most practice fits "somewhere between these two extremes" (p. 164).

Clyde (1999) admits "no attempt was made to evaluate the various features on the different Web sites; to a certain extent this was because of the absence of

any generally-accepted criteria for the evaluation of school library Web sites or their features” (p. 232). In addition, so little was known about school library websites at the time of the first study in 1996, that it was useful to find out what school libraries were actually doing in terms of mere presence, regardless of quality issues. Ten years into the presence of websites in this field, it is time to examine commonalities in exemplary practice, to establish taxonomies for those commonalities, and to determine indicators to guide practitioners and to help them provide equity for the learners they serve.

### Research Questions

The thousands of school library website efforts represent conspicuous diversity in approach. With sites ranging from single-page brochures to dynamic, multi-page learning environments, examining the broad scope of these professional efforts would be much like comparing apples and oranges. The disparity of these efforts, compounded by students’ heavy reliance on the Web, and a body of professional literature that documents the need for online professional intervention with learners, suggests the need for research and points to the following critical research questions:

1. What models of exemplary practice exist in school library websites?
2. What common features are presented in sites representing exemplary practice?
3. What common organizational structures and design characteristics are employed in exemplary school library sites?

4. From the models observed in sites identified as exemplary practice, can a functional descriptive taxonomy of features be developed?
5. How are school library sites evolving? How do the features and services offered by exemplary sites in 2006 differ from the state-of-the-art of the randomly selected sites last studied by Clyde in 2002?
6. To what extent do exemplary school library websites present features devoted to: information access and delivery, learning and teaching, and program administration, as expressed in the context of the current national standards document *Information Power* (AASL & AECT, 1998)?

#### Purpose

Beyond earlier explorations that focused on counting features, this study attempts to operationalize a concept of exemplary practice. Through a systematic analysis of sites pointed to by experts for their features and characteristics, the researcher developed two functional taxonomies to create a descriptive model of exemplary practice, a picture of current state of the art and trends in school library website practice.

The process should help to identify a set of performance indicators to assist practitioners in the development of library sites. In future studies, the researcher hopes to build on the baseline established in this work to develop an instrument for guiding practitioner in evaluating the quality of school library websites.

#### Limitations

This study is limited to examining content and form in secondary online school library practice. Because this study examines practice relating to middle and

high school library websites, features and characteristics relating to sites designed for younger users did not appear in the study's results. Practice for younger learners may look quite different, based on those users' more limited reading abilities, as well as their specific developmental needs and interests. The researcher selected to explore secondary sites, rather than high school sites exclusively, so as not to exclude potential variations in secondary school configurations. For instance, many private schools include 6<sup>th</sup> through 12<sup>th</sup> graders in their upper schools. High schools might include 8<sup>th</sup>, 9<sup>th</sup> or 10<sup>th</sup> through 12<sup>th</sup> grades.

This study does not attempt to measure such critical issues as user behavior, response, and satisfaction. Though the study of content raises serious questions regarding which features are truly important to student users, a number of researchers note that the study of content should precede user studies. Rife, Lacy, and Fico (2005) note: "One cannot study mass communication without studying content. Absent knowledge of the relevant content, all questions about the processes generating that content, or the effects that content produces, are meaningless" (p.39).

This study is descriptive. It does not attempt to evaluate the features and characteristics of the sites or the sites as a whole. The researcher hopes that the development of a tool that itemizes and analyzes content of websites demonstrating effective practice will prove a step in the direction of the development of criteria and tools for evaluation. The purpose of the study is to examine if content exists on selected websites, not to evaluate the quality of the content presented.



Because the Web is an ever-changing medium, terminology and categories discovered in the 2006/2007 school year, will likely evolve. Adjustments must be made for future studies. New Web applications, such as blogs, wikis, podcasts, and streamed media are just beginning to impact online library services. The growing popularity of these new applications will likely continue to influence online practice in the coming few years.

This study was purposely limited to 10 sites representing effective practice. Had the sample been larger, the findings might have been different. The small scale of the sample affects the generalizability of the research to a larger population. Because the goal of the study is to describe effective practice, the researcher hopes that the resulting instruments will serve as models to present practitioners with the possible features and characteristics demonstrated by best practice sites.

Coding errors are always possible. These errors are perhaps more possible in a non-linear Web landscape. Information buried deep within a site's multiple pages might be missed. The researcher, a professional librarian who is herself involved in website design, coded all the sites. If the researcher could not locate content during a reasonable time period, then it is likely learners or faculty users would not find that content either.

The coding instruments may not be ideal for examining all school library websites. School libraries are subject to such variables as size of library staff, the ability of the librarian to devote time to these tasks, the skills of the librarian relating to Web communication, and school or district policies and restrictions. These

factors have implications and likely create barriers for school librarians who wish to create comprehensive websites.

The researcher hopes the results of this study will serve as a baseline for the study of website evolution and as a prelude to for later study of user behavior and response.

## CHAPTER 2

### LITERATURE REVIEW

#### What are School Library Websites?

The terms *virtual library*, *digital library*, *electronic library*, *cyberlibrary*, and *library website* are used in the literature of information science and education to describe dissimilar efforts such as the following: national libraries; the archives of major organizations; the specialized digitized text, image, and media archives of museums and universities; aggregated commercial databases; as well as the focus of this study—school library websites developed by teacher-librarians to serve their own user groups who are predominantly learners.

School library websites generally extend their services beyond the creation of a digital information delivery structure to implement instructional missions. Distinguished from sites that merely house archives or collect bookmarks, library websites in educational institutions can reach beyond intellectual access, utilizing the professional skills of the librarian to offer instruction in information literacy and to support learning in the various disciplines. Marchionini and Mauer (1995) describe such efforts as building intellectual infrastructures (¶ 6) and point to their potential for creating communities of learners. Neuman (1997) cites several studies that point to school library websites as venues for higher level thinking and learning. Marchionini, Plaisant, and Komlodi (1998) echo Neuman's conclusions. "Digital libraries are the logical extensions and augmentations of physical libraries" and in addition to

amplifying existing resources, “they enable new kinds of human problem solving and expression” (p. 536).

Though researchers disagree over terminology, this study will use the term *school library website* to describe a customized online learning environment, developed by a teacher-librarian to improve and extend the services and mission of the library program to the learning community. In 2007, the interface may take traditional HTML form, or it might take the form of a blog or a wiki.

### Students and their Information Habits

No longer limited to the traditional collections physically available in their school libraries, or the content of their textbooks, today’s student researchers confront an explosion of information choices. High school students, who have literally grown up on the Web, prefer it as a primary information outlet (Levin, Arafeh, Lenhart, & Rainie, 2002; Jones & Madden, 2002; Tenopir, 2003). They have high expectations for information speed and convenience and high expectations for library service (Abram & Luther, 2004).

A Pew Internet and American Life study, *The Digital Disconnect: The Widening Gap Between Internet-Savvy Students and Their Schools* (Levin, Arafeh, Lenhart, & Rainie, 2002) finds that most students (78 percent) prefer to use the Internet for research and homework. Tenopir (2003) notes high school and college students use the Internet more than their libraries. But she warns that their quality judgments about Internet materials “may not exactly match faculty criteria” (p. 32).

College students, just one year beyond high school seniors, may not be prepared to recognize quality or to realize their broader search options. According to

the Pew study *Internet Goes to College* (Jones & Madden, 2002), nearly three quarters of students (73%) report that they use the Internet more than the library. When they are using the Internet for research, they make use of commercial search engines and generally ignore their library's rich online resources because they don't know how to find them. Griffiths and Brophy (2005) observe that college students' use of academic resources was low and that they had little awareness of alternative information seeking methods beyond their favorite commercial search engine. In general, students had difficulty locating information.

The Pew Internet & American Life Study, *Teens and Technology: Youth are Leading the Transition to a Fully Wired and Mobile Nation* (Lenhart, Madden, & Hitlin, 2005) reports that nearly nine of 10 teens are Internet users and that half have broadband connections. The survey concludes that today's teens are "enveloped in a wired world" (p. 20), using technology for communicating, shopping, game playing, and information seeking. Interestingly, although the study noted that teens increasingly use the Internet at their libraries, "more than half (54%) of all online teens say they have gone online from a library, up from a little more than a third of teens (36%) who reported utilizing library internet resources in 2000" (p. 14). The report does not recognize the online efforts of librarians in connecting with youth. It seems to equate *library resources* with library hardware. The word *database* does not even appear in the study. A more recent Pew study, *Social Networking Websites and Teens* (Lenhart & Madden, 2007), finds that more than half of teens now use social networking software to communicate with old and new friends.

Teens live, play, learn, and connect on the Web. Libraries need to recognize their opportunities to meet young users in that space.

#### Students and their Information Issues

Despite our students' comfort and familiarity with things digital, researchers point to their need for more instruction, as well as the support of improved interface design, if they are to become effective seekers and users of information. Library websites address can young users' needs on both fronts.

While popular media attribute near guru status to young adults (Tapscott, 1997; Prensky, 1998), the literature of library and information science documents students' feelings of confusion and frustration, and less-than-effective approaches when interacting with information technologies. Research reveals troubling data relating to students' searching capabilities, their abilities to navigate the Web to find the resources they need for academic research, and their understandings of search environments, despite common feelings of self-efficacy.

#### *Naming the Information Need*

Students have trouble naming their information needs. Limited vocabulary and the inability to predict category patterns are prevalent cognitive issues. Brown (1995) found that 65-80% of subject search terms used by students from third grade through college fail to match the subject headings of electronic search tools. Shenton and Dixon (2004) observed similar naming problems with students representing their information needs in search terms. Large and Beheshti (2000) observed that sixth-grade students had trouble selecting appropriate search terms

and that the problem was compounded when they had to search multi-term concepts.

### *Confronting a Glut of Choices*

In addition to their own developmental learning and vocabulary issues, without an interface to guide them, young people come face-to-face with information glut as they confront hundreds of choices for any information task. It is natural for students to face challenges finding, evaluating, and using information. They confront a trillion-page Web—a Web created primarily for adults. Users of any age are likely to be baffled by the multiplicity of search choices offered by the Web—the commercial search engines, the subject directories, the portals. And then there are the millions of pages that comprise what we call the *invisible Web*, most notably the subscription databases in which libraries invest so heavily. Which search tools should students use for a particular information task—search engines, subject directories, subject portals, subscription databases? Which search strategies should they employ within each chosen search tool? How should they evaluate their overwhelming lists of results which are often made more distracting by sponsored results? What does quality look like? How should students document the sources they select? Agosto (2002) notes that students experience cognitive constraints in the form of information overload both within individual sites and with the Web as a whole. She describes students' overwhelming choice of websites as *outcome overload* and discusses the negative impact of this overload on student decision making, applying Simon's (1955) behavioral decision-making models of bounded rationality and satisficing to young adult information seeking. *Satisficing* is selecting

decision outcomes that are good enough to suit decision maker's purposes, though not necessarily optimal—a blend of *sufficing* and *satisfying*. Student participants often stop searching before they reached a satisficing choice and select disappointing sources. For some students, the major decision-making stop rule, is the first acceptable option they came across.

#### *Student Deficiencies and the Need for Training*

Fidel et al. (1999) point to high school students' difficulties using the Web, the need for training, and the need for improved system design informed by examination of users' seeking and searching behaviors. The Fidel study notes that students know little about the various search choices available to them and are glad to be told where they might start. The research team observed significant student inefficiency and frustration, and conclude that training is needed and that search environments can be much improved.

Neuman (1997) describes high school students as novices in terms of their understanding of the research process. Students often chose inappropriate databases, had naïve and inflexible conceptions of how information is organized, and often misunderstood the structures of the electronic information resources they use.

#### *Research on User Behavior Trends*

The *2003 OCLC Environmental Scan* (De Rosa, Dempsey, & Wilson, 2003) identifies major trends and patterns of change in the information landscape and its users. The report points to three changes among all information consumers. In terms of *service*, users are moving to self-sufficiency. Users see their worlds as *seamless*;



they view their academic, leisure, and work worlds as fused. And echoing Agosto's findings relating to satisficing, in terms of *satisfaction*, information consumers are largely satisfied with the quality of the information they find, even though information professionals might not deem those materials satisfactory.

A Pew Internet & American Life Project study, *Search Engine Users: Internet Searchers are Confident, Satisfied and Trusting — But They are Also Unaware and Naïve* (Fallows, 2005), looks at the public's trust in free Web search engines. Most users, especially young people, "paint a very rosy picture of their online search experiences" (p. 2). Users are in control and feel confident. They are satisfied with their results. They see their favorite search engines as fair and unbiased sources of information and are largely unaware of the type of alternative search tools they might discover through library websites.

#### The Importance of Mental Models and Navigation Aids

School library websites attempt to organize the Web and other information sources for students through their use of visual and text-based structures. Research points to a strong need for this type of guidance. Pitts (1995), Marchionini (1989), Neuman (1997), and Slone (2002) conclude that students have limited mental models for information seeking and lack the necessary framework for understanding information organization and the types of information available to them. Marchionini and Teague (1987) and Liebscher and Marchionini (1988) point to the need to create mental models to help users better understand information structures and navigate electronic environments. Large, Beheshti, Nessel, and Bowler (2004) conclude that student searching is improved when they are navigating venues that offer clues in a

variety of media. In their study of adolescents' use of the *Science Library Catalog*, Borgman, Hirsh, Walter, and Gallagher (1995) explore and confirm the importance of hierarchal subject categories as recognition devices to aid in searching. Neuman's (1993, 1995, 1997) studies of high school students' interactions with online information resources reveal that students' compelling misunderstandings of database structures sabotage their independent use of these resources.

Nilan (1995) notes that navigational metaphors make particular sense when groups of users have some shared sense of the meaning of the metaphor. In the case of school library websites, the in-person instruction of the teacher-librarian helps to reinforce the meaning of a common metaphor or structure for a student population who also use the site remotely.

Barker (1998) emphasizes the importance of mental models in the design of educational interfaces as cognitive structures. According to Barker, virtual libraries are themselves navigational metaphors that facilitate knowledge transfer between domains of knowledge and enable users to find their way around computer-based systems. If virtual libraries are to function as effective teaching and learning tools, it is vitally important that we design end-user interfaces that can enable users to create rich mental models.

Fidel et al. (1999) note that students seek landmarks or graphical clues as they navigate the Web. Comparing the Web to a shopping mall, where store windows must visually attract visitors, the researchers recommend that system designers recognize the importance of graphical guides for searchers.

Marchionini, Plaisant, and Komlodi (1998) identify principles to consider in the design of digital libraries. Among the design goals they point to are minimizing “disorientation by reducing navigation,” “anchoring users in a consistent context” and supporting “rapid relevance decisions through overviews and previews” (p. 535).

In their studies of interactive multimedia in instructional design, Park and Hannafin (1993) identify twenty empirically-based principles relating to the organization of information. Among the most relevant of the principles for school library websites is that knowledge should be organized to reflect the learner’s familiarity with the content, the nature of the learning task, and assumptions about the structure of knowledge. The researchers also note the importance of providing concept maps to indicate relationships among concepts and to visually guide learners to relevant instructional tools.

Marchionini and Maurer (1995) argue that library interfaces play central roles in guiding learners through the research process both in the library and remotely. “At the nexus of physical and intellectual infrastructure is the interface to the digital library. . . Good interfaces will allow learners to take advantage of digital resources equally well in classrooms, homes, and offices “ (¶ 8).

#### Online Interventions and Emerging Instructional Roles for Librarians

Wang’s (2003) study of the role of digital libraries in supporting e-learning for educational organizations suggests that digital libraries “should provide the infrastructure for supporting the creation, assimilation and leverage of knowledge” (p. 113) and ought to be constructed by examining the needs of learners, their learning priorities, and the mission of the organization.

Nielsen (2005) argues that library websites, embedded in the new media environment initiative, demand new kinds of communications of librarians as well as new communication skills. Nielsen predicts that users' changing expectations relating to hypermedia will force change in the culture of librarianship.

Among these new communication skills may be ensuring that users understand library Web messages. Kupersmith's (2007) clearinghouse of usability test data, *Library Terms That Users Understand*, offers a list of terms most often misunderstood by users, as well as terms that are well understood. Kupersmith notes that such terms as *find books*, *find articles*, and other combinations that employ natural language foster correct user choices.

Jenny Levine (2004), also known as the Web's Shifted Librarian, describes major differences in our students' approach to information use and the need for librarians to intervene on their turf, and to make their professional intervention portable. Levine calls this adjustment shifting, or meeting young people's information needs in their own worlds. She contends that today's library must be portable.

Roes (2001) argues that online intervention is a critical role for librarians in educational settings—there is no excuse for librarians to wait and see. The role of the librarian off- and online is to “to support teaching and learning, and to develop relationships with faculty further and in the direction of supporting their teaching” (¶ 28). Roes believes librarians must develop skills to support educational innovation and function as role models for their institutions. In his research examining academic sites and their relationship to distance learning, Jurkowsi (2004) notes that

students now view these websites as “the library itself.” They are the first thing students see when they sit down at a computer in the library and they are students’ “point of contact from home” (p. 33).

### Online Interventions and School Librarians

School libraries share specific missions different from those of special, academic, and public libraries. According to *Information Power*, (AASL and AECT, 1998), the mission of the school library is “to ensure that students and staff are effective users of ideas and information” (p. 6). The document explains that school libraries might accomplish this mission by working toward achieving seven goals. By organizing collections of information in a single interface to serve the curricular mission of the school, as well as by supporting the learning missions of the school library program, school library websites can serve, translate, and potentially extend several of *Information Power*’s established goals:

- to provide intellectual access to information through learning activities
- to provide physical access to information through a carefully selected and systematically organized local collection of diverse learning resources
- to provide learning experiences that encourage students and others to become discriminating consumers and skilled creators of information
- to provide a program that functions as the information center of the school (pp. 6-7)

Woven through *Information Power*, are the specific skills present in major information literacy models. These include skills relating to inquiry and information

access; evaluating and organizing information, using information ethically, applying information to personal and learning needs, using information to create new knowledge.

At the time of this study, the American Association of School Librarians was soliciting feedback on a second draft of its new learning standards, 21<sup>st</sup> Century Library Learning Standards (American Association of School Librarians [AASL], 2007). This revision values many of the same core literacies as the 1998 document, but recognizes learners' new abilities to use new technologies, to collaborate and to use information independently to create knowledge, solve problems, and make decisions.

Kuhlthau (1997) describes school library websites as offering new zones of intervention for librarians and encourages librarians to design such systems through which they can accommodate, guide, and coach learners. Kuhlthau sees school library websites as constructivist learning environments and argues that when these sites are truly user-centered, learners' goals shift from merely accessing information to gaining new understandings of the learning process. Kuhlthau (1999) notes that when librarians intervene to create customized websites to meet the needs of specific learners, students are less likely to be overwhelmed by irrelevant information options. Clyde (1997) contends that a library home page moves a school library from being an online information user to being an information provider. Clyde sees the library website's primary purpose as instructional—the delivery of “information skills that will be the essential life skills of the information age” (¶ 1).

School library websites offer opportunities for what constructivist educator Margaret Riel (1998) labels *just-in-time learning*—learning that is both time- and place-independent. Jasinski (1998) echoes Riel and notes that well-designed, customized online instructional environments can significantly improve learning by providing opportunities for improved access for learner when and when they are ready to learn.

Neuman (1997) recognizes the value of school library sites in gathering the specific information resources students need. She sees the library site as “an essential venue for learning the concepts and skills necessary for conducting research and handling information in an information age” (p. 79). Neuman also notes that teacher-librarians who study use can improve their online instructional practice.

Marchionini and Maurer (1995) describe and predict the future of the library website in the school environment. They point to the ability of library sites to break down barriers and facilitate communication “equally well in classrooms, homes, and offices.” (¶ 8).

### Evaluation of School Library Websites

Little research exists on the evaluation of school library websites specifically. Bruce and Leander (1997) note that research is heavy in library websites for specialized workplaces, but see an unrealized potential for the development of educational digital libraries. They argue for the evaluation of school library sites by observing their use in the context of their individual educational goals and their use of current technologies. In terms of design, the researchers suggest that to be most

effective, library websites should be customized and that the librarians who create them must examine their use by students and educators as searchers –“who they are, what their practices and needs are, and what we expect them to know” (¶ 14).

Saracevic and Covi (2000) conclude that evaluation of digital libraries “has yet to penetrate research, practice, or even debate” and advocate evaluation efforts that may lead to improved access and use “across the landscape of digital libraries” (p. 11). They urge professionals to consider evaluation as a critical part of digital library evolution. Wang (2003) notes that educational library websites should be maintained and modified according to user feedback, specifically relating to success and failure navigating the interface and unanticipated results. Chao (2002) surveyed academic library experts to develop and test an instrument for evaluating the quality of online academic libraries. The study reduced a set of original 68 essential quality indicators to eight essential factors representing the “most salient and nonredundant criteria” (p. 189): (1) presentation , (2) content, (3) graphic design, (4) compatibility, (5) services, (6) search capability, (7) institutional information, (8) information about links.

Clyde’s (1997, 2000, 2004) research centers specifically on the evolution and the evaluation of school library websites. Clyde’s compelling rationale for creating school library websites includes:

- demonstrating the role of librarian in information skills development;
- contributing to the development of a school information center on the Web;



- seizing a critical opportunity to promote the school library and the information technology skills of its staff;
- promoting collections, activities, and services;
- offering guides to information sources in such forms as pathfinders, style sheets, tutorials;
- and making the library catalog widely available.

Clyde's rationale offers a base for evaluation efforts. She began her longitudinal analysis of school library websites in 1996. This initial investigation took the form of a content analysis of 50 randomly-selected sites in an early attempt to get a snapshot of the state-of-the-art. The study attempted to identify the most popular pages and features, to point to effective design models, and to develop quality indicators observed in the current state-of-the-art. While Clyde saw endless possibilities, this early, small-scale study revealed that the sample sites varied a great deal, that most existing sites lacked purpose, and that the sites made little effort to identify and address their users' needs. The study was replicated in 1999. Clyde found the 37 existing sites from the 50-site 1996 study were more sophisticated, had more pages and more resources. The sites Clyde examined varied a great deal in aim and purpose. In November 2002, Clyde took another look at those 50 sites to examine state-of-the-art, the evolution of the sites, and differences in aims and purposes of the sites between 1996 and 2002. Her 2002 study revisited 32 remaining sites from the 1996 study and revealed that sites evolved to provide widespread access to such electronic resources as subscription databases, the catalogs of other libraries, and the library's own catalog.

Discrepancies still existed in 2002 with a few sites existing as one-page web presence that hadn't been updated over the years. A few others evolved into large sites offering more than "40 pages of information and many features designed to meet the needs of users" (p. 164).

Clyde found that most sites fell somewhere in between these extremes. She concluded that "while new features are still appearing on school library Web sites, and there is evidence of an important emerging function for the school library Web site as an electronic information gateway, there is also evidence that developments (apart from in this area) are slowing down" (p. 166). Before her death, Clyde had planned another study for 2005.

The International Association of School Librarianship (IASL)/Concord Award was awarded to school library websites from 1999 to 2003 (IASL, 2003a). The aim of the award was to "promote the involvement of school librarians in the development of the Web and to promote excellence in the Web sites of school libraries." Selection criteria for the award included:

- evidence of school library and/or school librarian involvement in page/site development; relevance of the page/site to the goals and objectives of the school library
- visual appeal, including layout, choice of images, type face and style
- organization of information on the page/site
- quality of the writing and use of language (and proof-reading)
- ease of use of the page/site, and navigational features

- educational, information, entertainment, or public relations value of the page/site; appropriateness for the needs of users
- currency, evidence of update policy, and the provision of current information and/or links
- technical quality (note that this is interpreted as the appropriate use of technology, not necessarily leading-edge technology)
- value of the page/site as a model for other school libraries and/or school librarians. (IASL, 2003b)

While the IASL/Concord award was granted to examples of exemplary practice, no study has further defined or classified the characteristics of these criteria. For instance, what does effective organization of information look like in this area of practice? How can the educational appropriateness of a site be demonstrated? In what ways are these sites true models for other libraries and for other librarians?

### The Evolution of Library Websites

Much has changed in the dynamic environment of the Web since Clyde's (2004) examination of sites in 2002 and since the last IASL/Concord Award was last distributed in 2003. The world of the Web and students' online behavior evolved dramatically. The last several years have brought ubiquitous Web access for young people (Jones & Madden, 2002; Levin, Arafah, Lenhart, & Rainie, 2002), as well as the recent inception of Web 2.0—the more interactive read/write Web in which the line between the site creator and site visitor merge. Lenhart and Madden (2007) reveal that more than half of online American teens use social networking sites. An

earlier Pew Internet and American Life study, *Teen Content Creators and Consumers* (Lenhart & Madden, 2005), reveals that 57% of those teens who use the Internet, are not simply content consumers—they are content creators. These young people use the tools of Web 2.0 to create blogs, post original art, stories and videos, and remix content already online into new creative content.

CEO and founder of the blog-focused website Technorati, Dave Sifry, regularly reports on the state of the blogosphere. Sifry's (2006) latest report noted that the number of blogs is doubling every five to seven months. According to Sifry, approximately 175,000 new blogs are created each day, with an average of more than two blogs created every second. In March 2007, Technorati's *About Us* (2007) page reported tracking 71.6 millions blogs. The growth of this Web 2.0 tool provides new strategies for librarians to interact with users and learners.

Though the concept has not yet pervaded academic literature, library websites and blogs are abuzz with predictions for a newly interactive *Library 2.0*. Have the new interactive and multimodal features of what many are calling Web 2.0 or Library 2.0 (Miller, 2005; Crawford, 2006) influenced school library website practice? Walt Crawford's (2006) compilation of the popular literature concludes that "Library 2.0 encompasses a range of new and not-so-new software methodologies . . . that can and will be useful for many libraries in providing new services and making existing services available in new and interesting ways" (p. 31). Harris (2006), in one of the first articles to discuss these trends as they relate to schools, sees School Library 2.0 as a way teacher-librarians can adapt to a compelling digital

revolution and as an opportunity for school library professionals to remain effective in the face of technological change.

### Websites and Content Analysis

Content analysis became a popular research tool for a variety of disciplines in the 1950s and has since become an established strategy for analyzing traditional communication formats. Neuendorf (2002) explains that it is used to systematically, objectively, and quantitatively analyze message characteristics. Holsti (1969) suggests that content analysis is both descriptive and inferential and identifies three primary purposes for its use: to describe the characteristics of communication, to make inferences as to the antecedents of communication, and to make inferences as to the effects of communication.

Krippendorff (2004) notes that content analysis allows the researcher to make replicable and valid inferences from data to their context. He identifies four advantages for use of the methodology: it is unobtrusive, it accepts unstructured material, it is context sensitive (because it can accommodate and process symbolic forms), and it can cope with large volumes of data. These advantages point to the strategy's suitability for the analysis of Web content, as well as its suitability for use with print and broadcast media.

A number of researchers suggest procedures for applying content analysis strategies to the study of Web content. Cano and Prentice (1998) studied tourism websites in Scotland using methodology that consisted of identification of sites, development of a classification scheme for content analysis, and a detailed examination of the sites. Gray, Romano, and Clark (1998) conducted a content

analysis of a random sample of school sites to establish an early baseline of current practice. Overbeeke and Snizek (2005) examined the text and graphics of websites of twelve multinational companies to determine whether corporate sites would be an indicator of corporate culture—values, belief systems, practices, and other factors. Exploring five major dimensions, and examining 23 separate measures, the researchers found this strategy offered previously untapped insights into corporate culture. Engholm (2002) and Ivory and Megraw (2005) studied websites over time to determine patterns and changes in digital style. Stout, Villegas, and Kim (2001) examined 30 health-related websites to determine how the sites used interactivities and how the differences in use might impact learning.

McMillan (2000) describes the challenges of using content analysis to examine websites. Her meta-analysis of nineteen content analysis studies reveals that this stable strategy could be applied effectively to the dynamic environment of the Web. She describes the steps that traditionally comprise content analysis study and applies those steps to the analysis of Web content. McMillan explains that issues relating to collecting a random sample may be complicated by the dynamic nature of the Web, with sites appearing, disappearing, changing, and growing. She advises approaching Web content analysis with both rigor and creativity.

Petch (2004) notes the lack of research applying content analysis to websites and points to three areas that distress researchers: definition of a website, the unit of analysis, and the method of sampling. Her advice informs the methodology and the limitations of this study. Petch points to the need to clearly define boundaries for where a website begins and ends. When dealing with sites of variable size—some

relatively small, some ranging to thousands of pages—negotiating a consistent unit of analysis is critical to providing the researcher with enough information without presenting an overwhelming amount to analyze. Petch notes that there is no standard method for sampling Web content and warns that forming the sample critically influences the generalizability of the findings.

### Content Analysis and Library Websites

Content analysis has been used recently to study academic library websites and, to a far lesser extent, school library sites. Bates and Lu (1997) studied 114 personal homepages of librarians to detect trends and patterns. Haines (1999) used both a content analysis and an e-mail survey to investigate librarians' personal sites. Chisenga (1998) studied 13 university library websites in sub-Saharan African nations looking especially for access to electronic sources and services. Cohen and Still (1999) examined the content and structure of 50 Ph.D. granting university library sites in the United States and 50 two-year college sites to identify site purpose. This research served to identify a core of common content that existed across the sample sites, library content that was independent of the parent institution. The researchers categorized the content they discovered in a strategy similar to the goals of this study. Cohen and Still's categories included: library information, reference, instruction, research, and functionalities (similar to the characteristics explored in this study). Clausen (1999) analyzed the 12 Danish academic libraries with the goal of creating an evaluation form. Clausen's expert panelists found the sites academic sites disappointing in the following areas of evaluation: design and structure, quality of information, links and navigation, aesthetic impression,

miscellaneous, and general assessment. The researcher recommended that sites be more dynamic, continually improved, maintained by professionals with adequate time and training, and continually subject to user-oriented evaluation. Agingu (2000) compared the sites of historically black colleges with those of other public institutions, looking particularly at the services they provided for users.

Still (2001) performed a content analysis of university library websites in English speaking countries seeking to determine if a common core of materials was available at all the sites studied. If that were true, she hoped to prove the universality of those elements across cultural differences. She found a great deal of similarity in features, but noted differences tied to the educational environment. General instructional material and remote access were nearly universally ignored. Still found it disturbing, given the current emphasis on information literacy at professional conferences and in journal literature, that academic library websites would lag behind in the instructional arena. Dahl (2001) analyzed common practice relating to library-created online pathfinders. She studied the content and format of 45 electronic pathfinders selected from nine Canadian university libraries and concluded that specific guidelines should be developed for constructing these tools to assure their quality in terms of consistency, scope, readability, and usability.

Jurkowski (2004) examined 17 academic library websites serving distance learners and found the types of services and the number of website features offered to learners did not correlate to the size of the distance learning program. The strongest correlations related instead to the size of the institution. Larger institutions had the benefits of larger budgets and staff. In his related doctoral study, Jurkowski



(2003) found the sites he studied lacking in materials, instruction, personal assistance, and approved navigational design.

Hsieh, Chin, and Wu (2004), concerned that previous studies of university library sites merely discussed site features and functions, focused their research on establishing a model of quality online service. The researchers used a Delphi method, questioning the following personnel: professors of library science, heads of university libraries, and staff members associated with electronic university libraries, to help establish a model of performance indicators for electronic university libraries in Taiwan.

Simpson (2001) studied school library websites in Texas and found that sites differed dramatically. In findings that echoed Clyde's, Simpson found some sites with missing features, and others that serve as outstanding examples. Some serve as "placeholders," while others are "active, changing, and fully featured" (p. 75).

Clyde's (2004) most sophisticated sites provided information about the school library, selected links for users, a link to the OPAC (online public access catalog) and other useful catalogs, and links to subscription databases with both school and remote access, information about locating material for school assignments (sometimes in the form of pathfinders), and information about preparing bibliographies. Clyde found, of the 32 sites remaining from the 1996 study, some offered helpful navigational features such as site maps or search engines. Some were experimenting with such interactive features as webcams and virtual reference. Despite their growing popularity, none of the school library sites Clyde examined featured blogs to offer users current information.

## CHAPTER 3

### METHODOLOGY

#### Exploratory Focus Group Study

As a preliminary step, to explore the potential value of a school library website to its users, the researcher conducted four focus group interviews at Springfield Township High School (Valenza, 2007). After 10 years of maintaining a school library site, the researcher/librarian wondered how her students used the site, how they valued the site, and how her online efforts affected their research. High school seniors were selected for their long-term use, familiarity, and experience with a library interface. Because of the broad range of academic abilities across the high school community, the researcher chose to examine students of varying achievement levels to determine if students involved in advanced placement classes would approach the website in ways different from general academic students.

The findings revealed that, across achievement levels, students relied heavily on the library site for academic research. Students, from both honors and regular academic classes, appreciate the site's access to databases, documentation guidance, pathfinders, and school-specific research tools. Students view the site as a quality filter and attribute their confidence in efficiently finding information to their use of the website. They understand that the site was specifically designed to meet their academic needs and recognize the voice of the librarian behind the site. Users reported that they experience greater success with their library website than they have using such commercial search tools as Google and Yahoo! Students described research habits that extend well beyond the satisficing behaviors

attributed to young people in other studies. They noted their classroom teachers' involvement with and endorsement of the website. Among the issues they noted relating to the website were confusion over identifying the best database to use for a particular information task; losing the passwords for remote database access; and effectively expressing search terms. They also expressed a desire for more databases with more full text (Valenza, 2007). This exploratory study offers an informative snapshot of a population of users with the benefit of a hybrid learning experience—an active library website that is also a critical part of a school's learning culture.

#### Web-Based Survey

In a second pilot study, the researcher sought a clearer picture of use of school library websites beyond her own site. She hoped to explore what specific pages or sections of these sites students most valued, the level of student dependence on their library websites, whether students viewed these sites as learning environments, and the influence of these websites on student research behaviors.

From April through June 2005, the researcher conducted an online survey of nearly 1257 seniors in 14 high schools identified as having effective school library websites. Like the focus group study, this study also focused on high school seniors for their long-term perspective and experience using their school library websites. The researcher selected the sample for the study by soliciting participation among secondary sites identified by the IASL/Concord Awards (International Association of

School Librarianship [IASL], 2003a), as well as those identified in *School Library Journal's* former Website of the Month column.

The researcher used a survey instrument which included both open- and close-ended items. When asked which pages on their school library websites they found most valuable, students' most positive responses related to access to the following features: documentation help, search tools, the OPAC, and periodical databases. Students most frequently reported that the site contributed to their understandings of how to search more effectively, which search tools work best for specific projects, how the Web is organized, and how to document sources.

In terms of patterns of use, responses across the schools varied dramatically. At four of the 14 schools, well over 60% of the students reported using the site when they were not at school. At seven of the schools, less than 40% of the students reported using the site when not at school. Fewer students admitted to using the site on weekends. In only two schools was the level of weekend use near or slightly more than 50%. Students reported more evening than weekend use, with students at six of the schools reporting evening use at around 50% or higher.

Relating to user satisfaction, five schools consistently rated their websites more highly in nearly all items that asked students for an evaluative response. For the other nine schools, the level of student acceptance was generally positive, but moderate. These discrepancies led the researcher to wonder if any study of use of these websites could be separated from variables relating to the sites' content and their schools' academic culture. For instance, what specific features does each site offer students? What value does each school place on research? To what extent

do classroom teachers value the use of databases? To what level does the faculty of a school value the guidance of the librarian? To what extent does the faculty of a school collaborate with the teacher-librarian on creating and assessing research-based instructional activities?

The discrepancies in data, as well as the findings of Clyde (2004) and Simpson (2001) led the researcher to wonder if her Web-based study actually examined apples and oranges. What do exemplary school library websites really look like? Do they share common features and characteristics? These pilot studies pointed the researcher in the direction of her current focus—describing and analyzing current effective practice relating to website content.

### Selection of Sample and Research Design

To expand the findings of the pilot studies, the researcher sought to examine the content of other secondary school library websites and to revisit the concept of exemplary sites explored in the Web-based survey. The directory *School Libraries.Net: Web Pages Created by School Librarians* (Barber, 2006), sponsored by H.W. Wilson, demonstrates the broad range of interfaces representing current practice. The site maintains a lengthy list of school library websites in the United States and in 26 other countries. Thousands of other school library sites are likely to exist beyond those listed in this portal.

While Clyde (1997, 1999, 2004) chose a random sample of sites from among those listed in this, and another since-terminated library portal, for her three-part longitudinal study, this researcher focused her examination, not on the broad field,

but on examples of exemplary practice present in Fall 2006. Both Clyde's and Simpson's (2001) findings revealed uneven practice. These findings led the researcher to wonder what made a school library site exemplary. Because exemplary practice is a challenging concept to define and operationalize, the researcher engaged the assistance of a panel of experts in the field to select a sample.

This study relies on a purposive sample of sites demonstrating exemplary practice. For the purposes of comparing similar creatures, with similar functions and purpose, the researcher focused this study on examining secondary school websites. Sites for the sample were selected through a Delphi process.

The Delphi process attempts to strengthen the validity and credibility of a study by incorporating anonymous informed judgments of participating experts (Brown, 1968). In a Delphi method, the researcher asks consecutive rounds of questions of experts whose opinions are relevant to the study. Its goal is to improve on the panel approach by "subjecting the views of individual experts to each other's criticism in ways that avoid face to face confrontation and provide anonymity of opinion and of arguments advanced in defense of those opinions" (p. 3). Through the subsequent analyses of the panel's responses, the researcher develops expert consensus. Following an initial round of questioning, subsequent surveys are accompanied by information collected from the preceding round of replies and feedback, encouraging each participant to reconsider and, if appropriate, to adjust his or her previous replies in response to the replies of other members of the panel.

After two or three rounds of surveys, a group position is determined by ranking and averaging results.

To choose the members of the Delphi panel, the researcher contacted 38 experts, selected among academics, authors, and presenters whose professional work, publications, and research interests relate to online school library practice, as well as practitioners whose online work is pointed to as exemplary in articles found in the library literature databases. Among the strategies used for identifying Delphi candidates was a survey of the membership page of the Youth Services SIG (special interest group) of ALISE (Association for Library and Information Science Education Youth Services SIG, 2006) for academics with combined research interests in the areas of youth services, youth information seeking, and online services and instruction. The researcher also searched the professional databases, *Library and Information Science Full-Text* and *Library and Information Science and Technology Abstracts*, for names of authors and practitioners who had written at least one article relating to school library websites. These articles were also scanned for multiple mentions of library webmasters whose sites represented exemplary practice. Initial e-mail correspondence (see Appendix A) served to establish the panel. Of 38 candidates contacted, 22 agreed to participate in the three-round panel process (see Appendix B for Preliminary and Final List of Delphi Panelists).

The resulting Delphi panel of 22 experts accomplished two tasks: (a) the panel selected a sample of 10 exemplary sites for the content analysis study and (b) the panel participated in building two taxonomies, coding instruments used for

analysis of the selected sites. Specifically, in the first e-mail correspondence, the experts were asked to:

1. List the names and URLs of the secondary (middle, junior or high school) library websites that you consider exemplary. (These may be traditional HTML sites, blogs, wikis, etc.)
2. List the features and characteristics of an exemplary school library website that you consider most important. (Some examples of features might be e-mail help, access to subscription databases, citation generators, learning objects, etc.)

In responding to the first e-mail question, the panel addressed the Research Question 1: What models of exemplary practice exist in school library websites? The Delphi panel nominated a total of 68 exemplary sites. This initial list of sites, with a tally of the number of times each site was suggested, was returned to the panel for further evaluation. The researcher then asked the members of the committee to select the 10 most effective sites of the 68 sites, and to rank them on a 1 to 10 scale (see Appendix C for the original list of nominated sites with Delphi panelists' rankings). The resulting highest-ranked 10 sites were sent back to the committee for approval in a third round. No objections were voiced to this consensus. Websites vary greatly in size and depth. To keep the study manageable for a single researcher and to attempt to represent truly exemplary practice, the number of sites selected for study was limited to the 10 sites ranked highest by the panel. The 10 sites selected for this purposive sample represent 14.7% of the total nominated sites. These sites clearly gathered the bulk of votes from the Delphi



panel. Rankings for the remainder of the long tail of 68 nominated sites displayed considerably fewer points than those at the top of the list.

In the interest of full disclosure, the researcher’s own school site, Springfield Township High School Virtual Library, was one of the sites included in the panel’s selection. The doctoral committee was informed of this possibility prior to the panel procedure and agreed that this site might be studied along with the others in the sample.

The top 10 sites selected by the panel for analysis are displayed in Table 1.

Table 1

*Demographics of the Sample Sites.*

School	Location	Type	Setting	Grades #students
Carthage Senior High School <a href="http://www.carthage.k12.mo.us/hs/media/">http://www.carthage.k12.mo.us/hs/media/</a>	Carthage, MO	Public	Rural	10-12 854
Glennie Information Resource Centre <a href="http://www.glennie.qld.edu.au/irc/index.htm">http://www.glennie.qld.edu.au/irc/index.htm</a>	Queensland, AU	Private (Anglican, girls)	Suburban	7-9 ; 10-12 800
Greece Athena (Middle/High School) Media Center <a href="http://www.greece.k12.ny.us/ath/library/">http://www.greece.k12.ny.us/ath/library/</a> 2 campuses	Rochester, NY	Public	Suburban	6-8; 9-12 3500
Hunterdon Central High School Library <a href="http://central.hcrhs.k12.nj.us/imc/">http://central.hcrhs.k12.nj.us/imc/</a>	Flemington, NJ	Public	Suburban	9-12 3000
Lawrence High School Library <a href="http://library.lhs.usd497.org/">http://library.lhs.usd497.org/</a>	Lawrence, KS	Public	Suburban	10-12 1200
New Trier High School Library <a href="http://nthts.newtrier.k12.il.us/library/default.htm">http://nthts.newtrier.k12.il.us/library/default.htm</a>	Northfield and Winnetka, IL	Public	Suburban	9-12 4200

2 campuses				
Newton North High School Library	Newton, MA	Private	Urban	9-12
<a href="http://www.nnhs.net/library/">http://www.nnhs.net/library/</a>				1800
Northfield Mount Hermon Library	Gill, MA	Private	Rural	9-12
<a href="http://www.nmhschool.org/nmhlibrary/index.php">http://www.nmhschool.org/nmhlibrary/index.php</a>				626
Springfield Township High School Virtual Library	Erdenheim, PA	Public	Suburban	8-12
<a href="http://mciu.org/~spjvweb/">http://mciu.org/~spjvweb/</a>				850
University Laboratory High School Library (Uni)	Urbana, IL	Public,	Urban	8-12
<a href="http://www.uni.uiuc.edu/library/">http://www.uni.uiuc.edu/library/</a>		laboratory		306

The 10-site sample included seven public and three private schools. One of the schools, Glennie, is outside the United States. Two of the schools—Glennie and Greece Athena—serve both middle and high school populations. The New Trier site serves two high school campuses. Most of the sites—six of the 10—are suburban; two are rural. Though two of the sites in the sample are urban, it is interesting to note that neither of these two urban schools could be considered inner city. One is private. The other, a selective admissions laboratory school, is a part of the University of Illinois.

Table 2 reflects the wide range of points the Delphi panel attributed to the top 10 sites. Regarding selection of the sample, the panelists were satisfied by the consensus they reached. They nevertheless expressed concern that these exemplary sites might be improved. One panelist responded, “I like the final list of sites. I believe they do represent the overall best of high school library Web pages!” But another noted some of the sample sites’ flaws, “The Lawrence, Kansas site is excellent; I often use it as an example, but I’m very bothered by the colors. The Hunterdon Central site has a lot of older news.” Another panelist

accepted the consensus of the panel in selecting the sample, but did not believe that “best practice truly existed” in this arena.

Table 2

*Weighted Points Attributed to Top 10 Sites by the Delphi Panel*

Website	Weighted points
Springfield Township	139
University Laboratory High School (Uni)	108
Greece Athena	60
Northfield Mount Hermon	48
Newton North	46
Hunterdon Central	42
New Trier	36
Lawrence	34
Carthage	33
Glennie	27

Following the selection of the sample, the researcher conducted a 10-item e-mail survey with the webmasters of the selected sites. Nine of the questions (see Appendix D for full survey responses) asked for background information relating to the sites. A final open-ended question explored the webmasters’ projected plans for their sites over the next two years (see Appendix E).

**Background Regarding Site Maintenance**

The open-ended questions included queries relating to how the sample sites were maintained. Table 3 reveals details about the staff members responsible for

maintaining each of the ten sites, and the amount of time and support allotted to the sites. In all cases, the professional librarians functioned as site webmasters. In only two cases did the librarian have the assistance of a professional webmaster. Development and maintenance of these sites is largely the responsibility of the teacher librarian. Time spent varied dramatically across the sites. Librarians spent between one and 15, or an average of 4.65 hours, per week on maintaining their sites. At four of the sites, one person was solely responsible for the maintenance of the site. At four of the sites only one professional is present. At all of the sites in the sample the librarian has the support of at least one clerical staff member.

Table 3

*How Websites are Maintained*

School	Professional staff	Support staff	Hours per week	Maintained by
Carthage	1	1	1	webmaster & 1 librarian
Glennie	2	1 full-time 2 part-time	2	1 librarian
Greece Athena	1 (middle) 1 (high)	1 (middle) 1 (high)	2	2 librarians
Hunterdon Central	3	3	12-15	3 librarians
Lawrence	2	1	10	1 librarian

New Trier	9 (2 campuses)	5, 6	2-3	librarians (no number listed) & Webmaster
Newton North	3	1	5	1 for design 3 for pathfinders 1 for book blog
Northfield Mount Hermon	4	2	2-5	1 librarian
Springfield Township	1	2	2	1 librarian
University Laboratory (Uni)	1	1.5	5	1 librarian & graduate assistant

#### Study Time Period

McMillan (2000) described the study of websites as shooting a moving target. The creation of a website is indeed a long-term effort. Sites are dynamic. They respond to technological advances, user needs, and the changing capabilities of their creators. This situation was especially pronounced in 2006, a year which saw the emergence of what journalists and practitioners refer to as Web 2.0/Library 2.0 (Harris, 2006). With new browser-based editing tools, sites are even more likely to frequently change and add features.

All websites in the sample were electronically archived and printed for study during a one-week period November 2006, with the goal of capturing a static

picture of online practice during the 2006/2007 school year. Library websites were archived electronically on November 15. An additional print archive of the sample was collected between November 12th and November 19<sup>th</sup>. This archive consisted of a library's homepage and, when available, two or three drills or clicks down.

### Developing Taxonomies for Analyzing Content

Unlike content analysis of traditional print sources, where procedures might involve computer-aided text analysis strategies, websites are complex media structures, varying significantly in size, organization, content, and the media used to present their content. Petch (2004) notes there are no standardized methods for sampling Web-based content.

For the purposes of data collection, the researcher defined a *school library website* as a collection of Web pages—an HTML site, blog, or other Web-based publication—linked together to represent a school library program. The proposed *unit of analysis* was selected as the homepage plus no more than three drills down. For the purpose of this study, *homepage* is defined as the first or the welcoming page of a website. It typically serves as a table of contents for the site. External hyperlinks that take the researcher out of the original site were not considered part of the site. *Features* were defined as website content that provides a particular library or information service to the intended audience, for instance pathfinders, databases, or digital booktalks. *Characteristics* were defined as the strategies or forms a site uses to achieve its goals, for instance aesthetic elements, embedded explanations, or interactivities. Features and characteristics were sorted in categories and subcategories. For the purposes of data collection, a

*category* is defined as grouping of features or concepts related to the goals or mission of the site.

While Clyde (1999, 2001, 2004) counted site features and their frequency, she made no attempt to create taxonomies of that content, nor did Clyde attempt to separate features from format or characteristics. For example, the presence of a reading program was examined in the same coding scheme as the presence of a Web cam.

In addition to suggesting sites for the sample, through their responses to the second question in the e-mail survey, Delphi panelists participated in compiling two initial checklists—one of features they expected to find in exemplary library sites; the other of the characteristics or strategies they expected to find.

The features identified by the Delphi panel experts clustered around the three essential elements of the library media program, described in the national guidelines *Information Power* (AASL and AECT, 1998), particularly the content in Chapters 4, 5, and 6. The elements are represented by three intersecting circles in the guidelines' logo: information access and delivery; learning and teaching; and program administration. They are explained in the document as the:

roles that the library media specialist plays in supporting student learning.

The functions and services necessary to the learning and teaching and the information access roles will promote that learning directly; program administration activities offer underlying organizational support to the program. (p. 49)

This pattern of features, suggested by the Delphi panel, and later observed to varying degrees in the sample sites, addressed Research Question 6, relating to whether traditional school library programs are translated online. For instance, in the category of information access and delivery, most sites offer OPACs, subscription databases, links to search tools, reference and news sources. In the category of learning and teaching, most sites offered guidance in information ethics and documentation, searching skills, and presented such online learning activities as WebQuests. In the category of program administration, sites presented such features as contact information, mission statements, policies, and promotional materials.

A fourth major category of features—Books and Reading—emerged as a result of the Delphi suggestions, as well as the initial examination of sites that followed. While in its “Learning and Teaching” chapter, *Information Power* (AASL & AECT, 1998), devotes Principle 6 to reading, “The library media program encourages and engages students in reading, viewing, and listening for understanding and enjoyment” (p. 66), the Delphi panel consensus and the examination of the sample websites attributed enough weight to features in this area to warrant its separation as a distinct category which revealed such features as online book discussions, student book reviews, and links to book-related databases.

The features and characteristics originally suggested by the panel were aggregated and organized as outlines and sent back to the panelists for two additional rounds of comments and refinements. Two preliminary taxonomies



emerged as a result of the Delphi panel's suggestions and refinements. *Taxonomy* will be defined as a hierarchal classification structure that names and categorizes component items and indicates relationships among those items and categories. As expected, levels of categories and sub-categories emerged through the Delphi process.

As the taxonomies were built, the researcher established written definitions for the features and characteristics, both suggested and observed, in two corresponding codebooks. The codebooks incorporated descriptions of features and characteristics suggested by Delphi panelists.

While working with the Delphi panel, the researcher tested the taxonomies as coding schemes to ensure the suitability of the categories, the appropriateness of the information units, the clarity of the coding instructions, and to assess the overall reliability of the tools. The taxonomies developed through the consensus of the Delphi panel were refined through a simultaneous preliminary examination of the existing features and characteristics of the 10 sample sites. When a new feature or characteristic was observed, it was added to the appropriate taxonomy and category. The researcher returned to sites already examined to ensure the feature or characteristic was not previously overlooked. As the researcher discovered missing features and characteristics, she added them to the coding schemes and codebooks. Duplicated items were eliminated to avoid coder confusion. In her preliminary examination, the researcher continued to examine and refine feature labels to ensure the same feature was not described in varying ways.

As patterns and categories emerged, the researcher developed a system for classifying the observed content, using a combination of *emergent* and *a priori* coding, as described in Neuendorf's Content Analysis Guidebook (2002). With *emergent* or grounded coding, the researcher establishes categories as he or she examines the data. In *a priori* coding, categories are established prior to analysis, based on existing theory or research. Neuendorf notes:

just as critical content analysis variables may be discovered as well as prescribed by the researcher . . . so too may units emerge from the pool of messages. Through immersion in the message pool, the researcher may discover what units make sense within the world of those messages.

(p. 72)

As she continued to build the classification schemes together with the Delphi panelists, the researcher used their suggested categories, while remaining alert to the discovery of categories, site features, and elements of form that did not match the suggestions of the panel, as well as those that did not fit into the structures suggested by *Information Power*. The Delphi panel reached consensus on the final instruments.

This process resulted in two preliminary taxonomies to use as content analysis instruments. The Features Coding Form (see Appendix F) addressed the Research Question 1: What common features are represented in sites representing exemplary practice? This form examined the *what* of the websites, for instance, access to subscription databases, online instructional activities, readers' advisory materials, pathfinders, subject guides, e-book collections, access

to the OPAC, and e-mail help. The Characteristics Coding Form (see Appendix G) addressed Research Question 2: What common organizational structures and design elements are presented in school library sites? The Characteristics Coding Form examined aspects of the sites that describe *how* the site operates, for instance, the use of blogs, wikis, video, navigational strategies, and interactive forms.

While the researcher attempted to ensure that categories and features were mutually exclusive within each coding scheme, certain items are classified in both the features and characteristics taxonomies. For example, a book review blog might be listed under Books and Reading in the features taxonomy and under Interactive Strategies in the characteristics taxonomy.

One item on the characteristics instrument related to site accessibility. Because this would be difficult for coders measure without high-level technical skills, the researcher chose to use an electronic accessibility checker for this item. The Adaptive Technology Resource Center (2007) tool, located at the University of Toronto site, assesses websites for accessibility problems.

By comparing the features identified in the two taxonomies against features present in the charts developed for Clyde's (2004) final study, the researcher addressed the Research Question 5, regarding the evolution—any noticeable growth, progress, and change—relating to school library websites.

#### Reliability and Validity

Validity of a content analysis study is related to establishing guidelines for the rules of coding and the definition of categories and sub-categories. Validity is

determined by establishing stability and reproducibility. The stability of the study requires coders to recode the data in the same way and get the same results each time. Reproducibility involves a group of coders consistently applying elements of the research tool, for example, classifying content into categories—in the same manner (Petch, 2004).

The term *intercoder reliability* refers to the extent to which independent coders agree on the coding of the content variables. In studies performed by one primary investigator, assessing intercoder agreement assures that the application of codes is not arbitrary and that the codebook and coding instrument might be effectively utilized by future users with minimal variation. Tinsley and Weiss (2000) prefer the more specific term for the consistency required in content analysis—*intercoder agreement*, or “the extent to which the different judges tend to assign exactly the same rating to each object” (Tinsley & Weiss, 2000, p. 98). In their meta-analysis of the use of intercoder agreement in content analysis studies, Lombard, Snyder-Duch, and Bracken (2002), warn against lack of detail and practical guidelines in assessing agreement. They propose the following procedures: calculate and report intercoder reliability; select one or more appropriate indices; obtain the necessary tools to calculate the indices selected; select a minimum acceptable level of reliability for those indices; assess reliability formally in a pilot test; assess reliability formally during coding the full study; and report intercoder reliability in a careful, clear, and detailed manner in research reports.

For this study, the researcher selected Cohen's kappa (Cohen, 1960, 1968) to calculate levels of agreement. Kappa is the most widely used measure of interjudge reliability (Perreault & Leigh, 1987). It is appropriate for use with nominal data. It explicitly recognizes the likelihood for agreement that is expected to occur by chance and removes it. Although some researchers suggest that kappa may be an overly conservative measure and difficult to compare with other reliability measures, other more complex measures have experienced similar criticism (Perreault & Leigh; Harris, Pryor, & Adams, 1997). Kappa coefficients for this study were calculated using the Statistical Package for the Social Sciences, or SPSS.

Krippendorff (2004) recommends that at least two coders be used in a content analysis study to determine reliability of the coding scheme. After the researcher performed a preliminary examination of the sample to ensure that major features and categories present in the sites were not missing from the instrument, two additional coders tested the instruments.

Coders A and B were library assistants with no prior coding experience, but much experience navigating their own library's website. Their training involved two practice sessions with the researcher. The researcher introduced and explained the instrument, demonstrated strategies for identifying variables, and described the coding procedure to the coders. To pre-test the codebooks (see Appendix H for Features Codebook and Appendix I for Characteristics Codebook) and the coding tools, and to remedy issues relating to definitions and redundant items, the coders coded one randomly selected site as the researcher observed, discussed reasons

for disagreements, and responded to questions. This process helped to ensure more consistent interpretation of the instrument. Following the coders' examination of the pilot site, descriptions of categories and definitions of controversial or confusing items/features were clarified. The codebooks were revised to respond to the coders' questions and concerns.

Following the pilot, the coders examined three randomly selected websites from the ten-site sample to verify the accuracy of the revised coding instruments and to allow the researcher to obtain a measure of intercoder agreement. Archiving the websites ensured that the coders worked with identical data.

Coders examined the sites by browsing and searching the archived sample sites and by scanning the printed archives. Features and characteristics not identified within a reasonable time period—determined as five minutes—were considered not present on the site. As the coders noted the presence and absence of features and characteristics, they were encouraged to take notes on the coding forms. Notes included mention of how features were described, alternate vocabulary used by the websites, and whether the features (or links to the features) appeared on the homepage or secondary pages. The researcher followed the coders, applying the same procedures as she manually coding all ten sites.

The researcher used a kappa statistic to assess agreement on the questions relating to whether or not a feature or characteristic was present. Kappa is the proportion of agreements after chance agreement has been excluded. It is generally used with pairs of raters. A value of 0 indicates statistical independence;

a value of 1 indicates perfect agreement. The closer kappa is to 1.0, the greater the agreement between raters. A kappa of less than .70 is considered not satisfactory. Kappa was calculated for the three randomly selected sites the coders examined. Each of the coder's scores was compared with the researcher's and each other's.

Kappa results were calculated for those questions involving presence or absence of a feature or characteristic for the two individual instruments. The researcher compared her coding with each of the two coders and the two coders with each other.

Table 4

*Summary of Kappa Scores for Three Sites*

Carthage: Features coding form

.927 for Coder A and the researcher

.872 for Coder B and the researcher

.873 for Coder A and Coder B

Carthage: Characteristics coding form

.856 for Coder A and the researcher

.951 for Coder B and the researcher

.905 for Coder A and Coder B

Newton North: Features coding form:

.847 for Coder A and the researcher

.897 for Coder B and the researcher

.814 for Coder A and Coder B

Newton North: Characteristics coding form:

.832 for Coder A and the researcher

.822 for Coder B and the researcher

.780 for Coder A and Coder B

Springfield: Features coding form:

.918 for Coder A and the researcher

.938 for Coder B and the researcher

.897 for Coder A and Coder B

Springfield: Characteristics coding form:

.807 for Coder A and the researcher

.909 for Coder B and the researcher

.896 for Coder A and Coder B

Results ranging between .780 and .938 across the instruments suggest a relatively high level of reliability for both coding instruments (see Appendix J for full SPSS output results).

#### Finalizing the Content Analysis, Coding Forms, and Codebooks

Nearly all of the coding forms items asked coders to note the presence and absence of features and characteristics. These nominal responses were tested using kappa. An open-ended question followed each major category, asking coders to identify *other* items not currently listed in the category. Following the preliminary examinations, the researcher examined these responses. Both coding forms and codebooks were revised to incorporate additional *other* features and characteristics



discovered and listed by the coders and the researcher. These few additions became additional subcategories on the forms.

The researcher aggregated the results listed on the two coding forms into tabular format (see Appendix K for the aggregated results of the features analysis and Appendix L for aggregated results of the characteristics analysis).

## CHAPTER 4

### RESULTS AND ANALYSIS

#### Results of Content Analysis: Features

The outlines developed as a result of the work of by the Delphi panel and the researcher's preliminary examination of the sites resulted in the finalization of two taxonomies (Appendixes F and G), one of which examined site features (see Appendix F). As she examined the sample sites for the presence and absence of features, the researcher recorded the varying strategies used for presenting and describing these features, for instance, how are subscription databases labeled? What are the various ways pathfinders might be described? Are these features located or linked to on the site's homepage or is it a secondary page item or link?

The site features form included the following categories: Information Access and Delivery; Learning and Teaching; Books and Reading; Program Administration. Of these four major categories, Books and Reading did not appear as a separate role within the *Information Power* (AASL & AECT, 1998) document. It was included in the "Learning and Teaching" chapter, under Principle 6: "The library media program encourages and engages students in reading, viewing, and listening for understanding and enjoyment" (p. 66). The prevalence of website content relating to books and reading suggested that this group of features deserved its own major category.

### *Information Access and Delivery*

This area within a website deals with the site's provision of intellectual and physical access to information and resources. According to *Information Power* (AASL & AECT, 1998), the library program should provide the school community with "accurate, current information to meet learning needs." The school librarian should take "the lead in locating information and offering guidance in its selection and use" (p. 84).

The most ubiquitous area of the websites in this category is the library's OPAC. All 10 sites led users to their own online catalogs. All but two included the OPAC as a direct link on their homepages. Labeling for this feature varied. Among the titles used for OPACs: *Card Catalog*, *Catalogue*, *Electronic Resources: OPAC*, *Online (card) Catalog*, *Holdings and Catalog*, *LHS Library Catalog*, *Online Catalog*, and *Alexandria*. Two libraries—Newton North and Northfield Mount Hermon's Reading Room Blog—avoid library terminology and call their OPACs—*Find a Book* and *Find Books, CDs, Films in the Library Catalog*. This approach echoes Kupersmith's (2007) advice that natural language cues foster correct user choices.

Nine of the sites lead users to OPACs other than their own—four to other schools in their districts, seven to university libraries, nine to public libraries. Only four sites link users directly to interlibrary loan databases. Only one of the sites, Newton North, offers an explanation of the Dewey Decimal System in chart form, to explain how materials are organized in their physical space.

The Delphi panel suggested federated search tools as a site feature, though several panelists expressed doubt that “schools were there yet.” Nevertheless, the panel felt this feature would be a major aid to users. One panelist wrote,

It would be very nice to have one search engine that searches, not just the OPAC, but also all the databases to which the library subscribes. It might also search local content that students and teachers have assembled. This area must be very friendly and capture attention. It is the competition to Google. It is the place to begin.

Despite this panelist’s vision, none of the sites contained a true federated search, although vendors like Gale offer federated searches across holdings of their own products.

Eight of the sites link to selected free Web search tools. For five, these are presented as homepage links. Seven of those sites annotate their selected search tools. These sections were labeled similarly as *Search Engines*; *Search Here*; *Web Search Tools*; *Search the Web*; and with the paths *Research Guide>Search Engines, Websites> Search Engines*, and *Web Reference> Search Engines*. These areas offer links to a variety of search tools beyond Google. They present both general Web searches as Yahoo! and Ask.com, as well as subject specific search tools for such content as government information, books, news, image, and people searches. Springfield offers a lengthy list of search tools, which include search tools for blogs, image search tools, and copyright-friendly media search tools.

The sample sites provide some basic level of online help. Seven of the 10 sites offer connections with a librarian either by e-mail or through an interactive form.

Only three of the sites explicitly suggest service beyond a standard e-mail link and welcome contact as reference service. Springfield clearly advertises, *Ask Me* over a cartoon bubble representing the librarian. Greece Athena and Glennie feature services labeled *Ask A Librarian*. Greece Athena's service is provided through an online form on a page featuring photographs of the middle and high school librarians. None of the sites offers synchronous instant messaging (IM) services. Northfield Mount Hermon offers live online website help, but that help, a school-wide service, is not specific to the library. Only three of the sites link users to remote services from other libraries, all of them state services, for instance, KanAsk (Kansas), AskHere PA (Pennsylvania), AskAway (Illinois). This seems an odd omission, especially since services are available in other states in the sample. The two Massachusetts school libraries, for instance, did not choose to link to their state's MassAnswers service. Interlibrary loan links were also surprisingly light. Only four of the 10 sites link users to interlibrary loan resources. One, Northfield Mount Hermon, directly intervenes in the interlibrary loan process, providing two interactive interlibrary loan forms—for books and for periodical articles.

All of the sites provide access to subscription databases. Two of the sites hide their database areas from remote users behind password protection. The researcher wrote to the webmasters for access to those pages for the purposes of this study. One of the webmasters offered a password so the researcher could examine those pages. The other sent images of the database page for study.

For nine of the sites (all but Hunterdon Central), databases are a homepage link. Clyde (2004) describes access to databases as one of the major growth areas

observed in her longitudinal study. Because online databases have become an increasingly large portion of school library budgets, it is interesting to examine how this investment is treated through the libraries' online portal. The 10 libraries vary in the extent of their database holdings. Holdings range from nine databases to well over 100. Databases are challenging to count. Some schools link to database suites—EBSCOhost, Galenet—as one database. Others choose to break out the component databases of these vendors' suites so that learners can make direct access to a specific resource rather than a menu of resources. Some sites link directly to specific databases supported by local public libraries or affiliated universities on their own pages. Others link to the main pages for these resources on their remote sites. This difference was not pointed to in the coding forms. It was captured informally in the notes area as the coders and the researcher attempted to count database holdings. Variations in access to database holdings might be an area worthy of future study, particularly if school libraries do not incorporate a federated search approach.

The library websites offer various strategies for helping students select the right databases. This type of service was noted by several of the Delphi panelists as important to students. In addition, in both of the researcher's pilot studies (Valenza, 2007), student users expressed confusion relating to which databases would be best to choose for specific school-related information tasks. In the focus group study, students requested subject lists and clear descriptions of what each database contained. Some of the sample sites offer subject area listings to aid in selection and A-Z lists to promote easy location. Eight of the 10 sites offer annotated descriptions

of those services. The sample sites label and approach improving access to their databases in a variety of ways:

- Carthage: Online Resources. Mouse-over descriptions
- Glennie: Databases. Arranged by type—encyclopedia, periodical, etc.  
Annotations and icons
- Greece Athena: Online Databases. Arranged by subject, icons, no annotations
- Hunterdon Central: Not a homepage link. The path from the homepage:  
Electronic Resources > Electronic Databases. Alphabetical list, no annotations
- Lawrence: Electronic Indexes. Alphabetical list, no annotations
- New Trier: Databases (organized alphabetically within subject, some briefly annotated)
- Newton North: Two strategies on homepage:
  - Left frame—student-friendly language—*Find Magazines, Find Newspapers, Find Books, Research an Issue, Research a Person.*
  - Center of page—Magazines, Journals & e-Books; News. Icons and annotations
- Northfield Mount Hermon: Includes multiple access points.
  - On formal site: Electronic Resources: Encyclopedias, Periodicals, Also: Resources by Subject and A to Z List of Resources;

- In Reading Room Blog: *Find Magazine & Newspaper Articles*.  
Arranged alphabetically within subject in charts, annotations, and  
*Find Encyclopedias and Dictionaries*
- Springfield: Catalogs and Databases, with icons and mouse-over  
explanations, and an alternate list of Databases by Subject
- Uni: Online Databases, arranged in center of homepage with mouse-over  
annotations

Database services are expanding into new formats. Six of the 10 sites offer access to e-book collections like netLibrary or Gale Virtual Reference Library. (These e-books may also be accessible through the libraries' own OPACs.) Three offer access to subscription streaming video services. None yet offer access to audiobook collections currently available through a growing number of public library websites.

Eight of the 10 sample sites offer instructions for accessing databases from home. (Northfield Mt. Hermon, one of two that does not, is a boarding school.) Four of the sites clearly distinguish whether their databases are supported by the library itself, or by the state, public library or other institution. Six of the sites recognize holdings beyond those offered in periodical databases, presenting traditional journal holdings lists. Five of those six sites share both print and online journal holdings through these lists.

All of the sites offer links devoted to reference resources; seven offering these as homepage reference links. These features vary only slightly in name: *Ready Reference, Reference Desk, Core Reference and Subject Links, WebRef, Reference*



*Desk, Reference Tools.* Seven of these reference areas link to free Web content only; three link to both free and subscription content, offering an alternate access point to databases. In addition to standard online reference tools—encyclopedia, dictionaries, almanacs, biographical tools—among the other reference sources observed are links to quotation databases, information about weather, calculators, translators, currency, and countries.

Despite the universality of reference as a subcategory in Information Access and Delivery, reference was an area of contention among members of the Delphi panel. While the panel agreed that such an area might be valuable on school library sites, several panelists wondered if such links would be more useful when included in pathfinders for specific projects and whether reference portals, maintained by larger institutions like the Internet Public Library (IPL), or search portals like Librarians' Index to the Internet (LII), would be more useful and likely more current than locally maintained reference links.

Nine of the sites offer links to news resources, beyond subscription periodical databases. Though the panel suggested that the sites might offer relevant RSS feeds to push current news directly to the websites, no such links were present. Eight sites link to local news; nine link users to national news. Eight of the 10 sites link to international news. It is not surprising that exemplary secondary sites would choose to link learners and faculty to the available international sources that might expand understanding of global issues beyond the scope of the more commonly accessed western sources.

Because this research examined secondary sites, the Delphi panel expected exemplary sites to include links to college and career planning resources. Seven of the 10 sites include college guidance; six of the 10 include links to career planning resources. Among the content in college sections are: interactive college search tools, directories, financial aid resources, SAT and ACT test preparation, application essay help, and scholarship information. Career sections feature advice and inventories, as well as links to such online career guides as the Occupational Outlook Handbook.

Delphi panelists felt that, in addition to connecting students to information resources for school projects, secondary school library websites should connect users to “personal information of many types, such as dieting, sexual harassment health and beauty tips...safety tips and tutorials for working in digital space.” This expectation did not exist in practice. Only one site—Lawrence—actually offers links to Helplines/Hotlines. Annotated links in this area lead Lawrence students to programs relating to alcohol abuse, crime prevention, AIDS information, safe schools groups, gay/lesbian/bisexual support, and a variety of counseling services.

All but two of the sites offer pathfinders, but these tools vary in their number, depth, and the levels of collaboration involved. The feature *pathfinder* was challenging to code. Coders initially had trouble distinguishing lists of subject Web links on particular subjects from more focused, more customized, more instruction-oriented pathfinders. ODLIS: The Online Dictionary of Library and Information Science defines a *pathfinder* as a:

subject bibliography designed to lead the user through the process of researching a specific topic, or any topic in a given field or discipline, usually in a systematic, step-by-step way, making use of the best finding tools the library has to offer. Pathfinders may be printed or available online. (Reitz, 2006)

The features codebook (see Appendix G) further defines *online pathfinders* as:

Web documents that serve as customized guides to bibliographic research on a specific topic, for a specific course or assignment, or for a particular information format or task—for example, primary sources or streaming video. Usually created by teacher-librarians, they are often developed collaboratively with teachers. Electronic pathfinders are designed to lead students or users to high quality sources in various information formats. They gather together the print resources of the library, as well as free Web resources and subscription databases.

While all of the websites offered features identifying useful links for students, two of the sites do not offer pathfinders as defined by ODLIS and the codebook. These two sites—Carthage and Glennie—gather only free Web resources, around broad subject areas, with no connection to curriculum and no content relating to the specific library collection or its finding tools, whether print or electronic.

Pathfinders, a term not necessarily clear to those outside the world of libraries, are labeled in a variety of alternate ways: *Teacher Projects*, *Project Links*, *Research Guides/Course Resources*, *Class Projects*. The number of pathfinders on the sample sites ranges from 9 to 143. Newton North divides its pathfinders into two

categories—those that are currently in use and a larger number of archived tools. This strategy serves to remove the potential noise of an overwhelming number of resources not currently useful, and focuses learners on the items they most need to discover. Another issue relating to the coding of pathfinders in this study is that they include instruction. Pathfinders might have fit both the Information Access and Delivery and the Learning and Teaching categories. Because of their traditional role as finding tools, the researcher chose to include them in the Information Access and Delivery category.

Table 5 summarizes the features found in the Information Access and Delivery category, listing features present in more than half, or at least 6 of the 10 sites.

Table 5

*Common Core of Site Features: Information Access and Delivery*

Feature # Sites displaying

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Information Access and Delivery

Library OPAC	10
Links to other OPACs	9
Local university	7
Public library	9
Subscription databases	10
Annotated	8
Instructions for remote access	8
Subscription e-book collections	6

Links back to the school's homepage	10
Links to free Web search tools	10
Links to Web reference	10
Dictionaries	8
Biographical tools	8
Atlases, geographical tools	8
Encyclopedia	7
Almanacs	6
Links to news sources	9
National	9
Local	8
International	8
Pathfinders	8
Ask-a-librarian service	7
College planning	7
Career planning	6
Journal holdings list	6

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*Note.* This list includes features held by six or more of the 10 sample sites.

### *Learning and Teaching*

According to *Information Power* (AASL & AECT, 1998), "Schools have evolved to focus on learning, and effective school library programs have also changed their focus from collections to learning that engages students in pursuing knowledge within and beyond a formal curriculum" (p. 59). A great number of

researchers (Clyde, 1997; Jasinski, 1998; Kuhlthau, 1999; Marchionini & Maurer, 1995; Neuman, 1997; Nielsen, 2005; Riel, 1998; Wang, 2003) argue that librarians should use their virtual spaces as learning environments, as places to connect learners with instruction at the moment of need.

The coding instruments reflect the Delphi panel's emphasis on educational resources. One panelist wrote, the website should contain "all sorts of tools and tutorials helping both teachers and students to be more efficient learners." Another expressed the desire that the site become "the entry point to all assignments in the school, particularly those that are collaborative units with teachers. Thus, the student gets to assignments through the library rather than directly through a teacher's web site." The panelist noted the advantage to this approach: "the library Web page provides not only the assignment, but *the helps* necessary to accomplish that assignment such as tools, information sources, tutorials on product creation, helps to judge quality information sources, etc."

Most of the sites in this study offer instruction, as well as guidance for using resources. Areas of the sites address information literacy learning. Indeed, the sample sites' features clustered around several of the nine Information Literacy Standards for Student Learning (AASL & AECT, 1998, pp. 8-9), as well as skills present in such information prominent literacy models as the Bix Six (Eisenberg & Berkowitz, 1990). Such skills relate to inquiry and information access; evaluating and organizing information, using information ethically, applying information to personal and learning needs, and using information to create new knowledge.

Suggestions submitted by the Delphi panel, as well as the researcher's preliminary examination of the learning and teaching content of the 10 sample sites, led to the development of subcategories relating to: searching, questioning, evaluation, information ethics, and synthesis. Members of the Delphi panel reached consensus on these categories in their final examination of the coding instruments.

Five of the sites offer overviews of the information-seeking and use process, broadly covering specific information skills. Greece Athena presents Getting it Done: Six Steps to Success. Springfield offers What is Information Literacy and Why Should I Care? Both documents are based on the Big Six model. (Eisenberg & Berkowitz, 1990). Springfield aggregates both original lessons and lessons by other librarians in the form of an annotated chart on its Information Literacy Lessons page as well as a Research Guide. Hunterdon Central offers Thinking Critically About Research; Lawrence offers Library Kat's Guide to Research in the Library. Five of the 10 sites offer guides to research projects.

Six of the 10 sites offer content relating to searching instruction, supporting elements of Information Literacy Standard 1: "The student who is information literate accesses information efficiently and effectively" (AASL & AECT, 1998, p. 9). New Trier provides advice for developing keywords for searching Questia and Google. The Lawrence site offers an original song, "Ode to Boolean Searching." Springfield offers a SearchQuest, a WebQuest about search tools; the videos, How to Make Google Go, Databases are Different, and What About Wikipedia?; the presentation, Power Searching 501, and a variety of handouts designed to improve student search skills. Northfield Mount Hermon's Reading Room Blog devotes a category to

Smarter Searching Tips. Uni's Computer Literacy area includes such activities and handouts as: Boolean searching, Online Catalog Exercise, Finding and Selecting Articles, and Evaluating Search Tools.

Surprising few, only two of the sites, offer guidance relating to questioning and thesis development, also related to Standard 1. Springfield devotes quite a bit of content to inquiry skills in its templates, forms, presentations, and videos. Among the resources included on the Online Lessons page are the following: Question Brainstormer, Developing a Thesis—which features five tests for a solid thesis, two thesis generator handouts suggesting question stems, Asking Phat Questions, and the video, What's the Fuss about the Thesis? New Trier presents students with several Question Templates, an explanation of questioning in the research process, and background content designed to help learners develop essential questions.

Standard 2 of the Information Literacy Standards for Student Learning reads, "The student who is information literate evaluates information critically and competently" (AASL & AECT, 1998, p. 8). Five of the sites offer instruction on evaluation. Much of this content involves evaluating Web content. Hunterdon Central, Newton North, and Uni present website evaluation forms. Uni's content also includes such handouts and activities as Elements of Webpage Evaluation and an Evaluating Websites Tour. Springfield's content includes the following: a PowerPoint on evaluation; CARRDSS—an acronym for the evaluation process; a WebQuest about evaluating resources; and such handouts and activities as: Should I Take this Author Seriously?; Distinguishing Scholarly, Popular, Trade Resources; Middle Ages—Pages to Evaluate; and Evaluating Blogs as Research Sources.



The largest concentration of instructional content appears in the area of information ethics. Information Literacy Standard 8, relates to the “practice of ethical behavior in regard to information and information technology” (AASL & AECT, 1998, p. 8). All ten sites offer instructional content regarding academic integrity and respect for intellectual property. This content falls under such homepage labels as: Citation Formats, Bibliography Guide, Works Cited Formats, Style Manual, How Do I Cite my Sources?, How Do I Avoid Plagiarism?, Plagiarism, and Resources for Copyright.

Uni’s content includes lessons on Netiquette, Scenarios for Teaching Internet Ethics, and a sample permission letter. Uni also includes information on new trends relating to intellectual property with its link to Creative Commons. Newton North offers the podcast, How to Cite Your Sources, as well as handouts: How to Document in the Text of Your Paper, Anatomy of a Citation, and a WebQuest on plagiarism, Please Don’t Cheat. Newton North points to the principles of intellectual freedom with its posting of the Library Bill of Rights. This corresponds to Information Literacy Standard 7, recognizing the “importance of information to a democratic society” (AASL & AECT, 1998, p. 9). Greece Athena’s Works Cited Guide offers a sample works cited page, examples of parenthetical documentation, and the presentation, How to Write a Bibliography, which presents students with a color coding system. Springfield’s lengthy Research Guide offers multiple pages of content on creating source cards and note cards, and preparing documentation. Springfield also offers a PowerPoint on plagiarism, guidelines for multimedia and

Web production, a pathfinder for finding copyright-friendly images and sound, and such lessons as *Is it Plagiarism?* and *Plagiarism vs. Documentation*.

Seven sites have their own school-specific style manuals. Six link students to online citation generators like NoodleBib or Landmark Citation Machine. Four offer instruction relating to copyright. Of those four, three of the sites provide instruction relating to new copyright information relating to Open Source and Creative Commons—Newton North, Springfield, and Uni. Two sites offer guidelines for multimedia and Web production. Two of the sites—Newton North and Springfield—lead students to the plagiarism checking/prevention tool, Turnitin.com.

Instructional content relating to synthesis is present, but surprisingly light. This type of instruction correlates to Standard 3, which reads: “The student who is information literate uses information accurately and creatively” (AASL & AECT, 1998, p. 8). Only three of the sites offer instruction in the form of how to create original work after consulting a variety of sources. Springfield offers Spartan Notes; a Writing Flow Chart; organizers for speeches, debates, and current events; and the following lessons: *Weaving Quotes into Your Writing*; and *Summarizing, Paraphrasing, and Quoting*. New Trier offers the organizers *Visually Mapping Connections Among Texts* and *How Concept Mapping Relates to School Research*. Four of the sites offer links to OWLs, or online writing labs, to help guide students through the writing process.

Beyond material relating to information skills, other instructional content was surprisingly light. Only one of the sites offers a library floor plan. Only one offers a

virtual tour. Three offer instruction for technology use. None of the sites offer a curriculum map. Two offer test preparation resources for local assessments.

Five of the 10 sites share student work. This instructional feature correlates to Standard 9, which looks for students who “participate effectively in groups to pursue and generate information” (AASL & AECT, 1998, p. 9). Newton North features a student podcast explaining open source software. Northfield Mount Hermon presents the Hoggers in Literature diorama contest. It shares profiles of its student workers; its Lounge Lizards, and student performers who contribute to Acoustic Fridays. Students at Northfield also contribute book and film reviews. Springfield shares student-produced book trailers, information literacy instruction, two student-maintained art galleries, and student writing through curricular blogging. Uni students share their thoughts about books in a Book Discussion Forum. Lawrence archives the work of student poets from 2002 and 2004 in its Graffiti area. The LHS Library Notes and Book Reviews blog, and the site itself, are filled with student book reviews and images of students in posters and at events.

Seven of the 10 sites link to learning activities planned with classroom teachers. Some of these content-area projects are mingled in areas with collaboratively developed pathfinders. Many of these collaborative documents combine pathfinders with elements of instruction. When these resources move beyond the pathfinder stage, as online lessons or WebQuests, they offer background or rationale for an assignment, descriptions of the task, and assessment tools. Uni’s Classroom Projects page offers several lessons among its pathfinders, for example, Did Women Have a Renaissance? and Multi-source News Story

Analysis. Greece Athena's Teacher Projects are of a similar mix. Springfield clearly separates its pathfinders from its lessons and appears to have the greatest number of curricular WebQuests, handouts, and videos in its Online Lessons page. In many cases, lessons and WebQuests refer learners to online pathfinders as resources or components of instruction.

Six of the sites offer opportunities for learning through social networking, supporting Standard 9 in asking learners to participate effectively in groups. With more than half of the teen population using social networking software as a means for communicating and making social connections (Lenhart & Madden, 2007), this appears to be a critical strategy for libraries to engage learners. Carthage links to the school's instructional Moodle interface. Lawrence, Springfield, Greece Athena, Northfield Mount Hermon, and Uni offer students opportunities to participate in book review blogs or forums.

Most of the sites offer some learning materials to serve faculty. Four of the sites lead teachers to resources for creating lessons. Two sites lead teachers to learning standards. Three lead to resources for developing rubrics, or assessment tools. Four sites link to professional development resources. These professional development resources include links to professional journals and databases, as well as resources for improving technology skills. Springfield archives PowerPoint presentations and handouts developed for faculty workshops, as well as sample rubrics and handouts aimed at helping teachers integrate information literacy skills in their areas of instruction. Six of the 10 sites describe their traditional library services for faculty. Two of the sites offer teachers guidance relating to copyright. One site

hosts a faculty wiki, though it does not seem currently active. Two sites, Greece Athena and Springfield also offer professional content for school librarians. This content includes links relating to cataloging, professional associations, professional journals for librarians, content relating to information literacy, other school library websites, and resources relating to pathfinder development.

Parent resources were light across the sites, even though Delphi panelists believed this content should be present. One panelist wrote that this content should contain “not only news, but advice on how to help children and teens do their work.” Perhaps the absence of materials for parents reflects the fact that parent involvement often diminishes as students move through the grades. Perhaps, the absence of resources for parents also addresses the issues of focus and audience noted in Clyde’s (2004) study. Clyde concluded that the sites in her final study lacked clear mission and sense of audience. Even though focus on electronic access to information had increased between 1999 and 2002,

some of the sites seemed to be designed primarily for students, some primarily for teachers, some primarily for the parents of prospective students, some for a mixed audience of students, teachers, parents, and people outside the school, but the majority still seemed to be aimed at no particular group of users. (p. 166)

Though these 10 exemplary sites clearly focus their content most heavily on learners, they offer some limited material for parents to support learning at home. Three sites offer reading lists useful for parents. Greece Athena offers a specific section, For Parents: Reading with Your Children. Greece Athena’s library site also

links to its PTAs' sites. Springfield's Online Lesson page shares a letter for parents relating to changes in school research caused by changes in the information landscape. Though it was suggested as a category by the Delphi panel, none of the schools discussed volunteer opportunities for parents. Perhaps that also may be a feature more relevant for elementary school library sites.

The researcher expected the exemplary sites to be on the forefront of other changes in online environment relating to learning, materials relating to shifts in copyright licensing and the growing number of Web 2.0 resources. In fact, only two sites point users to copyright friendly materials to use for multimedia production. Only one site links users to open source software and Web-based applications that might promote equity in terms of access to technology tools for reading, writing, and communicating. Only one site offers content related to finding and evaluating blogs or wikis as information sources.

Table 6 summarizes the features found in the Learning and Teaching category, listing features present in more than half, or at least 6 of the 10 sites.

Table 6

*Common Core of Site Features: Learning and Teaching*

Feature	# Sites displaying
Information ethics/documentation	10
School-specific style manual	7
Learning activities, WebQuests, etc.	7
Searching guidance	6

Citation generator	6
Library services for faculty	6

*Note.* This list includes features held by six or more of the 10 sample sites.

### *Books and Reading*

“The library media program encourages and engages students in reading, viewing, and listening for understanding and enjoyment” (AASL & AECT, 1998, p. 66). The 10 sample sites’ focus on reading, combined with the emphasis suggested by the Delphi panel, warranted creating Books and Reading as a fourth category beyond the *Information Power* structure of three essential elements of school library media programs. All of the sites devote homepage space to books and reading, correlating to Information Literacy Standard 5: “The student who is an independent learner is information literate and appreciates literature and other creative expressions of information” (AASL & AECT, 1998, p. 8). Five of the sample sites offer new materials lists. Three present class-specific reading lists. Five link to award lists for books, with most of these sites focusing on such ALA awards as the Newbery and the various YALSA awards. Seven of the sites demonstrate connection to reading programs in the school or library, by pointing to such activities as: school and library book clubs, Read to Succeed, Banned Books Week, and Teen Read Week. Four of the sites describe their reading contests. Lawrence and Springfield share photographs of students and teachers in READ posters, inspired by ALA software. Two sites offer content relating to author visits. Four sites link to author pages. Five of the 10 sites offer access to book and reading-related databases like Novelist. Nine of the sites share online book discussions or digital

booktalks. This appears to be the most popular content within the Books and Reading areas. Seven of the sites offer some form of student book review content. Two sites offer students tips for selecting books. Two sites offer other types of book-related content—one promotes a Barnes & Noble book fair; another promotes book-related speakers and events out in the community.

Northfield Mount Hermon’s Reading Room Blog is a site in itself. It features abundant content relating to reading, viewing, and listening. It includes Bookmarks of the Month, information about book-related speakers and events, illustrations of new materials, and literature-related contests. A New and Recommended section features reviews of books and other materials with photographs of the students who recommend the titles.

Table 7 summarizes the features found in the Books and Reading category, listing features present in more than half, or at least 6 of the 10 sites.

Table 7

*Common Core of Site Features: Books and Reading*

Feature	# Sites displaying
Online book discussion	9
Support of reading program	7
Student created reviews, lists	7
Links to book-related databases	6

*Note.* This list includes features held by six or more of the 10 sample sites.



### *Program Administration*

Among the themes *Information Power* (AASL & AECT, 1998), lists in Chapter 6, "Program Administration," are: "supporting the mission, goals, objectives, and continuous improvement of the school; comprehensive and collaborative long-range, strategic planning; ongoing assessment for improvement; clear communication of the mission, goals, functions and impact of the library media program; and effective management of human, financial, and physical resources" (p. 100). To various degrees these themes are translated online through the sample sites.

All of the schools offer basic contact information. Nine list hours. Nine offer information regarding their staffs. Six of those nine sites also shared staff photos. At two of the schools, librarians share their professional resumes.

Six sites share information about library policies. Among the policies, only four sites, Glennie, Newton North, Northfield, and Uni, include collection development or material selection policies. Three libraries include their circulation policies. Three include acceptable use policies for the Internet.

Surprisingly, only two sites offer calendars of library activity. Springfield posts a Word document of the current week's schedule. Newton North offers an interactive online planning form and calendar for viewing the schedule by day, week, or month.

Three of the sites host school archives or galleries. Springfield's site hosts the school clipart and student art galleries. New Trier offers a History Timeline and Photo Tour. Northfield Mount Hermon features its Archives and This Week in NMH History. Uni's Photo Gallery presents current images and a collection from Back in

the Day. Newton North offers Images of Newton High School: See What Life was Like Just Before NNHS was Built. Five of the sites use their Web space to promote or to archive such special library events as speakers, book fairs, student concerts, and art shows.

Statements of mission offer a window into school librarians' aims for creating and maintaining their sites and the audience for which the sites were created. Clyde's (2004) study found that the aims of school library sites were diverse and that "the majority still seemed to be aimed at no particular group of users" (p.166).

It appears that this situation has changed. Eight of sites in the sample of 10 exemplary sites share mission statements (see Appendix M for mission statement language). Only one of the mission statements, Springfield's, is specific to the school library's website. It is not clear that the other mission statements apply to the library's website, as well as the physical library itself. Because the librarian/webmasters chose to post their mission statements on their sites, it is likely that they are meant to represent the online, as well as the face-to-face, library program. Of the eight sites with posted missions, the principal audience is clearly students. Six of the sites focus on information literacy and echo the national mission expressed in *Information Power*—"to ensure that students and staff are effective users of ideas and information" (AASL & AECT, 1998, p. 6). For Glennie the goal focuses on becoming the "centre for learning." Glennie's goals include creating a "pleasing and practical learning environment," helping students develop information skills, fostering a love of reading for pleasure, and acquiring resources to support high quality service. Greece Athena explicitly echoes *Information Power*. Its

program seeks to “ensure that students and staff are effective users of ideas and information.” New Trier seeks to promote information literacy and “to commit minds to inquiry.” Newton North bases its philosophy on the system-wide goals and core values of the school and defines its purpose as functioning as a “learning laboratory where students acquire knowledge of and familiarity with various information tools, and an appreciation of reading and literature, that will enable them to become critical consumers of information and self-sufficient life-long learners.” Northfield Mount Hermon seeks to “support, stimulate, and inspire the educational environment of the school,” by developing collections and resources to support the curriculum, teaching information literacy skills, providing access to global information, preserving the school’s history, offering individual attention to students and faculty, and serving as a community resource. Springfield’s mission is to ensure that students graduate as competent, critical, and ethical users of information and to model the school’s shared core values: respect, excellence, integrity, and community. Springfield lists a separate mission for the website: “to translate the mission of the school library for our learning community in school, at home, anywhere. The website allows us to open our library—its customized instruction and its services to users 24/7.”

Two of the sites do not explicitly address information literacy in their missions. Lawrence’s focus is to build “a community of readers.” Uni’s mission is to provide materials to “implement, enrich, and support the curriculum” and “to meet the individual educational, emotional, and recreational needs of students, faculty, and staff.” As a departmental library of the University of Illinois, Uni’s library also “provides service and materials to the University community at large.” Although

these two sites do not explicitly list the national mission, much of their content nevertheless addresses information literacy.

Four of the 10 sites share library news through a traditional newsletter or through a blog. Three of the sites, Glennie, Lawrence, and Springfield, share their annual reports. New Trier was the only school to offer library FAQs, or frequently asked questions. The library websites are beginning to consider feedback as part of their administrative function. Three of the 10 sites offer users materials suggestion forms. Two present surveys. Glennie shares the results of its Recreational Reading Survey. (The researcher chose to include this feature in the Program Administration category rather than the Books and Reading category because its purpose is to inform the library administration in terms of purchases.) Northfield Mount Hermon offers Comments on Comments in its Reading Blog, soliciting feedback on materials and activities. Three sites share information regarding expectations for user behavior. Northfield's Hoggers Visit the Library, uses humor to convey this message—toy pigs demonstrate both appropriate and inappropriate behavior.

One Delphi panelist insisted “the website is one of the major factors in data mining for the impact the LMC has on achievement. We know who uses it for what purposes and by follow through, it becomes a documented record of effectiveness.” Only two of the sites appear to use the library website for such research. Lawrence and Springfield both make use of counters and both report on usage trends in their annual reports. Glennie's Annual Report also makes use of statistics to describe the value of its program. It is possible that sites using content management systems software gather their statistics in other ways—through sites like Technorati or

through their own school or district statistics. This strategy was not recorded on the sites.

Table 8 summarizes the features found in the Program Administration category, listing features present in more than half, or at least 6 of the 10 sites.

Table 8

*Common Core of Site Features: Program Administration*

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Contact information	10
District/school name and address	9
Staff information	9
Hours	9
Mission statement	8
Library policies	6
Library promotional materials	7
Special events	6

*Note.* This list includes features held by six or more of the 10 sample sites.

### Results of Content Analysis: Characteristics

This study takes into account the presence of characteristics or strategies that the 10 sample sites use to display their features. With the guidance of the Delphi panel, the researcher divided site characteristics into five categories. It is possible that school and district differences may have more direct impact on the results recorded on the Characteristics Coding Forms. School libraries function within the context of their larger institutions. The ability of a school library to display creativity

in terms of design may be impacted by software or templates required. School policies also affect such factors as whether the library can use images of students or introduce such 2.0 applications as wikis and blogs.

### *Connectedness to School, Curriculum, Learning*

This first category examined the 10 sites' connectedness to school, curriculum, and learning. All sites appeared to be age and grade appropriate. None of these sites seemed too young or too sophisticated for their middle or high school audiences, though Newton North and Northfield Mount Hermon make extra effort to connect with young users with learner-friendly language. Curricular relevance is also displayed in the sites' collections of databases and their inclusion of learning activities. Eight of the 10 sites showed direct evidence of teacher collaboration, particularly in their pathfinders. The omission or limited number of either pathfinders or collaboratively-developed lessons in four of the sites made them feel less connected to their schools' instructional landscape. Six of the 10 sites demonstrated evidence of student collaboration. Eight sites encouraged reading as a beyond-school, life-long behavior.

### *Navigation and Organization*

#### *Navigation*

The second category considered strategies related to navigation and organization. Nine schools offer text that was readable for users, written at a level that was understandable for teenagers. Nine of the sites presented text that was clear and legible. Lawrence's pages present problems for both reading and navigation. Its red text on black background is challenging to read. Its animated

introduction presented an extra step necessary to click past before users could open the site. Scrolling vertically is often necessary to access important content. Some of the site's content, though available through its site search tool, is challenging to find navigating the site by its major structural strategy, subject categories. In fact, users have to scroll to the bottom of a long page to find the site search tool. Hunterdon Central presents navigation issues of a different sort. Major content like databases and the OPAC are hidden on secondary page links, behind opening-page category links.

Student-friendly language and embedded explanations were characteristics important to the Delphi panelists. One panelist noted: "I wish the links for the databases provided information on what was in the database as opposed to simply stating 'All EBSCO Databases.' That doesn't help a student know what's inside that might be helpful." Another Delphi panelist wrote, "Labeling should use language that is meaningful to the students, taking into account social constructions that may be particular to their community."

Newton North makes the most serious effort to clarify content for young users, replacing terms like *OPAC* and *database* with phrases like: *Find a Book*, *Find Magazines*, and *Research a Person*. Northfield Mount Hermon makes similar modifications for teen users in its Reading Room Blog, an alternate interface for its official site, where it uses labels like *Find Magazine & Newspaper Articles* to replace phrases like, *Electronic Resources > Periodicals*, used on its more formal site. One member of the Delphi panel, who is also a practitioner, noted,

Annotations need to be in plain English! In 2.0 of our resource portal we are probably going to stop naming databases by the company. What 7th grader cares that he/she is going to be using EBSCO? He/she is looking for information, not a meaningless brand name that only impresses other librarians.

Six of the schools use embedded explanations to clarify features for users. Carthage, Glennie, Springfield, and Uni use mouse-over descriptions for terminology and icons that might confuse users. Newton North and Northfield Mount Hermon annotate their homepage links. Nine of the sites annotate links beyond the homepage. Hunterdon Central's homepage labels are not as intuitive as some of the other sites. Users must visit the unexplained label Electronic Resources, to find the OPAC and the databases. Lawrence's unexplained label for databases, Electronic Indexes, might confuse some student users. On most other pages, these resources are clearly annotated homepage links.

### *Organization*

In terms of intelligible structure, most sites have clear homepage indices, with links organized around text-based buttons in tables or frames. One, Springfield, uses the graphic metaphor of a library as a navigational strategy. Carthage's major links surround a graphic of the word *Research*. Northfield Mount Hermon's structure was clear and intelligible, but its duality might confuse infrequent users. Northfield Mount Hermon's site is actually two separate interfaces. The official site exists within the school template on the school's content management system. Northfield Mount Hermon's Reading Room Blog, built using standard blogging software, contains the



same links as the official NMHS site, but this site features student-centered language and content. Reading Room labels are different from labels on the official site. Instead of the label *Periodicals*, used on the official site, the Reading Room Blog uses the label, *Find Magazine and Newspaper Articles*.

#### *Location of Major Content*

Was the important content front and center on the sites? Seven of the sites clearly present important links—access to databases, OPACs, learning resources, pathfinders—to users on their homepages. Lawrence requires students to click past an animated introduction to get to the real homepage. Many of the pages on the Lawrence site involve lengthy vertical scrolling. Finding information is not always possible through the links on the top menu. Some resources, like the Annual Report, are available only through the site map. On the other hand, Newton North offers users two opportunities to access major content. The left frame lists links in kid-friendly language using such terms as *research an issue* and *find science journals*. The center area repeats those links with enhanced explanations and icons. This redundancy appears to be a useful strategy to ensure users reach the content they need.

#### *Loading Time and Accessibility*

Most of the sites present no problems in terms of loading time. Only one of the sites, Springfield, causes users serious wait-time, approximately 30 seconds of download time (over a T1 line) when users click beyond the homepage to access the Pathfinder and Catalogs and Database pages. Springfield's video resources require several minutes of wait time. Springfield is the only site in the sample to offer large

video files. This may be an issue for future study as other sites explore use of media files.

The Delphi panel shared concerns regarding issues of user accessibility. Because it would be challenging for the average coder to assess such measures as: equivalents for non-text items, ability to distinguish foreground from background information, a site's functionality using keyboard commands; mechanisms for users to find content and orient themselves; and text readability, the researcher used an online accessibility tool to examine the sites for these considerations. The Adaptive Technology Resource Center (ATRC) at the University Of Toronto (2007) offers a "model system that demonstrates how web pages can be checked for accessibility problems" (see Appendix N for ATRC output results). The ATRC checker examines sites for their compliance to current Web Content Accessibility Guidelines (WCAG) 2.0 standards established by the World Wide Web Consortium (W3C).

Though ATRC scores varied dramatically, not one of the sites passed the accessibility tests. All had more than the acceptable number of known problems, problems that the site can detect with certainty and advises must be modified.

- Carthage: 137 known problems
- Glennie: 71 known problems
- Greece Athena: 23 known problems
- Hunterdon Central: 15 known problems
- Lawrence: 132 known problems
- New Trier: 17 known problems
- Newton North: 42 known problems

- Northfield Mount Hermon: 267 problems
- Springfield: 8 known problems
- Uni: 60 known problems

These findings echo those of Ivory and Megrew (2005). Even in the interfaces most highly ranked by their expert panel, the most glaring deficiencies related to inadequate accessibility and usability. By far, the bulk of the accessibility problems fall into two categories: the sites do not provide text alternatives for non-text content and the sites offer limited functionality operable from the keyboard alone. While the range in the number of errors was dramatic, the results led the researcher to suspect that few librarians consult accessibility tools, or pay attention to accessibility issues, when they build their sites. Attention to accessibility issues ensures that users with a variety of disabilities, including vision difficulties, can more easily use a website. This attention may become increasingly important as users access sites from alternate and emerging Web devices, for instance, telephones and cars. It also ensures that users with browsers that do not support images, or those users who elect to turn images off for faster downloads, can easily navigate a site.

Five of the sites offer site maps to facilitate navigation; six of the sites offer site searches. For sites based on content management systems (CMS), like Hunterdon Central and Northfield Mount Hermon, the map and search functions exist as part of the functionality of the larger school CMS site. (Content management systems are software packages that enable one or more authors to publish information online without knowledge of HTML code.) Two of the sites—Carthage and Glennie offer neither a map nor a search engine.

### *Aesthetic Qualities*

The third category on the Characteristics Coding Form examines aesthetic qualities of the sites, or how they appeal to their school audiences. Delphi panelists referred to such aesthetic qualities in a variety of ways, using such phrases as: the website \*feels like the library,” “has a personality and presence,” “touches the students,” “is not generic,” “is a trusted friend,” “has a sense of humor,” “is as cool to use as Google.” Relating to aesthetics, one of the Delphi panelists noted that some sites are limited by administrative decisions and mandated templates. Delphi panelists warned that creative design is not always possible because of district guidelines limiting policies or the software used. Others argued that librarians could be creative even within the limits of mandated templates. Eight of the sites in this study were examples of original design. Springfield’s image map of its library is a metaphor for its services presented in a colorful cartoon style. The image features a caricature of the librarian. Two sites were developed as components of their school’s content management systems.

While several panelists expressed concerns regarding templated design, imposed by the larger institution, one panelist argued, “Creativity is possible within the use of a template.” Templates helps student “know where they are in the big picture; they do not have to be boring. Consistency via a template will support navigation in what might be murky information territory.”

Some Delphi panelists noted that school or district policies might limit the use of images of students and staff. One wrote, “I think they are essential, but not

always allowed.” Another panelist noted, “teens love to see images of themselves,” but wondered, “how will you protect personal images from being copied, reproduced, or used by other people?” One panelist warned about making photographs of librarians the visual focus, noting that student photos are far more important to use. They are critical elements that “support the feeling of ownership.”

Six of the sites use graphics and photographs to enhance the mission of the site. Northfield Mount Hermon makes heavy use of photographs, filling its Reading Room Blog with images of students, materials, and events. Lawrence also relies heavily on photographs of students, faculty, visitors and events for its aesthetic appeal. Springfield includes images of students and their work in its Flickr clipart gallery.

#### *Interactive Elements, Communication, Student Involvement*

The fourth category of the Characteristics Coding Form relates to strategies for interactivity and communication and inspiring student involvement. Several of the Delphi panelists noted the Web’s new potential for encouraging interactivity. One panelist wrote:

The key here goes back to whether the site is a pass-through or a destination. A library site can become a place users go for the library experience. Book reviews and other interactive content make it a place, not just a tool. Maybe that is the definition for if “it feels like a library.”

Another panelist felt even more convinced of the importance of interactivity, stressing the value of even minimal levels, and a growing need to trust student users in knowledge landscapes that increasingly involve collaboration:

I think library websites need to move forward with interactive elements. Social networking and the new inter-personal webspaces are not going to go away just because schools ban MySpace. I don't want to say "blogs, wikis and podcasts" here, because those are just tools . . . means to the end. The end result is student achievement—the method is a higher level of engagement with library resources through socially-driven interactions with people and information to create a learning environment that leads to increased knowledge generation. Some of the tools available now do a great job of this on a macro scale, but even things like students using a simple stars ranking or applying tags to resources gets them engaged. This does involve what Library 2.0 refers to as radical trust. You have to trust your users. Sure you also maintain careful controls and checks on their input - but you have to trust them enough to allow input!

Yet another Delphi panelist noted that the sites she liked most in the sample had elements of student ownership. She preferred sites that not only felt useful, but felt to students “almost like they designed it themselves.”

Web 2.0 has clearly had impact on school library websites. Five of the sample sites offer opportunities for student collaboration through wikis and blogs and other interactive strategies. Uni offers a book discussion forum. Northfield Mount Hermon chooses a dual approach. Its traditional template-based approach is clear and rich in content, but one-way in terms of communication. Its Reading Room Blog, on the other hand, is rich with student involvement. It posts images of student projects; it displays profiles of student workers and performers; it invites book and

film reviews; and it solicits feedback in its Comments on Comments area. Springfield offers a book blog and presents a template encouraging student blog-building to document and reflect on the research process and to encourage peer and faculty interaction. Five of the eight sites with blogs welcome student comments or posts. The Springfield site hosts a variety of student and classroom blogs devoted to curricular reading and research. Greece Athena hosts separate book blogs for its middle and high school students. These blogs include a star system for book reviews. Lawrence solicits student book reviewing via e-mail and later posts their comments and their images on the website. Not all blogs engage student interaction. Although Hunterdon Central's webspace is based on blogging software, no student collaboration is observable. While some school library blogs reside on the school's server, in some cases the librarians seek opportunities to post blogs off the official server, using such services as Edublogs, Blogger, and TypePad.

Springfield is the only site experimenting with wikis, using them as collaborative writing space for student projects and as a strategy for collaborating on and editing pathfinders.

Though sites are clearly adding blogs as a supplementary strategy for including dynamic content, of the ten sites, only two—Hunterdon Central and Northfield Mount Hermon, are wholly based on Web 2.0 technology, making use of a content management system (CMS) approach. CMS software requires no knowledge of HTML and no demand for HTML editing software. One member of the Delphi panel suggests that library websites should:

adopt the lightweight programming model from Web 2.0. This is the idea that is loosely translated as perpetual beta, in that sites are constantly being updated and new features added. Using a content management system (like Drupal, or even a blog platform like Wordpress) allows the librarian to add new content without all the hassle of re-coding the site.

Four of the ten sites include slideshows. Greece Athena uses a PowerPoint to explain its color-coded documentation system. Newton North includes an engaging slideshow of historic school images using Flickr. Northfield Mount Hermon offers Hoggers Visit the Library, a Web-based slideshow discussion of library resources and appropriate behavior. Springfield includes a number of instructional PowerPoints, among them are slideshows on evaluation, searching, and plagiarism. Five sites use interactive forms to communicate with users.

Despite evidence of growing interactivity, none of the sites in the sample demonstrate push or pull technologies that would allow the user to customize the content or the interface. Two of the Delphi panelists saw this as a valuable characteristic. One suggested that push technologies would “notify the student of new resources in areas of personal interest—news, reading lists, assignments.”

Only two school library sites in the sample include media elements to deliver information and instruction. Springfield posts information literacy lessons and book trailers using streamed video. Newton North offers two instructional podcasts. Because use of podcast technology and streamed video sites are spreading, it is likely that library sites will evolve to include more streamed media.



### *Freshness*

The fifth category considered freshness, or strategies relating to updates, revisions, and currency. In spite of their useful content, some Delphi panelists felt that sample sites look like they were created in the late 1990s, would have limited appeal for Web-savvy young users.

One panelist wrote:

The most important element is that it needs to speak the current visual language. Most library websites I see have a horrible visual accent that places them in time about 10 years ago. . . Nothing says 1997 like the rainbow divider line and the counter at the bottom. Students see this as the visual equivalent of someone telling them that back when they were young they had to walk to school...uphill both ways. The current trend in Web design can easily be seen looking at sites that our students use without a mandate from their teachers. Check out YouTube or MySpace. Students expect to see tabs across the top and then content arranged in blocks.

With so many youth currently involved in creating their own Web content (Lenhard & Madden, 2005), today's young people are familiar with design choices. Such researchers as Engholm (2002) and Ivory and Megraw (2005) identified generations of digital style relating to website design and note certain elements, echoing the comments of the Delphi panelist, that are representative of first generation, or early Web design.

The absence of accent, or a visual concept of freshness referred to by several

panelists, was challenging to judge, but it is clear that some long-standing sites seemed not to have had a face-lift since their launch. Lawrence, with its old-looking animated introduction, lengthy scroll, and top-title structure, seems to fit a first-generation mould. Glennie features an animated line under its menu, similar to the line described by the Delphi panelist. Glennie's Reading and Books page displays several rather old-looking animated gifs. Its Internet page features icons that look as if they were around since the 1990s.

Though Glennie's standard pages really may not require updates, the dates displayed on the bottom of many of its pages are several years old and suggest to users that the site has aged. Six of the sites in this sample provide dates for their last homepage update. Uni's homepage displays a January 2005 date of last update. Though Uni's homepage has likely been static because it serves as an index page, other site areas, such as its blog and its forum, are dynamic and continually updated.

Though Hunterdon Central's site is actually a blog, the content on the center of its homepage—the most recent post—often appears old. Only five blog posts appear between the first post on April 2005 through November 1, 2006. Though this is not an unreasonable time between site updates, the first content users see may not have always have current meaning or lasting value. One panelist observed, Hunterdon Central's "news/blog portion is not updated enough, which would be fine if it didn't occupy so much center real estate." Another Delphi panelist questioned, "Why advertise that a page is two-years-old if age isn't critical?" Nevertheless, teacher-librarians offer instruction in the evaluation of websites. One aspect of this

evaluation is recommending that learners examine website dates to assess currency. Updating frequently used school library site pages might be a critical consideration if these sites serve as student models.

Newton North approaches the freshness issue by separating its pathfinders into two categories—current and archived. This not only contributes to freshness, but eliminates the need to scan a crowded page to locate resources that are now more selectively displayed. The Looking for a Good Book Blog in the center of the page draws users to new content.

Six of the sites appear to speak the current visual language. Even if the site itself has a traditional look, these sites' supplementary blogs, translate their goals for the 21<sup>st</sup> century. Greece Athena carries a bright blue, yellow, and red theme throughout its site and its blog. Modern looking icons are used attractively and consistently to enhance navigation. The blog is filled with images of materials. Springfield's homepage image map is a colorful visual representation of a library and its librarian. Though Uni's site has a standard HTML look, with a gargoyle mascot as the only image, its Book Blog is filled with images of learners and the library staff. The blog, Gargoyles Loose in the Library, displays clear sense of humor. Students are presented informally hamming it up in the library—getting ready for Halloween, working on fun projects, relaxing on the comfortable furniture during free periods. The librarian continues to refer to individuals and groups of students in her discussion. In fact, many of the sites' blogs reveal more casual approaches than the more formal approaches present in the traditional areas of the sites. Northfield Mount Hermon's Reading Room Blog also has a light touch in its written content and

it is rich with photographs of library events, student work, student performers, and student workers.

Most of the sites in this small sample work to present fresh content for their users and have an attractive current flavor. Newton North's strategy of separating archived from current content demonstrates a commitment to freshness. For most sites, blogs now function as strategies for presenting news and updates beyond standard and static site content.

### Plans for the Future

In addition to establishing background information relating to the websites examined, the e-mail questionnaire (see Appendix E) asked the webmasters of the ten sites to describe plans for their sites for the next two years.

Five of the sites described interest in including more instructional content and in better supporting student research. Greece Athena plans to add PowerPoint tutorials about available databases and to collaborate to present more projects with classroom teachers. Glennie plans to increase the level of research help to students, though the webmaster notes time as a barrier to creating this new content. Carthage wants its site "to be our students' first stop in their research process." The plan is to increase "useful links for student and teacher research. Content will be driven by student/teacher needs." The webmaster at Uni continues to seek "the magical best way to feature and promote our databases."

Six of the sites plan to expand interactivity and student participation through the use of Web 2.0 tools like blogs, wikis, and photo sharing sites. Springfield plans to increase the number of student-produced learning objects on its Online Lessons

page, in the form of streamed instructional videos, podcasts, and PowerPoints. Springfield also plans to enrich its two existing Flickr image galleries with more student work and to increase the level of peer review on these galleries. Greece Athena plans to expand its blogging options. Newton North is currently working on “embedding dynamic, 2.0 elements to the site,” with RSS feeds and schedules. The webmaster notes, “We have been experimenting with wikis and blogs for class assignments and plan to add these and other examples of student research onto the site.” Northfield Mount Hermon plans to include more student participation in its already student-centered Reading Room Blog. Hunterdon Central plans more interactive elements, especially relating to book recommendations. Uni’s webmaster plans to continue both her blog and the site’s book forum. She is considering transferring her HTML-based photo gallery to a photo-sharing site. She notes, “We’ll probably be collaborating with teachers as they develop Web 2.0-based projects, either hosting or linking to those efforts.”

The sites appear to be moving toward the convenience of content management systems. New Trier is in the process of moving its OPAC to Sirsi Rooms (<http://www.sirsi.com/Sirsiproducts/rooms.html>), a CMS that encourages the incorporation of pathfinders, databases, and free Web content. New Trier is currently creating new content for that space. With student help, Uni is in the process of “converting the entire back end of the site to CSS,” or cascading style sheets. This would allow more control over the style of the site and how its pages will be displayed.

Several of the sites plan to address design issues. Two of the Delphi

panelists noted that they while they appreciated the content of the Lawrence High School site, they felt the site's approach was old and that its design inhibited student use. The Lawrence webmaster is aware of her site's legibility and navigation issues. Her plans involve resolving some of these issues, and to first address the problem of the site's dark background. Glennie plans a major redesign to update the look and feel of the site. Northfield regularly conducts usability studies. During the last study, the librarians came away feeling as though the site needed only minor tweaking. Springfield plans to reorganize its growing online lessons areas to make the materials easier to find.

#### Changes Since Clyde's Longitudinal Study

Clyde's longitudinal content analysis (2004) described the state-of-the-art relating to school library website practice in 2002, as applied to the 32 sites remaining from a sample of 50 randomly selected sites first examined in 1996. (An interim examination of 37 sites was conducted in 1999.) In her study, Clyde attempted to identify how the sample sites evolved over six years and the overall development and differences that appeared in the sites' aims and purposes over time.

Though this smaller study examines ten purposively selected sites identified as representing effective practice, and though the focus of this study is specifically secondary, it is nevertheless interesting to compare the studies to explore changes, differences, and potential trends. By comparing the items identified in the two taxonomies against features present in the charts shared in Clyde's (2004) final study, the researcher was able to identify features no longer present in exemplary

school library websites, identify new features and characteristics and make some inferences relating to the pace and extent of change in the interim four years. Appendix N compares the sites in this sample with the baseline features Clyde identified and followed over the course of three studies. Appendix O compares the sites in this sample with features newly discovered in Clyde's 1999 and 2002 studies. Because this current study relies on features identified and labeled by a Delphi panel, some taxonomy features did not directly correspond with those described by Clyde. When Clyde's features did not correspond with taxonomy items, they are noted in Appendices N and O as "not specifically listed in taxonomies."

Some items in Clyde's longitudinal study appear to be obsolete. Lists of CD-ROMs are relics in a Web-based database landscape. Online guestbooks, familiar from the early days of the Internet, appear to be a feature of the past. General Internet tutorials are no longer present. They are replaced by more specific instruction—tips for evaluation, searching, and documenting. Some of the items Clyde listed originally in 1996 (See Appendix N), seem almost too obvious to count individually in a study of exemplary sites ten years later, for instance, names of schools and libraries, links to selected Internet resources, an interactive e-mail link.

The presence of some less basic features clearly increased since Clyde's initial 1996 study. These features appear more frequently in this updated smaller sample of exemplary sites. Research instruction based on an information skills model is one such feature. In 1996, 16% of sites included this content; in 1999 the figure increased to 24.32%; in 2002 the figure increased to 28.13%. In this smaller sample, 50% of the sites include content relating to a research model. While

information relating to Internet use and library policies is present on 60% of the sites of this current small sample, such content was observed on only 6% of the 1996 sample, 10.8% of the 1999 sample, and 9.38% of the 2002 sample. Links to Internet search engines appear more prevalent. Such links are present in 80% of the exemplary sample. They were present in 30% of the sites in Clyde's 1996 sample. Online reference desks appear more popular in the small sample; 70% of sites in the smaller sample offer online reference. In 1996, Clyde recorded the presence of online reference in 6% of sites. This figure dipped to 2.7% in 1999 and rose slightly back to 6.25% in 2002. Book reviews, present in 14% of Clyde's first survey are present in 100% of the sites in the smaller sample. Information on teaching documentation, present in 12% of the 1996 sites, 13.51% of the 1999 sites, and 37.5% of the remaining sites in 2002, is present on 90% of the sites in this smaller sample.

Appendix O identifies and traces features Clyde discovered as new following her first study. Many of these newly discovered features appear staples of the sites in the smaller study. Subscription databases, first recorded in 1999 as present in 32.45% of sites, and increasing to 62.5% of the sites in 2002, are present in 100% of the sites in this study. Links to the school OPAC, newly recorded in 1999, appeared in 32.45% of sites, and 43.75% of the 2002 sites, are also present in 100% of the sites in the smaller sample. Links to the OPACs of other libraries are a similarly popular feature in the small study. Such links were present in 29.73% of the 1999 sites, 53.13% of sites in the 2002 study, and 90% of the sites in the current study. Links to online reference sources is another area of growth. Clyde noted them first



in 21.62% of the sites in 1999, and in 50% of the sites in 2002. Reference links are present in all of the sites in the current study. Clyde attributes particular importance to the presence of mission statements. She noted them in approximately one fifth of the sites in both 1999 and 2002. Such features are present in 80% of the sites in the small exemplary sample.

In her 2002 examination, Clyde (2004) found that, among the 32 sites remaining from her original random sample of 50, several new features had been added since her previous examinations. Appendix P compares Clyde's newer discoveries to the content discovered in this study.

Among the features Clyde discovered as new in 2002 were access to online databases and services from home; site search engines; reading programs; collection development policies; lists of new materials; statements of site purpose and goals; library webcams; webpage hosting information for users; new materials request forms; form-based ask-a-librarian services; virtual museums; and welcome messages from the librarian.

Of the 32 sites studied in 2002, 15.63% offered site search engines. These navigational strategies appear more prevalent. Sixty percent of the sites in the smaller currently offer a site search engine. Though Clyde noted that one or two sites were experimenting with webcams in 2002, none of the sites in this smaller sample currently feature webcams. This researcher wonders about the purpose of a cam in the library during those times when students might easily visit, or the value of a cam presence when the library is empty.

Clyde noted materials suggestion forms as a new feature in 2002, offered by one site in her 32-site sample. In 2006, three of the ten sites offer this service. It is a bit surprising that more of these exemplary sites do not use the available Web-based technologies, or even simple e-mail, to solicit user requests for materials. Clyde noted virtual museums in one (3.13%) of the 2002 sites; they are present in 40% of the sites in the smaller sample. Lists of new materials were present in 6.25% of sites studied in 2002; such lists are present in 50% of the sites in the smaller sample.

For Clyde, the most significant new feature and the main growth area observed in 2002, was access to commercial databases from home, as well as from school. This feature is ubiquitous among the sites in this sample. All 10 of the sample sites offer both school and remote access to databases. Some now provide access to databases in new information formats—streamed media, audiobooks, and e-books.

Among Clyde's overall discoveries were some disappointments. In her conclusions Clyde noted: "No school library website in the study even provided a link to a real-time 24/7 virtual reference service offered by the state or national library" (p. 165). Clyde noted that only one or two sites offered form-based virtual reference. This situation appears to be changing, though only slightly. While none of the school libraries in this 10-site sample offer synchronous IM reference services, seven offer some level of e-mail service; three offer explicit reference service—two via e-mail, the other via an interactive form. Four of the sites link directly to real-time services hosted by remote institutions.

Tables 9 and 10 list features and characteristics observed in this 2006 examination that were not observed in Clyde’s last study. Emerging features listed in Table 9 are categorized according to the taxonomy in this study. Among the additional features are blogs. “Despite their popularity elsewhere,” Clyde noted, “none of the sites in study was experimenting with a Weblog to provide current information for users” (p. 165). Eight of the sites in this study feature some type of blog presence. Two of the sites are actually blogs themselves. Five of the sites involve students in their blogs. One site is also experimenting with wikis as collaborative student workspace, a 2.0 application not on the radar in Clyde’s 2002 school library examination. Among the other prevalent features since the Clyde studies are pathfinders, e-book databases, online password lists to facilitate remote access to subscription databases, WebQuests and other online collaborative lessons, school-specific style manuals, and online book discussions. Although Clyde’s charts were not categorized into taxonomies, Table 9 reveals that the majority of the new features identified cluster under the Learning and Teaching category.

Table 9

*New Features Observed Since Clyde’s 2002 Examination*

Website feature	Number (of 10)
I. Information access and delivery	
Pathfinders for student projects	8
E-book databases	6

Streaming media databases	3
Links to open source software	1
Links to copyright-friendly media	2
Online password lists (Protected) or instructions for home access	8
II. Teaching and learning	
Collaborative lessons, WebQuests, handouts	7
Links to learning standards	2
Student work	5
College Information	7
Career Information	6
School-specific style manual	7
Citation generators	6
Plagiarism check and prevention tools	2
Questioning and thesis guidance	3
Searching guidance	6
Evaluation guidance	5
Information ethics, documentation guidance (in addition to bibliography advice)	10
Synthesis tools—organizers, note-taking tools	3

Research project guides	5
Links to online writing tools, OWLs, etc.	4
Support and preparation for local standardized tests	2
Link to school or district CMS	1
Professional development resources	4
Opportunities for learning through social networking	4
III. Books and reading	
Links to book awards	5
Reading contests	4
Summer reading lists	4
Class-specific reading lists	3
Online book discussion	8
Book/reading related databases	5
IV. Program administration	
Staff Information	9
Weekly Schedule or Calendars	2
Surveys	2

In terms of characteristics, many of the new items are also related to Web 2.0 applications and interactivities (see Table 10). This smaller sample includes evidence of blogs, wikis, podcasts, interactive forms, and the inclusion of student work and images. Other new characteristics, for instance embedded explanations and annotated links, relate to improving user access.

Table 10

*New Characteristics Observed Since Clyde's 2002 Examination*

Website characteristics	Number (of 10)
<b>II. Navigation / Organization</b>	
Embedded explanations to describe resources and define vocabulary	6
Annotated links	9
<b>III. Aesthetic Qualities / Appeal for Audience</b>	
Images of students	6
Images of materials	4
<b>IV. Interactive Elements / Communication Tools</b>	
Wikis	1
Blogs	8
Podcasts	1
Forums	2
Interactive forms	5
Video, other media	2

Inclusion of student work	5
Overall 2.0 approach	2
Inclusion of student work	5

In her general conclusions and in her discussion, Clyde pointed to site size and mission as major differences among her randomly selected sites. “The school library Web sites as a whole remain a diverse collection in terms of intended audience, apparent aims, content, and resources made available through them” (Clyde, p. 166).

In terms of size, some of the sites Clyde studied consisted of merely one page that had not been updated for years, allowing the library to claim no more than a Web presence or to function as a billboard. She also found a few comparatively large sites that offered “more than 40 pages of information and many features designed to meet the needs of users” (p. 164). Most sites, Clyde concluded, fit between these extremes. This researcher did not formally count the number of pages contained by each site in her study. Web content exists in multiple file formats and includes PowerPoint presentations, image files and slide shows, lengthy pathfinders, streamed video, podcasts, and PDF documents. It is difficult to determine how exactly to count long, scrollable Web pages. Nevertheless, by examining the archived notebook of printouts, it is clear that each of the sites in the study contains more than 20 pages of content. Several of the sites—most notably Springfield, Greece Athena, Newton North, and Northfield Mount Hermon, with their multiple lessons, pathfinders, resource pages, presentations, and media files—

approach an equivalent of more than 200 pages, trumping even the most comprehensive sites in Clyde's study.

Clyde (1999) found it impossible to discern the intended audience for 34 of the sites in her 50-site sample. Her later studies (Clyde, 2004) revealed no clearer vision of intended site audience. The sites in this study of exemplary sites are clearer about their audience than those in the Clyde study. As noted in the earlier discussion of mission as a site feature, eight of the sites in this sample include a statement of their mission and goals and those goals are represented by site content. Six of the sites point to missions relating to learning, inquiry, and information literacy. Clyde expressed disappointment in the diversity of the sites "aimed at no particular group of users" (p. 166). In both supporting information literacy and learning, and in supporting their schools' reading and information needs, the primary audience of the sites in this study appears to be the learner, with faculty as a secondary audience.

In the four years since Clyde's last study much has changed if the ten sites in the small exemplary sample are at all representative of a larger population. On the whole, these sites are more comprehensive than most of the sites in Clyde's larger random sample. These sites have clear audience focus. Most offer the blogs Clyde was hoping to see. And they have more features relating to learning and teaching. The sites in this exemplary sample are more clearly focused on the needs of the learner and appear to be exploring strategies to engage them.



## CHAPTER 5

### DISCUSSION AND CONCLUSIONS

The Delphi panel helped to develop a selective sample of 10 sites for analysis. Their contributions relating to expected features and characteristics, helped build two taxonomies in the form of coding instruments and corresponding codebooks. The researcher's content analysis study allowed her to examine whether and to what extent those suggested features and characteristics existed in actual practice, as well as whether and to what degree the sample sites translated *Information Power's* (AASL & AECT, 1998) traditional library roles for users who increasing live online. In addition, the study allowed the researcher to compare her findings of existing features and characteristics with Clyde's (2004) longitudinal study of randomly selected sites. Each of the six research questions in this study is addressed in the following sections.

#### Research Question 1

Question 1 asked: What models of exemplary practice exist in school library websites? The Delphi panel's initial list of 68 sample nominees demonstrated a very long tail of choices. The list presented new discoveries for many of the experts, with seven of the 10 sample sites nominated by three or fewer panelists. Following two additional rounds of e-mail, the resulting consensus list of top 10 sites—Carthage, Glennie, Greece Athena, Hunterdon Central, Lawrence, New Trier, Newton North, Northfield Mount Hermon, Springfield, and Uni—represents great variety. The sample sites crossed cultural and geographical differences, representing a mix of

private and public schools and a mix of environments—urban, suburban, rural. The unexpectedly vast range of point scores—from 139 for Springfield to 27 for Glennie—reflected differences in depth of content, style, and mission.

As models, these sites demonstrate a diversity of options for practitioners in both content and strategies. While some sites present a basic, perhaps realistic, level of exemplary service, others present a more comprehensive view of online service options. Some present a knowledge-management approach for their schools—with rich archives of pathfinders and collaboratively designed curricular materials. Some model effectiveness in engaging and interacting with students—inviting student participation in book discussions, devoting space to student images and student work. One school represents a shift in the traditional model of a school library site with its dual-site approach. It presents users with a serious area of research and learning resources. It also presents an area celebrating student ownership of library resources and events and reaches beyond student research needs to celebrate and include the whole learner. Some sites demonstrate a clear focus on promoting books and reading. This list of sites shares trends school sites might monitor. Blogs, present on eight of the 10 sites appear to be important supplemental features of these model sites.

The sample selected by the Delphi panel presents a spectrum of effective practice, levels of service, and models to suit a variety of school library environments.

## Research Question 2

Question 2 asked, “What common features are represented in sites representing exemplary practice?”

Appendix K, Aggregated Content Analysis Results: Features, presents the researcher’s examination of site features. The core lists of features in Tables 5, 6, 7, and 8 summarize those features present in more than half of the sites in this sample.

As in Still’s (2001) study of university library websites, all sites in this secondary school library sample offer access to OPACs and databases. Most sites link to the OPACs of other libraries. Remote access to subscription databases is also covered well in this small sample.

The researcher believed that the vision of change expressed in *Information Power* would appear translated for users who prefer to learn online. According to *Information Power* (AASL & AECT, 1998), “Schools have evolved to focus on learning, and effective school library programs have also changed their focus from collections to learning that engages students in pursuing knowledge within and beyond a formal curriculum” (p. 59). Although some of the schools devote much Web space to instruction, as in Still’s results, this sample also revealed spotty instructional coverage, especially in some of the areas relating to the traditional information literacy skills described in *Information Power’s Information Standards for Student Learning* (AASL and AECT, 1998) and described in such models as the Big Six (Eisenberg & Berkowitz, 1990). The researcher expected that the majority of the exemplary sites would devote Web space to addressing the skills that underlie the library program. While all sites offer content relating to documentation and

information ethics, only half offer advice in evaluation of resources, only three present content relating to questioning and thesis development, and only three present content relating to helping students through the process of synthesizing new knowledge. While it is possible that these libraries address this instruction in their face-to-face programs, the researcher expected that support and reinforcement relating to these information skills would be presented online. If delivering instruction in information literacy is an overriding goal of the school library media center, as stated in the missions of six of these exemplary sites, practice falls slightly short of translating that mission for learners who see the Web as a major learning and information source (Lenhart, Madden, & Hitlin, 2005).

The researcher encountered additional deficiencies relating to site features. Online reference service is surprisingly limited. While e-mail links connect seven of the sites' librarians with their users, only three sites present explicit online reference service and none of the sites yet provide their own synchronous reference service. Understandably such service might be limited by school hours. Nevertheless, only four sites in this exemplary sample link students to the larger reference services available 24/7 through their public library systems. While public and academic libraries appear to be exploring options for federated searching to improve user access to online materials, none of the sample sites appears to be moving in that direction.

A common core of items observed on sites identified as displaying effective practice would indicate that these features might be top considerations for libraries planning or maintaining sites. In spite of differences in school culture, certain

features are present in six or more of the sample sites. Table 5, 6, 7, and 8 offer a list of those features offered by more than half of the ten sites in the sample. These features are arranged under their respective Features Coding Form categories in order of their frequency.

Which features are most common in the sample? Universal features, presented by all 10 sites in the sample, are the following: OPACs, databases, search tools, reference, documentation, and contact information. Nine of the sample sites include links to other OPACs, links to news sources, online book discussions, library hours and staff information. Eight of the sites offer instructions for remote access; links to dictionaries, biographical and geographical reference tools; links to local and international news; pathfinders; and mission statements.

The researcher hopes that the lists of core features in Tables 5, 6, 7, and 8 may guide practitioners as they plan and build online presence for their school libraries and may appear a bit less intimidating than the more comprehensive taxonomy of options presented in Appendix K.

### Research Question 3

Question 3 asked, “What common organizational structures and design characteristics are presented in school library sites?” In this area, school and district differences may impact the differences among organization and design. Some schools require all departments to share a template. School and district policies may also determine whether or not a site might incorporate images or such 2.0 applications as blogs and wikis.

Most sites in the sample display connection to curriculum in their collections of databases, pathfinders for particular assignments, and promotion of reading as a life-long activity. Most display evidence of collaboration with the learning community and support of reading.

The sample sites consider users in their design elements. Some sites replace library-specific terms like OPAC with phrases like, *Find a book*. Most present no download wait issues. Most of the sites offer clear labels, embedded explanations—often mouse-overs—to describe content for their secondary school audiences. Nearly all annotate their links. In terms of navigation and organization nearly all of these exemplary sites offered legible text, consistent design, logical strategies for organizing content into understandable categories. Most offer either a site map or a site search to facilitate navigation.

Sites vary dramatically in terms of aesthetics. Though several sites are recognizing the value of including images of learners, materials, and events, the researcher found original art and media surprisingly sparse. This is particularly strange in the 2006/2007 school year—a year in which media sharing sites are widely popular.

The biggest trend in terms of strategies or characteristics is in the area of opportunities for collaboration, feedback, and involvement. While use of streamed media and wikis is limited, sites display other interactive strategies. Half of the sites include student work and use interactive forms. Use of blogs by nearly all of the sample sites, demonstrates the growing importance of Web 2.0 tools for communicating with online audiences.

#### Research Question 4

Question 4 asked, "From the models observed in sites identified as exemplary practice, can a descriptive taxonomy of features be developed?" The work of the Delphi panel and the content analysis of the 10 selected sites resulted in the development of two taxonomies that enabled the researcher to study websites. The Coding Forms (Appendixes F and G) and the aggregated results charts (Appendixes K and L) present the structure of these descriptive taxonomies. The researcher used these taxonomies effectively to examine the ten sample sites. Two additional coders used the taxonomies on three randomly selected sites. Kappa tests demonstrated acceptable levels of intercoder agreement.

Two of the Delphi panelists expressed concern that the average school librarian would not be able to maintain a site representing all the features and characteristics listed on the taxonomies. Despite the consensus reached regarding the features and characteristics that should be present on exemplary sites, these panelists suggested that the taxonomies developed in this study might overwhelm the average practitioner. Were these descriptive taxonomies actually functional? One panelist, who often presents on the topic on school library websites, shared:

The general reaction I get from most people is "Wow, I can't do all this." Many of these schools on your list have a large staff. If you publish this, I'd love to see smaller and rural schools included and also sites that are good but less extensive. Could you list the top ten essential ingredients of a web site? I'd hate to see too many people think they can never do this because the list of features is so extensive.

In terms of the staffing and support available to librarians who maintain these sites, interviews with the webmasters of the exemplary sites actually revealed a variety of staffing situations (see Table 3). For five of the sites, one librarian alone is responsible for maintaining the website. Three of the sites have only one professional on staff. All of the sites have at least one support staff member. Most libraries, especially those without support staff, will find it challenging and impractical to address all the categories and subcategories listed on in the taxonomies. Size of the student population and a librarian's teaching load are factors that impact the time professionals can devote to developing websites. Though these critical factors may present obstacles to improving online practice, it is nevertheless critical that school librarians see their websites as opportunities for scaling and delivering their practice to students who spend much of their time online.

The taxonomies developed in this study are not meant to be prescriptive. Just as they served in this content analysis, the researcher hopes that these descriptive tools will be also functional for practitioners, regardless of their staffing situation or teaching load. The taxonomies present categorized lists of features and characteristics seen as desirable by the eyes of an expert panel. Practitioners might use these tools as functional guides to determine priorities as they plan, develop or improve their sites, first selecting features most important to their own specific learning communities. Additional features might be selected later as a website grows. The lists of core features presented in Table 5, 6, 7, and 8 should serve as a more realistic guide to practitioners just beginning in this arena. The taxonomy listing site characteristics should guide librarians in determining potential communication



strategies beyond the selection of content and features. This taxonomy offers expert-suggested strategies to incorporate, as librarians work to make their sites more accessible, more responsive to learners, and more relevant to curriculum.

#### Research Question 5

Question 5 asked, “How are school library sites evolving? How do the features and services offered by exemplary sites in 2006 differ from the state-of-the-art of the randomly selected sites last studied by Clyde in 2002?”

Clyde’s (2004) longitudinal content analysis described the state-of-the-art relating to school library website practice in 2002, 1999, and 1996. Though her sample was larger, randomly selected, and crossed grade levels, a comparison with this sample of secondary exemplary nevertheless proves interesting.

Since Clyde’s last study several features—guestbooks, lists of CD-ROMs, and general Internet tutorials—appear obsolete. Basic features, like e-mail links and name of school seem hardly worth counting in a 2007 content analysis.

Clyde noted the growing importance of online subscription databases in transforming sites into “electronic information gateways” (p. 166). These databases now appear ubiquitous among effective school library websites. In fact, the sample sites appear to be expanding their database holdings into new media formats—video and e-books. It was surprising that these exemplary sites do not yet offer students and faculty access to subscription databases of audiobooks.

Some features Clyde, noticed in her two later studies, appear as site staples in this small sample. OPACs, links to the OPACs of other libraries, links to reference

sources are present in all sites in the smaller sample. Site search engines, new to Clyde's 2002 list, are present in six of the 10 sample sites.

The popularity of some features appears slow to grow based on practice demonstrated by this sample. Clyde noticed suggestion forms as new features in 2002. This interactive feature is present on fewer than half of the sample sites. The easy availability of interactive forms, online survey tools, and simple blogging strategies for soliciting user suggestions and feedback makes this absence surprising in 2006. Clyde found that none of the sites in her larger sample offered chat-based reference. This is also true of the smaller sample, where in fact fewer than half of the sites link directly to available live reference services hosted by remote institutions.

If the sites of this sample provide any major evidence of change since Clyde's last study, they reveal that sites are evolving to include 2.0 tools. While Clyde was surprised to note that no site in her sample included what she called a weblog, most of the sites in the smaller study featured some type of blog presence. One site also currently includes wikis for faculty collaboration and student writing projects. The general growth of the blogosphere (Sifry, 2006), combined with students' own facility with 2.0 tools (Lenhart & Madden, 2007), and the ease with which users can use these tools to post Web content points to even further growth in this area in the coming years.

Clyde saw major differences in her sample sites relating to size and mission. "The school library Web sites as a whole remain a diverse collection in terms of intended audience, apparent aims, content, and resources made available through them" (Clyde, p. 166). Clyde compared one-page billboard type sites with sites of

“more than 40 pages of information and many features designed to meet the needs of users” (p. 164). Though all sites in this highly selective sample present a relatively comprehensive approach, they too vary dramatically from each other in terms of size and depth of service. Several are on the small size, with approximately 20 pages representing all of their online services. Others offer far more comprehensive services with content equaling nearly 200 pages.

Clyde noted her sample’s lack of purpose, as evidenced in the absence of mission statements in 34 sites of the original 50 sites. The sites in this study appear have clearer notions of their audience. Nearly all the sites in this exemplary sample present statements of their missions and goals. These statements—most often promoting information literacy, inquiry, and reading—are largely supported by site content.

In addition to demonstrating overall gains in size, the use of Web 2.0 strategies, and greater sharing mission and goals, the smaller sample includes a number of features and characteristics not documented in any of Clyde’s studies. Among the most popular features since Clyde’s studies are pathfinders, e-book databases, online password lists to facilitate remote access to subscription databases, WebQuests and other online collaborative lessons, school-specific style manuals, and online book discussions. Most of the new features identified in this study cluster in the category of Learning and Teaching. In terms of characteristics, this smaller sample includes a number of site strategies not noticed by Clyde. These characteristics include the use of student work, images of students, and images of library events. Other new characteristics, such as embedded explanations and annotated links, relate to improving user access.

## Research Question 6

Question 6 asked, “In what ways do exemplary school library websites resemble exemplary traditional programs and translate the program elements suggested in *Information Power* (AASL and AECT, 1998): information access and delivery, learning and teaching, and program administration?”

The features suggested by the Delphi panel, as well as preliminary examinations of the websites, clearly revealed categories resembling those suggested for traditional library programs in the national guidelines. In addition, the work of the panel and the content analysis demonstrated the presence of a category relating to Books and Reading. While most features suggested by the panel were present on the actual sites, these features were represented unevenly across the sites. Although all three traditional program elements, as well as Books and Reading, are represented by the sample, nearly all the sites place the most emphasis and their greatest energies on the Information Access and Delivery sections of their sites. This trend seems inconsistent with *Information Power's* observation that school libraries have “changed their focus from collections to learning that engages students in pursuing knowledge within and beyond a formal curriculum” (AASL & AECT, 1998, p. 59). Tables 5 and 6 and Appendix K demonstrated this tendency, revealing a far greater concentration of features devoted to Information Access and Delivery than to Learning and Teaching. Despite this uneven focus, a few sites share substantial content in the critical area of Learning and Teaching, presenting instruction in information literacy, as well as instruction relating to content area learning. Nevertheless, the hopes held by

Kuhlthau (1997) for online libraries to become new zones for instructional intervention and Clyde (1997), who envisioned the primary function of these sites as educational, have not yet been realized if this exemplary sample provides any evidence. We're not there yet.

Program Administration was another area of service not fully addressed by these exemplary sites. The availability of online survey tools and interactive forms, led the researcher and several panelists to predict that exemplary sites would be using such strategies to enhance the librarian's ability to communicate, solicit feedback, schedule, promote, and manage. Few libraries share their reports and public relations materials. Few use available interactive calendar tools to share their library schedules. Few use available technology to survey users or to mine data.

It is quite possible that busy school librarians who choose to maintain websites for their learners will focus most of their efforts in creating Web spaces that address those learners directly. When prioritizing content for a library website, program administration features might not warrant the same attention as information access, learning and teaching or books and reading. Features identified in this area by the Delphi panel and the principles identified in Chapter 6 "Program Administration" of *Information Power* (AASL & AECT, 1998) serve to communicate the purpose and impact of the library program. These features may be strong tools for advocacy. Potential in the area of Program Administration is addressed by some of the sites in the sample, but that potential is far less than fully realized.

The researcher expected that a study examining exemplary websites would examine relatively even practice, and that the librarians maintaining these sites

would keep the national guidelines in mind as they built their online programs. While all the libraries studied were identified as exemplars of effective practice, great differences existed even among this limited sample of practice. The depth of available materials across the board was uneven in nearly every category.

Comparing the online programs of this sample to taxonomies based broadly on categories representing the national guidelines revealed far more focus on some areas than others. School librarians in this sample focus their online energies predominantly on information access and delivery, though several libraries sites do devote substantial space to learning and teaching. Similarly program administration was a focus for some sites and not others. Sites in this exemplary sample take a diverse approach to online service. While some sites in this study appear to work to translate the traditional program described in *Information Power* online, others do not, or they do so only partially.

### Conclusions and Implications

If our students seek and use information, communicate, and produce creative content in online spaces, school libraries must attempt to engage and meet these millennial users in their own information landscapes. Teacher-librarians have a professional mandate to ensure that students and staff “are effective users of ideas and information” (AASL & AECT, 1998, p. 6). Today’s teacher-librarian has a professional expectation to create online spaces to meet the instructional and information needs of his or her constituents. The models examined in this small sample demonstrate strategies worth emulating. They also present implications for

improving service and instruction, especially in those areas where “we aren’t there yet.”

### *Translating the Program*

Practicing teacher-librarians today are obliged to communicate their programs effectively in both face-to-face and online spaces. While this limited sample of extraordinary websites is certainly not representative of universal practice, it nevertheless provides insight into specific examples of state-of-the-art practice and offers an approach toward identifying features and characteristics school librarians might consider in creating relevant hybrid programs for 21<sup>st</sup> century learners.

While Clyde (2004) identified and listed uncategorized, individual features in her longitudinal studies, the taxonomies developed in this study categorize a full range of expert-identified potential content. They demonstrate strategies for translating the whole library program in the areas of Information Access and Delivery, Learning and Teaching, Books and Reading, and Program Administration. The lists of most prevalent features in Tables 5, 6, 7, and 8 serve as a shorthand guide to what exemplary websites consider most essential in terms of online program. The evidence presented in these tables present a starting point for basic online service, access to such features as: databases, OPACs, reference sources, search tools, pathfinders, news sources, documentation instruction, online book discussions, contact information, and mission statements.

### *Library Websites and Instruction*

The researcher discovered major discrepancies between the features the Delphi panel expected to be present in exemplary sites and what actually existed in

practice. These discrepancies are especially evident in the absence of content in the category of Learning and Teaching. The limited content observed in this area of the features taxonomy is inconsistent with the instructional focus represented by Information Power (AASL & AECT, 1998). It is also inconsistent with the predictions of major school library researchers. Kuhlthau (1997, 1999) saw library websites as constructivist environments, as new zones of intervention for guiding learners and customizing instruction. Clyde (1997) believed that the primary purpose of the library homepage would be instructional. If teacher-librarians are truly to function as *teacher-librarians*, this limited focus on instruction online must be addressed and remedied by practitioners and by pre-service institutions. The Learning and Teaching category of the features taxonomy presents a starting point for exploring the potential for effective hybrid instruction. Teacher-librarians would also benefit by examining effective practice in Web-based instruction outside the library world.

#### *Website Design*

A clear message from this study is that librarians could benefit from guidance in site design, specifically in making sites more accessible and engaging. All of the sites in this small sample failed the University of Toronto's accessibility checker (ATRC, 2007). Only two of the sites demonstrated awareness of Kupersmith's (2007) research on understandable language. Despite the popularity of image and media sharing online, few of the sample sites incorporate original art and media to engage and communicate with young users. Design is another area worth exploring by pre-service institutions and one for practicing librarians to explore to improve their hybrid practice.



### *Support from Vendors and Larger Institutions*

Librarians maintaining the sites in this small sample have at least one support staff member. Some are in libraries staffed by more than one professional (see Table 3). Delphi panelists expressed concern that less well-staffed libraries would struggle to create and maintain online programs based on the taxonomies they themselves worked to create. Library vendors and larger institutions—for instance, state libraries, or regional consortia—would provide a major service to their clients and constituents by exploring support in the form of website templates. Such templates could easily be created based on the taxonomies of this study. They could include a variety of interactive Web 2.0 tools, as well as flexible *widgets*—modular windows that provide a variety of functions to embed in websites without knowledge of HTML code. Such support would address issues of uneven practice and reduce the technology learning curve for busy professionals. These tools would allow practitioners to select features that best meet their own users' needs, and to easily customize their online presence.

### *Preparing Teacher-Librarians for Hybrid Practice*

All of these implications point to an overriding need. Institutions preparing teacher-librarians have an obligation to ensure their students are prepared to meet their meet young learners in both face-to-face and online information landscapes. The taxonomies developed in this study serve as starting points for pre-service class discussion and guides for pre-service students as they prepare authentic projects that ready them for meeting the needs of K-12 learners in hybrid learning environments.

Such preparation would also allow teacher-librarians to function as information technology leaders for K-12 faculty.

### *Establishing Models and Quality Indicators*

The sample in this study points to effective, if uneven, design models. The ten sample sites display great variety in their content and levels of service. These differences emphasize the need to establish models of effective practice and to develop tools to plan and evaluate online service. We can use the tools and taxonomies developed in this study to begin develop quality indicators for the purposes of assessing virtual libraries by how effectively they present the library program for 21<sup>st</sup> century learners. The researcher hopes that this examination of expert expectations and this analysis of exemplary sites will provide a snapshot of current practice and may suggest practical strategies for building and improving online library service to youth.

### Implications for Future Research

This Delphi panel and content analysis study revealed potential for several areas of additional research:

1. Expand the sample: Because it would be difficult to prescribe specific guidelines for practice based on the findings of this small sample, it would be valuable to apply the hierarchies of the coding instruments to a wider group of sites, increasing the scope and the diversity of the sample.
2. Study the sites longitudinally: It would be interesting to see how this sample of exemplary sites evolves, especially with changes in the information landscape, and with upcoming new standards and guidelines documents.

3. Quantify and qualify school library website service: This study's results imply that such features as databases, OPACs, and pathfinders are common to many school library websites. Despite the commonalities discovered, large differences exist among the institutions. It might be useful to adapt the taxonomies so that they help to quantify the levels of inclusion of the features. For instance, how many pages, or how much space is devoted to a library's instructional content, or more specifically to its instruction relating to documentation? How many pathfinders exist and how connected are these pathfinders to instruction? What level of instruction do these tools offer beyond links? Differences in holdings and strategies among these school libraries sites are wide. Future research might investigate the quantity and quality website features.

4. Examine the relationship between school culture and school library websites: Questions relate to cultural differences in the institutions beyond those observable by demographic data. How does faculty acceptance of school library websites influence their growth and use? How much emphasis do faculty members place on the use of online library resources and library guidance? How do librarians promote site use and acceptance into school culture? And importantly, what level of priority does the librarian him or herself place on this aspect of professional practice?

5. Explore the preparation of the school librarian for communicating online: To what extent do the abilities, the training, the interests, and the priorities of the

library professionals who create school library sites determine differences in approach, content, site depth and quality? How do these professionals retool?

6. Examine the continuing impact of Web 2.0: In 2007 it would be difficult to ignore the changes in the landscape and tools of the Web. This study displayed clear evidence of a shift toward adoption of Web 2.0 tools. To what extent will school libraries ultimately adopt these tools? Blogs appear to be a new, primarily supplementary, staple of school library sites. Will these and other read/write Web activities increase? Will school library websites exhibit more student ownership through greater levels of interactivity and the incorporation of student-produced media? It would be interesting to observe this small sample longitudinally to examine the influence of new technologies and tools.

7. Explore user behavior on and their response to school library sites: Additional questions relate to user behavior and satisfaction relating to these sites. Questions addressed in the Web-based pilot survey of students might be applied to this sample of exemplary sites. How do students use these sites? Are they perceived as valuable? What features and characteristics of these sites are most valuable to students? Which features do students use most? What can we learn by examining patterns of use? Are students using these sites primarily during school, after school, at night, or on weekends? To what degree do faculty members endorse and point students to the sites? What would students suggest if they could improve their school library websites? A future study might use a Delphi panel of teen library website

users to describe the features and characteristics they find most critical.

Such a panel might also identify websites they felt represented effective practice.

8. Examine the long tail: This small sample of 10 sites, selected from among 68 ignores a rather long tail of lower-ranked nominations. If Delphi panelists found worthy features and characteristics in all of their nominations, what elements of exemplary practice were present in those lower-ranked sites not examined?

9. Track progress in presenting school library service online: While there has been some evidence of change since Clyde's (2004) final study, in this period of dramatic change and vast acceptance of the Web as a space for learning of all types, why has progress not been more dramatic? Why are school library websites not there yet?

## APPENDIX A

### *Preliminary E-mail to Delphi Panel Candidates*

#### Secondary School Library Websites:

#### A Content Analysis Study

Dear Colleague,

I am writing to enlist your help in my doctoral studies at the University of North Texas. I have identified you as an expert in the area of school library websites and I hope to benefit from the pooled judgment of you and several other expert colleagues.

Many of you already know that my dissertation will focus on exemplary school library websites. The next phase of my study involves a content analysis. I plan to use a modified Delphi approach to identify exemplary sites and to develop criteria for examining them.

Using Clyde's (Clyde, 2004) 2002 study as a baseline, I will be analyzing school library interfaces to better understand their evolution, to note trends, and to attempt to develop models for professionals in the field.

I hope you will agree to help by answering the following questions and by allowing me to get back to you twice more to respond to the data I gather, tally, and cluster from your fellow experts.

1. Please list the names (and URLs, if possible) of up to ten secondary school library websites that you consider exemplary.

2. Please list 5-10 characteristics of an exemplary school library website you consider the most important.

Please respond by e-mail to: [joyce\\_valenza@sdst.org](mailto:joyce_valenza@sdst.org). Please also feel free to contact me should you need further information.

Work: 215-233-6030 Ext. 2502

Home: 215-576-0934

Cell: 215-518-1846

Thank you very much for any help you would be willing to offer.

Joyce Valenza

Clyde, L. A. (2004). School library Web sites: 1996-2002. *The Electronic Library*, 22(2), 158-167.

## APPENDIX B

### *Potential and Final Delphi Panelists*

June Abbas	Holly Gunn
Debbie Abilock	Will Haines
Mary Alice Anderson*	Christopher Harris*
Mary Ann Bell	Francis Jacobson Harris*
Pam Berger*	Sandra Hughes Hassell *
Linda Braun*	Doug Johnson*
Daniel Callison	Odin Jurkowski *
Mary K. Chelton	Jodi Kearns
Audrey Church *	Carol Kuhlthau
Linda Z. Cooper *	Annette Lamb*
Kathleen Craver*	Margaret Lincoln*
Gail Dickinson	David Loertscher*
Eliza Dresang	Deb Logan*
Allison Druin	Peter Milbury*
Robert Eiffert *	Delia Neuman
Nancy Everhart*	Kathy Schrock*
Mary Ann Fitzgerald*	Ruth Small
Daniel Fuller *	Ann Carlson Weeks
Melissa Gross	Alice Yucht*

\* Names noted with an asterisk (\*) agreed to serve as Delphi participants



APPENDIX C

*Nominated Sample Sites with Weighted Points*

(Listed By Number of Nominations)

School Library Website	Times nominated	Weighted points
Springfield	14	139*
Uni	9	108*
Lawrence	6	34*
Greece Athena	3	60*
Hunterdon Central	3	42*
Naples	3	22
Northfield Mount Herman School	3	48*
Redwood Bessie Chin	3	11
Chico	2	17
Great Neck South High School Library	2	
Mankato East	2	
National Cathedral	2	9
New Trier High School Library Home Page	2	36*
Oregon School Library Information System	2	4
Scarsdale High School Library	2	2
Walter Johnson High School Media Center	2	20
Walter Reed Middle School	2	4
Albuquerque Academy	1	
Arlington New York	1	
Barrington High School	1	
Bayard Rustin High School for the Humanities	1	6
Blue Valley North High School Library	1	
Cambria-Frieslan	1	
Carmel High Library	1	9
Carmel Middle School Library	1	5
Carthage High School Media Center	1	33*
Chiddix Junior High School IMC	1	4
Community High School District 94– LRC	1	2
DGN Library— Downers Grove, IL	1	
Dr. Charles Best Secondary School Library	1	21
East Chapel Hill	1	5
East Woods	1	4
East Side Middle School Library	1	9
El Rancho Charter	1	
Fort Worth Country Day School	1	

Glennie IRC		27*
Hamilton Union High School Library Home Page		
Harry Ainlay High School Library		6
Lee's Summit North		
Lee's Summit West		
Limestone Community High School Media Center		
Livingston High School		1
Manchester High School Library Media Center		
Martin Felton Library - Colegio Bolivar, Cali, Colombia		
Masterman School Library		14
Menomenie Middle School		
Mission High School		
Monte Vista High School Library		
Newton North		46*
P.L. Duffy Resource Centre		
Paideia School Library		
Peshtigo, Wisconsin School Web Site		
St. Clair Michigan Middle School Media Center		
St Pius X SRC Main		5
5Scarsdale Middle School		9
Scotch College Library		16
Southport School		
Tenafly High School—Lalor Library		
Thacher School		
Thomas Dale		10
Walnut Hills High School		5
Wazeta East Middle School		
Western Albemarle High School		1
Westminster School		
Whippany Park High School		4
Warmego High School Library Home		
Winona Middle School		
York Mills CI School Library		2

*Note.* Asterisk (\*) denotes that website became part of the 10-site sample.

## APPENDIX D

### *E-mail Letter to School Library Webmasters*

#### Secondary School Library Websites: A Content Analysis Study

Dear Colleague,

Your school library website was identified by a Delphi panel of experts as a model of exemplary practice. My doctoral work at the University of North Texas involves analyzing examples of effective practice with the goal of developing a descriptive taxonomy of the features and characteristics present in the sample sites. I am hoping you might be able to help me complete my study by answering a few questions that would help me better understand the background of these sites.

1. What grade level of students does your website serve?
2. How many students does your site (school) serve?
3. Is your school public or private/independent (other)?
4. Would your school be described as urban, suburban or rural?
5. How many professionals are on your staff?
6. How many support workers are on your staff?
7. Who is responsible for maintaining the site?
8. How many hours would you estimate that individual spends working on the site in an average week?
9. What software or web-based application do you use for maintaining the site?
10. What are your plans for the site for the next couple of years?

I am grateful for any help you might be able to offer.

Joyce

Joyce Kasman Valenza, Doctoral candidate UNT SLIS

Springfield Township HS Library

Phone: 215-233-6030 Ext. 2502

Fax: 215-836-5237

Cell: 215-518-1846

Library website: <http://mciu.org/~spjvweb>

Blog: <http://joycevalenza.edublogs.org>

## APPENDIX E

### *E-mail Questionnaire Responses from Webmasters*

#### 1. What grade level of students does your website serve?

Carthage: 10-12

Glennie: Years 1-12

Greece Athena: Grades 6-8

Hunterdon: 9-12

Lawrence 10-12

New Trier: 9-12

Newton North: 9-12

Northfield Mount Hermon: 9-12

Springfield: 8-12

Uni: 8 – 12

#### 2. How many students does your site (school) serve?

Carthage: 854

Glennie: 800

Greece Athena: 3500

Hunterdon: 3000

Lawrence: 1200

New Trier: 4200

Newton North: 1800

Northfield Mount Hermon: 626

Springfield: 850

Uni: 306

3. Is your school public or private/independent (other)?

Carthage: Public

Glennie: Independent

Greece Athena: Public

Hunterdon: Public

Lawrence: Public

New Trier: Public

Newton North: Private

Northfield Mount Hermon: Independent

Springfield: Public

Uni: Public

4. Would your school best be described as urban, suburban or rural?

Carthage: Rural

Glennie: Suburban

Greece Athena: Suburban

Hunterdon: Suburban

Lawrence: Suburban

New Trier: Suburban

Newton North: Urban. Long ago Newton was considered suburban, but nowadays we are generally regarded as part of greater Boston.

Northfield Mount Hermon: Rural

Springfield: Suburban

Uni: Urban

5. How many professionals are on your staff?

Carthage: 1

Glennie: 2

Greece Athena: 2 (1 high school librarian, 1 middle school)

Hunterdon: 3

Lawrence: 2

New Trier: Between our two campuses, we have nine librarians. Because of adviser responsibilities, it works out to 8.0 full-time equivalents. We have three librarians at our freshman campus, and six at our 10-12 campus. We also have a part-timer who works evening hours (3-6)

Newton North: 3

Northfield Mount Hermon: 4

Springfield: 1

Uni: 1

6. How many support workers are on your staff?

Carthage: 1

Glennie: 1 full time, 2 part time

Greece Athena: 2 teaching assistants full time, one for each school

Hunterdon: 3

Lawrence: 1 and student assistants

New Trier: 11-5 at the freshman campus, 6 at the 10-12 campus

Newton North: 1

Northfield Mount Hermon: 2

Springfield: 2

Uni:1.5

7. Who is responsible for maintaining the site?

Carthage: Koral and Nancy (webmaster and librarian)

Glennie: Librarian, Sue Crocombe

Greece Athena: Both school librarians

Hunterdon: three librarians

Lawrence: Librarian, Martha Oldham

New Trier: It's mostly done by the librarians, but we can call on our school webmaster for help with some things.

Newton North: Librarian, Kevin McGrath—I maintain the design, programming and organization. The three of us create online pathfinders. One of us maintains the Looking for a Good Book blog that is part of the front page.

Northfield: Associate Director, Pam Allan

Springfield: Librarian, Joyce Valenza

Uni: Frances Harris, with help from 50% time graduate assistant

8. How many hours would you estimate that individual spends working on the site in an average week?

Carthage: Unfortunately, we do not work on it weekly, but it would probably average out to about an hour per week.



Glennie: Varies. Some weeks it will be 20 hours, other weeks none. I guess it would average out at about 3hours. (Most of the development is done in my own time)

Greece Athena: 2 hours

Hunterdon: 12-15

Lawrence: 10 hours

New Trier: It varies according to the time of year—probably between 2-3

Newton North: I spend about 5 hrs / week on average. During times of upgrades or redesign it may be more.

Northfield Mount Hermon: 2—5

Springfield: 2

Uni: 5, with GREAT variability, and not counting time spent writing entries for my blog or moderating the book discussion forum. If I count those last activities, it's probably more like 10. In other words, the basic website is relatively stable and even static. When class projects come up or I am creating content, then more time is involved.

9. What software or web-based application do you use for maintaining the site?

Carthage: Dreamweaver and FrontPage

Glennie: Dreamweaver

Greece Athena: FrontPage

Hunterdon: Manilla

Lawrence: Dreamweaver

New Trier: Dreamweaver

Newton North: Dreamweaver 8.0 & Photoshop on a Mac

Northfield Mount Hermon: Site was built using FrontPage and is now maintained with Macromedia Contribute.

Springfield: FrontPage, Nvu

Uni: Dreamweaver

10. What are your plans for the site for the next couple of years?

Carthage: I would like for the site to be our students' first stop in their research process. I plan on keeping it very straight-forward—nothing too fancy. Useful links for student and teacher research. Content will be driven by student/teacher needs.

Glennie: About to launch a redesign to update the look and feel, make it easier to update and modify the way information is presented. I hope to expand research help but time to think is the key factor in developing new content (as opposed to adding to what is already there). The Junior Years section also needs redesign. It is possible that the whole site will disappear from public view in the next couple of years as it might be easier to transfer the content to our new intranet.

Greece Athena: Adding tutorials (PowerPoint) about available databases.

Continue to create teacher projects. Update general free resource links.

Expand various blog topics.

Hunterdon: Make it more interactive; perhaps starting with student reading recommendations

Lawrence: Change the background of website ... for easier reading

New Trier: We are moving our OPAC to Sirsi Rooms and have begun working on the content for that.

Newton North: We are currently embedding dynamic, 2.0 elements to the site (RSS feeds and library schedule). We have been experimenting with wikis and blogs with class assignments and plan to add these and other examples of student research onto the site.

Northfield Mount Hermon: Hmmm. We take a look at our website once a year and make decisions about any major revisions. Haven't done that yet this year. Last year I did a usability study of our website and came away feeling as though it only needed minor tweaking. We also maintain a blog and I can comment on future plans for that! We would like to include more student participation and have just begun really making headway. If you are interested, our blog address is: <http://nmhlibrary.typepad.com/>

Uni: We are in the process of converting the entire back end of the site to CSS (a student is helping with this). I'm not an html whiz or even a Dreamweaver whiz, and the site is far too easy to break. I'm thinking about using a photo sharing site instead of maintaining our html-based photo gallery. We'll probably be collaborating with teachers as they develop Web 2.0-based projects, either hosting or linking to those efforts. The blog and the book discussion forum will continue. I will continue to find the magical best way to feature and promote our databases.

## APPENDIX F

### Features Coding Form/Taxonomy

Coder:

Date:

Website Name:

Website URL:

<b>I. Information Access and Delivery</b>						
<b>Feature</b>	<b>Yes</b>	<b>No</b>	<b>Alternate label</b>	<b>Comments Examples</b>	<b>Homepage link?</b>	<b>Secondary page link?</b>
A. School library OPAC—online library catalog						
B. Links to other libraries / OPACS (How many?)			Number:			
1. Other schools in district/system						
2. Local university						
3. Public Library						
4. Interlibrary loan database (state?)						
C. Pathfinders: (How many?)			Number:			
D. Federated search tools (Tools that search across databases, OPAC, Web) List name of tool.						
E. Ask-a-librarian, online e-mail reference, help, chat reference links						
1. Originating from school library media specialist						
2. Link to remote reference service						
F. Subscription Databases / e-books / video services (How many?)			Number:			
1. Annotated?						
2. State purchased—links to (Mark with NA if unable to distinguish)						
3. Library/school district purchased (Mark with NA if unable to)						

distinguish)						
4. Subscription e-book collections						
5. Subscription digital audio book collections						
6. Subscription video collections						
7. Instructions for remote access—passwords						
G. Journal / Periodical List (for online and offline holdings)						
H. Links to school information / homepage						
I. Link to district information /homepages						
J. Links to teacher Web pages/sites						
K. Links free Web search tools Annotated—What does each do?						
L. Links to Web reference sources and portals (free Web, subscription, e-book)						
1. Links to online dictionaries						
2. Links to online encyclopedia						
3. Links to almanacs						
4. Links to biographical reference						
5. Links to online atlases, maps, geographical tools						
6. Links to other online reference (Describe)						
M. Links to news sources						
1. RSS feeds (relevant news sources automatically pushed to site by subscription)						
2. Local news						
3. National news						
4. International news						
N. College planning information (Describe)						

O. Career planning information (Describe)						
P. Access to personal help information to meet developmental needs of teens: dieting; sexual harassment; health and beauty tips; safety tips and tutorials. Describe areas of help.						
Q. Links to resources for Web development						
R. Links to copyright-friendly media						
S. Links to open source resources						
T. Other? Items not present in original list						
<b>II. Learning and teaching</b>						
<i>Feature</i>	<i>Yes</i>	<i>No</i>	<i>Alternate label</i>	<i>Comments Examples</i>	<i>Homepage link?</i>	<i>Secondary page link?</i>
A. Information literacy instruction (tools, tutorials, guides helping both teachers and students to be more efficient learners: handouts, lessons, tutorials, print, video, PowerPoints, PDFs, etc.)						
1. Overview of information seeking process, Big Six or other model						
2. Questioning and thesis development guidance						
3. Searching guidance						
4. Evaluation guidance						
5. Information ethics guidance / documentation advice / anti-plagiarism/ academic integrity guidelines						
a. Citation generator						
b. School-specific style manual, other style manuals (students taking college courses, etc.)						

c. Copyright guidelines						
d. Plagiarism prevention or checking tools: Turnitin.com, etc. (List types)						
6. Synthesis tools with process guidance. Organizers, notetaking tools, etc.						
7. Links to writing/revising guides. (College OWLs—online writing labs)						
B. Study process guides						
1. Study tips						
2. Homework guides						
3. Research project guides						
4. Standardized test preparation and practice. Include state and local exams, not ACT and SAT preparation.						
C. General library orientation and tour						
1. Library floor plan map?						
D. Curriculum map						
E. Student work or involvement: Student writing, student art, media, etc.						
F. Learning activities—collaborative teachers/teacher-librarian assignments, WebQuests						
G. Technology how-tos						
H. Drop box, peer review facilitation (MyDropBox, wikis, etc)						

I.Opportunities and guidelines for learning through social networking—wikis, blogs, etc.						
J.Professional resources for teachers, administrators, and librarians						
1.Handouts, forms						
2.Lesson creation tools and teaching resources						
3.Planning form to submit assignment information						
4.Links to learning standards						
5.Rubric resources						
6.Content related to professional development and school improvement—journals, research, activities						
7.Links to research on how libraries impact student achievement						
8.Opportunities and guidelines for professional social networking—wikis, blogs, etc.						
9.Library services for faculty						
10.Copyright information for faculty						
11.Resources for librarians						
12.Other resources for faculty						
K.Resources for parents						
1.Reading information (reading lists including summer, state, etc.)						
2.How to help learners with homework and research						
3.Internet safety						



information						
4.Links to research on how libraries impact student achievement						
5.Volunteer opportunities						
6.Other parent resources						
<b>III. Books and Reading : Readers Advisory / Recommended reading/viewing (lists)</b>						
<i>Feature</i>	<i>Yes</i>	<i>No</i>	<i>Alternate label</i>	<i>Comments Examples</i>	<i>Homepage link?</i>	<i>Secondary page link?</i>
A.New materials lists						
B.Class-specific reading lists (other than summer)						
C.Summer reading lists						
D.Award lists						
E.Support of school/library reading programs. Example: Accelerated Reader lists (List type), School Book Club						
F.Online book discussions, digital book talks (blogs, threaded discussion, wiki, podcasts, video etc.)						
G.Links to databases like <i>Novelist, Teaching Books</i> (List)						
H.Student-created lists, reviews, etc. (with blogs, wikis, podcasts)						
I.Reading contests (Describe)						
J.Coordination of reading program with book-related events going on at public library and community (Describe type of event)						
K.Other? Items						

not present in original list						
<b>IV. Program Administration</b>						
<i>Feature</i>	<i>Yes</i>	<i>No</i>	<i>Alternate Label</i>	<i>Comments Examples</i>	<i>Homepage Link?</i>	<i>Secondary Page Link</i>
A. General information about the library						
1. Contact information (Library name, librarian name, e-mail, phone)						
2. District name and school address						
3. Hours						
4. Mission statement						
5. Staff information— pictures, names, roles						
6. Welcome message from librarian						
7. Library FAQs						
8. Virtual museum (relating to school library or school)						
B. Librarian or teacher-organized work related to school improvement or professional development activities.						
C. Information about library resources (copier, scanners, digital cameras, printers)						
D. Library policies— materials selection, AUP, copyright, video, etc (List type)						
E. Library Schedule / Calendar						
F. Library news/newsletter						

(could be in blog, pdf, doc, other form)						
G. Available equipment for loan						
H. Library promotional materials / advocacy—posters, bookmarks, awards, citations, in the news, etc.						
I. Reports—Annual, monthly, quarterly, etc.						
J. Resource / materials suggestion forms						
K. Surveys—user, satisfaction, reading (List type)						
L. Expectations of users—rules for behavior, procedures, fines, etc.						
M. Student volunteers / workers						
N. Special library events—not calendar-type information						
O. Data mining features—helping to gauge the impact the LMC.						
P. Other? Items not present in original list						

APPENDIX G

*Characteristics Coding Form/Taxonomy*

Coder:

Date:

Website Name:

Website URL:

Characteristic	Yes	No	Label /Comments / Evidence
<b>I. Connected to School / Curriculum / Learning</b>			
A. Age and grade appropriate— Evidence that site is designed for the ages it serves. Point to language or images that to speak to secondary school students.			
B.Connected to or relating to curriculum (links to, discussion of, resources)			
C.Evidence of teacher collaboration—lessons, booklists, pathfinders, etc. Access to student assignments that require library support and resources. Record learning materials attributed to or signed by both the librarian and classroom teacher(s). Record evidence of classroom assignments that appear on library site, requiring use of library resources.			
D.Promotes (life-long) reading; encourages family-based, beyond-school reading through interactive content, booklists, etc.			
E. Other characteristics relating to school / curricular relevance			
<b>II. Navigation / Organization</b>			
Characteristic	Yes	No	Label /Comments / Evidence
<b>A. Readable by all students/users.</b>			
1.Text is written at student audience level. Avoids use of jargon—OPAC, vendor names, etc. Record libraryese terms. Spelling and grammar are correct.			
2.Text is legible. Font readable and consistent.			
3. Printable—no problems with dark backgrounds, etc.			
B.Embedded explanations— rollovers, pop-ups, other text clues.			
C.Links annotated—customized guidance to meet student needs.			

D. Intelligible structure. Links and features organized. Describe strategies for organizing information on homepage. (Examples: Use of tabs, frames, bulleted lists, icons for organization)			
1.Are any graphic metaphors used on homepage—for instance, image of library, desk, etc.			
2. Record use of tabs, titles, frames, icons, bulleted lists, image map for organization)			
E.Categories clearly labeled –age-appropriate terminology, using language that is meaningful to the students			
F.Consistent design, navigation, layout, page titling, color, to promote ease of use. Presence of branding to represent school, school district, or library. Homepage has clearly-designed layout. Second and third-level pages display school & library names and logos.			
G. Important stuff front and center. Catalog, databases, style sheet, etc. accessible—items students most need no more than 2 or 3 clicks away. No extra long pages. Little need to scroll. No horizontal scroll			
H. Attention to W3C accessibility standardsAWeb Accessibility Checker. Use ATRC Accessibility Checker (University of Toronto) as test: <a href="http://checker.atrc.utoronto.ca/index.html">http://checker.atrc.utoronto.ca/index.html</a>			
I. Fast—minimal download time Images are optimized; not of a size requires lengthy wait for download. Note long wait times with number of seconds/minutes.			
J. Site map, index offering overview of site—hierarchical visual model or outline of the pages of the website			
K. Site search tool—search engine or search box that limits its search to the website			
L. Links on second and third-level pages to school homepage, library homepage			
M. Other characteristics relating to navigation/organization			

III. Aesthetic qualities / Appeal for audience			
Characteristic	Yes	No	Label /Comments/ Evidence
A. Attractive, age-appropriate, professional appearance			
B. Use of graphics and photos to enhance mission of the site			
1. Images of students			
2. Images of materials			
3. Images of library events, activities			
4. Original art			
5. Clip art			
6. Animations and video elements			
C. Use of original design?			
D. Does the site use a template or use of CMS –content management system?			
E. Color is used attractively and effectively to facilitate navigation. Text can be read with color choices			
F. Has personality / presence / friendliness/sense of humor. How does this happen?			
G. Other aesthetic characteristics			
IV. Interactive elements / communication tools			
Characteristic	Yes	No	Label /Comments / Evidence
A. Opportunities for student collaboration, feedback, involvement			
1. Wikis?			
2. Blogs?			
3. Podcasts?			
4. Forums			
5. Slideshows (Flickr, PowerPoint presentations)			
6. Video tools or other multimedia elements?			
7. Interactive forms			
8. Inclusion of student work			
B. Overall Web 2.0 approach—Is the site itself a wiki or a blog? Does it use a content management system?			
C. Opportunities for personalization / opportunities to push content			
V. Freshness: Regular updates and revisions—including new content to keep users coming back.			
A. Page updates, postings show currency and recent attention to making sure content that requires update is accurate, links work.			
B. Speaks current visual language. (Doesn't look like a website created in1996.)			

## APPENDIX H

### *Codebook for Library Website Study—Features*

- I. Information Access and Delivery: ensures physical and intellectual access to information.
  - A. School OPACS (online public access catalogs)—which might include books, media, e-books, audiobooks, websites
  - B. Links to other libraries / OPACS from other libraries
    - 1. Other schools in district/system
    - 2. Local college or university libraries and OPACs
    - 3. Public libraries and OPACs
    - 4. Interlibrary loan links (links to services where users can request and borrow items from other libraries)
  - C. Pathfinders : Web documents that serve as customized guides to research on a specific topic, for a specific course or assignment, or for a particular information format or task—for example: primary sources, streaming video). Electronic pathfinders are designed to lead students or users to high quality sources in various information formats. They gather together the print resources of the library, as well as free Web resources and subscription databases. Usually created by librarians, they can include collaboration from teachers and students. Electronic pathfinders are designed to lead students or other users to high quality sources in various information formats and might include the following: call numbers or other advice in finding materials in the physical collection, as well as links to

subscription databases, websites, primary sources, keyword advice, relevant RSS feeds, etc. According to *ODLIS: Online Dictionary of Library and Information Science*, a pathfinder is “a subject bibliography designed to lead the user through the process of researching a specific topic, or any topic in a given field or discipline, usually in a systematic, step-by-step way, making use of the best finding tools the library has to offer. Pathfinders may be printed or available online” (Reitz, 2006).

- D. Federated search tools (Tools that search across multiple databases, OPACs, search engines, the library website)
- ODLIS* (Reitz, 2006) defines a *federated search* as: A search for information using software designed to query multiple networked information resources via a single interface. (Delphi consensus: We may not be there yet in the K12 technology market)
- E. Ask-a-librarian, e-mail or chat reference service (This might originate from school library media specialist or be a link to a remote reference service.) Online services that help to answer questions of members of the school community. List which type? Who provides service? If the service is not labeled as *ask-a-librarian* or *e-mail reference*, respond as to whether the e-mail address of the librarian is easy to locate.
1. Originating from school librarian
  2. Link remote service(s), perhaps from large public system.
- F. Subscription databases—These services are paid for by the school, school district or state, or other organization and provide reference, periodical, e-



book and other types of curricular content. Note the presence of annotations. Are they in plain English? Learners need to understand what each does. Note how these databases are arranged and organized. By vendor? By subject? Alphabetically?

1. Are they annotated? Does the site include descriptions relating to topic, scope, and coverage?

2. Are they state (province, regionally) purchased? (Mark NA unable to distinguish)

3. Are they library/school district purchased? (Mark with NA if unable to distinguish)

4. Subscription e-books. Does the library offer text or pdf-based databases composed of e-reference and other e-books in online format? (Examples include: netLibrary, Gale's Virtual Reference Desk.)

5. Subscription digital audio-book collections. Does the library offer collections of downloadable audiobooks from such services as Audible.com, Recorded Books, Overdrive, etc.?

6. Subscription video collections. Does the library offer subscription databases comprised of video resources? (United Streaming, Safari Montage, etc.)

7. Instructions for remote access—passwords. Does the site offer descriptions of how users can access databases when they are not in school. Note how this is handled.

G. Journal / Periodical List (for online and offline magazine holdings. Usually

will include dates.)

- H. Links to school / information homepages
- I. Links to district/ system information homepages (Record as NA if not applicable, for instance, a single, independent school)
- J. Links to teachers' Web pages/sites—links to other pages designed to help students with curricular work but not necessarily maintained in collaboration with librarian.
- K. Links to free Web search tools (annotated: What does each do to meet research needs?) Are they annotated or described or organized?
- L. Links to Web reference sources (section devoted to either free Web or subscription sources or a combination of both)
  - 1. Online dictionaries
  - 2. Links to online encyclopedias
  - 3. Links to almanacs
  - 4. Links to biographical reference
  - 5. Links to online atlases, maps, geographical tools
  - 6. Links to other online reference
- M. Links to news sources –include print, radio, television, other media
  - 1. RSS feeds—(Really Simple Syndication—format for automatically distributing news, headlines, and other regularly updated content on the Web to the site)
  - 2. Local news—township, county, state, regional
  - 3. National news—links to nationally known news—For instance, *New*

*York Times, Washington Post, USA Today, CNN*, and major broadcasting networks

4. International news—global perspective—links to print and media sources originating outside the United States. For school outside the United States, or links to news outside the country of the school

N. College planning information (Describe.) This content may include directories, interactive search tools, ACT and SAT information and preparation resources

O. Career planning information—This content may include career selection sources, career aptitude inventories, Occupational Outlook Handbook, resources relating to resumes, cover letters, etc.

(Describe.)

P. Access to personal information to meet developmental needs of teens: dieting; sexual harassment; health and beauty tips; safety tips and tutorials.

Describe.

Q. Links to resources for Web development—Web hosting sites, blogging and wiki software, etc.

R. Links to copyright-friendly media—Resources like Creative Commons, media sharing sites

S. Links to open source resources and free Web-based applications. These free applications, for which source code is readily available, may be downloaded in place of costly commercial applications. (For example: OpenOffice to substitute for Microsoft Office, Nvu to substitute for

DreamWeaver or FrontPage.)

T. Other—items not mentioned in the original chart. List and describe.

## II. Learning and Teaching:

A. Information literacy instruction (content related to helping both teachers and students to be more efficient learners: handouts, lessons, tutorials, print, video, Powerpoints, pdf, etc.)

1. Overview of information-seeking process, Big Six or other model

2. Questioning and thesis development guidance. Describe

3. Searching guidance. (Help or instruction for more effectively finding information in print, search tools, databases.) Describe.

4. Evaluation guidance. (Help or instruction for selecting appropriate, quality information) Describe.

5. Information ethics guidance / documentation guidance / anti-plagiarism advice / academic integrity guidelines (Help or instruction for using and presenting information ethically) Describe.

a. Citation generator. (Interactive electronic documentation tool. NoodleTools, Citation Machine, etc.)

b. School-specific style manual, other style manuals (students taking college courses, etc.)

c. Copyright guidelines for using print and media. Describe.

d. Plagiarism prevention tools (Automated tools for project submission that assess originality.) Turnitin.com, etc. Which? Describe.

6. Synthesis tools—organizers and notetaking tools—concept mapping or

outlining tools for creating projects. Examples: debate, speech, formal paper.

7. Links to writing/revising guides. (College OWLs—online writing laboratories? Which? Describe.)

B. Study/research process guides, tools, organizers, etc.

1. Study tips

2. Homework guides

3. Research project guides

4. Standardized test preparation and practice. Include state and local exams, not ACT and SAT preparation.

C. General library orientations and tours—PowerPoints, iMovie, use of screencasts, floor plan, etc.

D. Curriculum map – document that describes for what *is* taught to *all* students and the basic sequence for delivering that content, units of study, etc.

E. Student work or involvement: Student writing, student art, media, etc.

F. Learning activities Links to teachers' / teacher-librarian assignments and WebQuests for specific assignments (collaboratively developed) These differ from Pathfinders in that they describe a particular assignment. In addition to resources, or strategies for information access, they describe an assignment, its tasks and assessments.

G. Technology how-tos—content relating to how to more effectively use hardware and software.

H. Drop box, peer review facilitation—for submission of student work (MyDropBox,

etc)

I. Opportunities and guidelines for learning through social networking—wikis, blogs, forums, etc.

J. Professional resources for teachers and administrators

1. Handouts, forms
2. Lesson creation tools and teaching resources
3. Planning form to submit assignment information
4. Links to learning standards, either in the content areas or the process standards (ISTE, AASL)
5. Rubric resources: tools to help create assessments for student projects
6. Content related to professional development and school improvement—journals, research, activities
7. Links to research summaries on how libraries impact student achievement. (Include material like Scholastic’s research documents, Lance state reports, Todd and Kuhlthau’s Ohio Study.)
8. Opportunities and guidelines for social networking—wikis, blogs, etc.
9. Library services for faculty—explanations of how the library can partner with teachers and support classroom teaching.
10. Copyright information for faculty
11. Resources for librarians
12. Other resources for faculty

K. Resources for parents

1. Reading information (reading lists including summer, state, etc.)

2. How to help learners with homework and research
3. Internet safety information
4. Links to research on how libraries impact student achievement
5. Volunteer opportunities for parents
6. Other resources for parents

III. Books / Reading / Cyber Reading Rooms (Recommended reading lists (for print, e-books, audio books—all formats)

- A. New materials lists
- B. Class-specific reading lists
- C. Summer reading lists
- D. Award lists: YALSA, AASL, ALA, state awards, etc.
- E. Support of school reading program. Example: Accelerated Reader lists, Book Clubs
- F. Online book discussions, digital book talks, librarian recommendations (blogs, threaded discussion, wiki, podcasts, video etc.)
- G. Links to book-related databases like Novelist, TeachingBooks, etc.
- H. Student-created lists, reviews, etc. (with blogs, wikis, podcasts)
- I. Reading contests
- J. Pages related to school author visits
- K. Links to author sites
- L. Coordination of reading program with book-related events going on at public library, bookstores, community. Example: summer reading program, poetry readings, author visits

M. Tips for selecting books

N. Other? Items not present in original list

#### IV. Program Administration

##### A. General information about the library

1. Contact information (Name of media center, librarian name, e-mail, phone)
  2. District name and school address
  3. Hours
  4. Mission statement (could be alternately called purpose or goals)
  5. Staff information—pictures, names, roles. Links to librarian's homepages, resumes, or C.V.s
  6. Welcome message from librarian
  7. Library program FAQs (frequently-asked questions)
  8. Virtual museum (relating to school library or school) This content might include archive of images, photographs, documents, video, etc.
- B. Librarian- or teacher-organized work related to school improvement or professional development activities.
- C. Information about library resources (copier, scanners, digital cameras, printers, etc.) Possibly includes map on Website, highlighting location of key resources.
- D. Library policies. Examples: loan, collection development, academic integrity, acceptable use, copyright, intellectual freedom, video use, etc. (Please list type)



- E. Schedule / Calendar (interactive?)
- F. Library news—newsletter, notification of new resources, assignments, reading lists. List type
- G. Available equipment for loan
- H. Library promotional materials / advocacy (posters, testimonials, awards, citations, in the news, brochures, etc.)
- I. Reports—Annual, Monthly, quarterly, etc.
- J. Resource / materials suggestion forms
- K. Surveys—user satisfaction, reading interests, etc.
- L. Expectations of users (library behavior—on- and offline,
- M. Special Library events—focus on events beyond calendar-type information
- N. Data mining features—tools to help gauge the impact the program. For instance: Who uses site? For what purposes? Survey results, statistics, etc.
- O. Other

## APPENDIX I

### *Codebook for Library Website Study—Characteristics*

I. School / Curricular — Evidence that the site is to supports learning and school goals?

A. Age and grade appropriate—Does the vocabulary and content speak to the needs of high school or middle school students? Look for language, images, or resources that appear to speak to secondary school students.

B. Connected (links to, discussion of, resources relating) to curriculum. Is the site connected to content area/classroom learning?

C. Evidence of collaboration in meeting curricular needs

1. Look for evidence of classroom teacher /school librarians collaboration. Look for the presence of learning materials created by both the librarian and classroom teacher(s). Examples might include: information literacy and content area lessons, class booklists, pathfinders, tutorials, handouts, etc. Does the site point learners to library materials, resources, and advice that will help them succeed with content area assignments?

D. Evidence of student collaboration and involvement relating to learning— record any student book reviews, suggestions, curricular discussion. Record presence of learning-related activities signed, attributed to students. Student ownership

E. Promotes (life-long) reading; encourages family-based, beyond-school reading through interactive content, booklists, etc. Record any evidence of reading promotion for curriculum and beyond.

F. Other characteristics relating to school relevance

II. Navigation / Organization –Does the site facilitate access? Is it clear, organized, logical, simple, intuitive? Does the layout follow basic rules of effective web page design—the means by which users move around and locate information on a website?

A. Readable for all students / users

1. Text is written at student audience level. The site avoids use of jargon.

For instance, the term OPAC might be clarified. Do vendor names exclusively represent a database name? Does the site avoid or explain use of jargon/libraryese?

2. Text is legible. Font is readable and consistent.

3. Printable—no problems with dark backgrounds, etc.

B. Embedded explanations—rollovers, pop-ups, simple text, etc. Are confusing terms and names explained?

C. Links are annotated, especially if less familiar, offering learners customized guidance and organization to meet their learning needs.

D. Intelligible structure—Links and features are organized logically. Describe any strategies for organizing information on homepage. Examples:  
Record use of tabs, titles, frames, icons, bulleted lists, for organization.  
Are any graphic metaphors used on homepage—for instance, image of library, desk, etc.?

E. Consistent design, navigation, color, layout to promote ease of use.

Presence of branding. Homepage has clearly designed layout. Second

and third-level pages display school & library names and logos.

- F. Consistent design, navigation, layout, page titling, color, to promote ease of use. Look for the presence of branding to represent school, school district, or library. Homepage has clearly-designed layout. Second and third-level pages display school & library names, colors, and logos.
- G. Important stuff front and center, Items like catalog, databases, style sheets, are accessible. Items students most need no more than 1 or 2 clicks away. Little need to scroll.
- H. Attention to W3C accessibility standards. Use ATRC Accessibility Checker (University of Toronto) as test:  
<http://checker.atrc.utoronto.ca/index.html>  
Examples of tests included: text equivalents for non-text elements; structure can be separated from presentation, easy to distinguish foreground information from background; functionality operable from a keyboard; mechanisms for users to find content and orient themselves; text content readable and understandable; placement and functionality of content predictable
- I. Fast—minimal download time. Images optimized for web use and images have ALT tags to clarify during slow server issues. Minimal use of large graphic files. Note any long wait times with the number of seconds/minutes it took for item(s) to load.
- J. Site map—an index offering overview of site, a hierarchical visual model or outline of the pages of the site.

K. Site search tool—search engine or search box that limits its search to the website

L. Links on other site pages (second and third-level) to school homepage, library homepage

M. Page titles are clear and consistent (meta data & actual page), easy to cite.

N. Other characteristics relating to navigation/organization?

### III. Aesthetic qualities / Appeal for audience

A. Attractive, age-appropriate, professional appearance. Look of the site reflects current design choices of the audience.

B. Use of graphics, photos, media to convey message in appealing manner (non-gratuitous)

1. Images of students

2. Images of materials

3. Images of library events, activities

4. Original art—photographs, drawings, paintings

5. Clip art

6. Animations, video elements, Webcams

C. Does the site use an original design?

D. Does the site use a template or CMS –content management system?

Content management systems are web applications used as a method of managing web sites and web content.

E. Color is used attractively, consistently, and effectively to facilitate

navigation.

F. Has personality/presences/friendliness/sense of humor. Describe how this happens.

G. Other aesthetic characteristics?

IV. Interactivity: Opportunities for collaboration, feedback, involvement. Inclusion of student work.

A. Opportunities for student collaboration, feedback through wikis, blogs, forums. Inclusion of student work

1. Wikis (browser-based tools for online collaboration model that allow any user to edit content):
2. Blogs (weblog, a browser-based regular and chronological publication of comments and thoughts on the web.)
3. Podcasts (multimedia files—usually audio—distributed over the Web using syndication feeds—often described as a Web radio broadcast.)
4. Forums (threaded discussion used for such purposes as book or issue discussion)
5. Slideshows (Flickr, PowerPoint presentations) Displays of images and text in sequence, usually for instructional or artistic purposes
6. Video presentations or lessons or other multimedia elements
7. Interactive forms (include feedback forms, suggestion forms, etc.)
8. Inclusion of student work

B. Overall Web 2.0 approach—(Web 2.0 is referred to as the read/write

Web, where users are both consumers and producers of information. It also incorporates the shift to Web as computing platform—the use of Web-based applications in place of commercially produced software.) Is the site itself a wiki or a blog? Does site use a content management system (CMS—like Drupal, Wordpress, Moodle), that would allow the librarian/webmaster to add and edit content without need for an HTML editor or knowledge of code.

C. Opportunities for personalization / opportunities to push content. Push is content that is delivered to a receiver without their explicit request. Users set parameters for the content they'd like to see on a regular basis. Personalization features allow users to customize Web documents by adjusting text, graphics and layout to meet individual needs and interests.

V. Freshness: Regular updates and revisions—New content to keep users coming back.

A. Pages demonstrate evidence of updates and revision. Postings show currency and recent attention to making sure content that requires updates is accurate. Links work. No Under construction pages

B. Speaks current visual language. (Doesn't look like a website created in 1996.)

APPENDIX J

SPSS Kappa Output for Three Sample Sites

Crosstabs: Features Coding Form—Carthage

Case Processing Summary

	Cases					
	Valid		Missing		Total	
	N	Percent	N	Percent	N	Percent
Researcher * CoderA	117	70.9%	48	29.1%	165	100.0%
Researcher * CoderB	117	70.9%	48	29.1%	165	100.0%

Researcher \* CoderA

Crosstab

Count		CoderA			Total
		0	1	2	
Researcher	0	3	0	0	3
	1	0	35	1	36
	2	0	3	75	78
Total		3	38	76	117

Symmetric Measures

		Value	Asymp. Std. Error <sup>a</sup>	Approx. T <sup>b</sup>	Approx. Sig.
Measure of Agreement	Kappa	.927	.036	10.863	.000
N of Valid Cases		117			

a. Not assuming the null hypothesis.

b. Using the asymptotic standard error assuming the null hypothesis.



Researcher \* CoderB

**Crosstab**

Count		CoderB			Total
		0	1	2	
Researcher	0	2	0	1	3
	1	0	35	1	36
	2	0	5	73	78
Total		2	40	75	117

**Symmetric Measures**

		Value	Asymp. Std. Error <sup>a</sup>	Approx. T <sup>b</sup>	Approx. Sig.
Measure of Agreement	Kappa	.872	.047	10.108	.000
N of Valid Cases		117			

a. Not assuming the null hypothesis.

b. Using the asymptotic standard error assuming the null hypothesis.

Crosstabs

**Case Processing Summary**

	Cases					
	Valid		Missing		Total	
	N	Percent	N	Percent	N	Percent
CoderA * CoderB	117	70.9%	48	29.1%	165	100.0%

**CoderA \* CoderB Crosstabulation**

Count

		CoderB			Total
		0	1	2	
CoderA	0	2	0	1	3
	1	0	36	2	38
	2	0	4	72	76
Total		2	40	75	117

**Symmetric Measures**

		Value	Asymp. Std. Error <sup>a</sup>	Approx. T <sup>b</sup>	Approx. Sig.
Measure of Agreement	Kappa	.873	.046	10.097	.000
N of Valid Cases		117			

a. Not assuming the null hypothesis.

b. Using the asymptotic standard error assuming the null hypothesis.

Crosstabs: Characteristics Coding Form—Carthage

**Case Processing Summary**

	Cases					
	Valid		Missing		Total	
	N	Percent	N	Percent	N	Percent
Researcher * CoderA	43	26.1%	122	73.9%	165	100.0%
Researcher * CoderB	43	26.1%	122	73.9%	165	100.0%

Researcher \* CoderA

**Crosstab**

Count		CoderA		Total
		1	2	
Researcher	1	16	0	16
	2	3	24	27
Total		19	24	43

**Symmetric Measures**

		Value	Asymp. Std. Error <sup>a</sup>	Approx. T <sup>b</sup>	Approx. Sig.
Measure of Agreement	Kappa	.856	.079	5.673	.000
N of Valid Cases		43			

a. Not assuming the null hypothesis.

b. Using the asymptotic standard error assuming the null hypothesis.

Researcher \* CoderB

**Crosstab**

Count		CoderB		Total
		1	2	
Researcher	1	16	0	16
	2	1	26	27
Total		17	26	43

**Symmetric Measures**

	Value	Asymp. Std. Error <sup>a</sup>	Approx. T <sup>b</sup>	Approx. Sig.
Measure of Agreement Kappa	.951	.049	6.243	.000
N of Valid Cases	43			

a. Not assuming the null hypothesis.

b. Using the asymptotic standard error assuming the null hypothesis.

**Crosstabs**

**Case Processing Summary**

	Cases					
	Valid		Missing		Total	
	N	Percent	N	Percent	N	Percent
CoderA * CoderB	43	26.1%	122	73.9%	165	100.0%

**CoderA \* CoderB Crosstabulation**

Count

		CoderB		Total
		1	2	
CoderA	1	17	2	19
	2	0	24	24
Total		17	26	43

**Symmetric Measures**

	Value	Asymp. Std. Error <sup>a</sup>	Approx. T <sup>b</sup>	Approx. Sig.
Measure of Agreement Kappa	.905	.066	5.959	.000
N of Valid Cases	43			

a. Not assuming the null hypothesis.

b. Using the asymptotic standard error assuming the null hypothesis.

Crosstabs: Features Coding Form: Newton North

**Case Processing Summary**

	Cases					
	Valid		Missing		Total	
	N	Percent	N	Percent	N	Percent
Researcher * CoderA	117	70.9%	48	29.1%	165	100.0%
Researcher * CoderB	117	70.9%	48	29.1%	165	100.0%

Researcher \* CoderA

**Crosstab**

Count		CoderA			Total
		0	1	2	
Researcher	0	1	0	0	1
	1	0	47	1	48
	2	0	8	60	68
Total		1	55	61	117

**Symmetric Measures**

		Value	Asymp. Std. Error <sup>a</sup>	Approx. T <sup>b</sup>	Approx. Sig.
Measure of Agreement	Kappa	.847	.049	9.470	.000
N of Valid Cases		117			

a. Not assuming the null hypothesis.

b. Using the asymptotic standard error assuming the null hypothesis.

Researcher \* CoderB

**Crosstab**

Count

		CoderB			Total
		0	1	2	
Researcher	0	1	0	0	1
	1	0	47	1	48
	2	0	5	63	68
Total		1	52	64	117

**Symmetric Measures**

		Value	Asymp. Std. Error <sup>a</sup>	Approx. T <sup>b</sup>	Approx. Sig.
Measure of Agreement	Kappa	.897	.041	9.981	.000
N of Valid Cases		117			

a. Not assuming the null hypothesis.

b. Using the asymptotic standard error assuming the null hypothesis.

Crosstabs

**Case Processing Summary**

	Cases					
	Valid		Missing		Total	
	N	Percent	N	Percent	N	Percent
CoderA * CoderB	117	70.9%	48	29.1%	165	100.0%

**CoderA \* CoderB Crosstabulation**

Count

		CoderB			Total
		0	1	2	
CoderA	0	1	0	0	1
	1	0	48	7	55
	2	0	4	57	61
Total		1	52	64	117

**Symmetric Measures**

	Value	Asymp. Std. Error <sup>a</sup>	Approx. T <sup>b</sup>	Approx. Sig.
Measure of Agreement Kappa	.814	.053	9.042	.000
N of Valid Cases	117			

a. Not assuming the null hypothesis.

b. Using the asymptotic standard error assuming the null hypothesis.

Crosstabs: Characteristics Coding Form—Newton North

**Case Processing Summary**

	Cases					
	Valid		Missing		Total	
	N	Percent	N	Percent	N	Percent
Researcher * CoderA	43	26.1%	122	73.9%	165	100.0%
Researcher * CoderB	43	26.1%	122	73.9%	165	100.0%

Researcher \* CoderA

**Crosstab**

Count		CoderA		Total
		1	2	
Researcher	1	29	3	32
	2	0	11	11
Total		29	14	43

**Symmetric Measures**

	Value	Asymp. Std. Error <sup>a</sup>	Approx. T <sup>b</sup>	Approx. Sig.
Measure of Agreement Kappa	.832	.092	5.533	.000
N of Valid Cases	43			

a. Not assuming the null hypothesis.

b. Using the asymptotic standard error assuming the null hypothesis.

Researcher \* CoderB

**Crosstab**

Count

		CoderB		Total
		1	2	
Researcher	1	30	2	32
	2	1	10	11
Total		31	12	43

**Symmetric Measures**

		Value	Asymp. Std. Error <sup>a</sup>	Approx. T <sup>b</sup>	Approx. Sig.
Measure of Agreement	Kappa	.822	.099	5.400	.000
N of Valid Cases		43			

a. Not assuming the null hypothesis.

b. Using the asymptotic standard error assuming the null hypothesis.

Crosstabs

**Case Processing Summary**

	Cases					
	Valid		Missing		Total	
	N	Percent	N	Percent	N	Percent
CoderA * CoderB	43	26.1%	122	73.9%	165	100.0%



**CoderA \* CoderB Crosstabulation**

Count

		CoderB		Total
		1	2	
CoderA	1	28	1	29
	2	3	11	14
Total		31	12	43

**Symmetric Measures**

		Value	Asymp. Std. Error <sup>a</sup>	Approx. T <sup>b</sup>	Approx. Sig.
Measure of Agreement	Kappa	.780	.104	5.146	.000
N of Valid Cases		43			

a. Not assuming the null hypothesis.

b. Using the asymptotic standard error assuming the null hypothesis.

**Features Coding Form—Springfield**

**Case Processing Summary**

	Cases					
	Valid		Missing		Total	
	N	Percent	N	Percent	N	Percent
Researcher * CoderA	117	70.9%	48	29.1%	165	100.0%
Researcher * CoderB	117	70.9%	48	29.1%	165	100.0%

Researcher \* CoderA

**Crosstab**

Count

		CoderA			Total
		0	1	2	
Researcher	0	1	0	0	1
	1	0	81	2	83
	2	0	2	31	33
Total		1	83	33	117

**Symmetric Measures**

		Value	Asymp. Std. Error <sup>a</sup>	Approx. T <sup>b</sup>	Approx. Sig.
Measure of Agreement	Kappa	.918	.040	10.237	.000
N of Valid Cases		117			

a. Not assuming the null hypothesis.

b. Using the asymptotic standard error assuming the null hypothesis.

Researcher \* CoderB

**Crosstab**

Count

		CoderB			Total
		0	1	2	
Researcher	0	1	0	0	1
	1	0	82	1	83
	2	0	2	31	33
Total		1	84	32	117

**Symmetric Measures**

	Value	Asymp. Std. Error <sup>a</sup>	Approx. T <sup>b</sup>	Approx. Sig.
Measure of Agreement Kappa	.938	.035	10.464	.000
N of Valid Cases	117			

a. Not assuming the null hypothesis.

b. Using the asymptotic standard error assuming the null hypothesis.

**Crosstabs**

**Case Processing Summary**

	Cases					
	Valid		Missing		Total	
	N	Percent	N	Percent	N	Percent
CoderA * CoderB	117	70.9%	48	29.1%	165	100.0%

**CoderA \* CoderB Crosstabulation**

Count

		CoderB			Total
		0	1	2	
CoderA	0	1	0	0	1
	1	0	81	2	83
	2	0	3	30	33
Total		1	84	32	117

**Symmetric Measures**

	Value	Asymp. Std. Error <sup>a</sup>	Approx. T <sup>b</sup>	Approx. Sig.
Measure of Agreement Kappa	.897	.045	10.003	.000
N of Valid Cases	117			

a. Not assuming the null hypothesis.

b. Using the asymptotic standard error assuming the null hypothesis.

Characteristics Coding Form—Springfield

**Case Processing Summary**

	Cases					
	Valid		Missing		Total	
	N	Percent	N	Percent	N	Percent
Researcher * CoderA	43	26.1%	122	73.9%	165	100.0%
Researcher * CoderB	43	26.1%	122	73.9%	165	100.0%

Researcher \* CoderA

**Crosstab**

Count		CoderA		Total
		1	2	
Researcher	1	36	0	36
	2	2	5	7
Total		38	5	43

**Symmetric Measures**

	Value	Asymp. Std. Error <sup>a</sup>	Approx. T <sup>b</sup>	Approx. Sig.
Measure of Agreement Kappa	.807	.131	5.394	.000
N of Valid Cases	43			

a. Not assuming the null hypothesis.

b. Using the asymptotic standard error assuming the null hypothesis.

Researcher \* CoderB

**Crosstab**

Count

		CoderB		Total
		1	2	
Researcher	1	36	0	36
	2	1	6	7
Total		37	6	43

**Symmetric Measures**

	Value	Asymp. Std. Error <sup>a</sup>	Approx. T <sup>b</sup>	Approx. Sig.
Measure of Agreement Kappa	.909	.089	5.988	.000
N of Valid Cases	43			

a. Not assuming the null hypothesis.

b. Using the asymptotic standard error assuming the null hypothesis.

Crosstabs

**Case Processing Summary**

	Cases					
	Valid		Missing		Total	
	N	Percent	N	Percent	N	Percent
CoderA * CoderB	43	26.1%	122	73.9%	165	100.0%

**CoderA \* CoderB Crosstabulation**

Count

		CoderB		Total
		1	2	
CoderA	1	37	1	38
	2	0	5	5
Total		37	6	43

**Symmetric Measures**

	Value	Asymp. Std. Error <sup>a</sup>	Approx. T <sup>b</sup>	Approx. Sig.
Measure of Agreement Kappa	.896	.102	5.907	.000
N of Valid Cases	43			

a. Not assuming the null hypothesis.

b. Using the asymptotic standard error assuming the null hypothesis.

APPENDIX K

Aggregated Content Analysis Results: Features

Content Analysis Results: Features

I. INFORMATION ACCESS AND DELIVERY												
Features	Alternate Labels	Carthage	Glennie	Greece Athena	Hunterdon	Lawrence	New Trier	Newton North	Northfield Mt. Hermon	Springfield	Uni	Total
A. School library OPAC (online library catalog)	Card catalog Catalogue Electronic Resources: Online (card) catalog Holdings and Catalog Find a book Online Catalog Find books, cds, films Catalogs and Databases Alexandria	X	X	X	X	X	X	X	X	X	X	10/10
1. Information relating to how the Dewey Decimal or other system works—outline of subjects	Find a book							X				1/10
B. Links to other libraries / OPACS (how many?)	Libraries Beyond the library	X (4)		X	X	X	X (6)	X	X (3)	X	X (2)	9/10
1. Other schools in district/system	Junior Library		X			X		X	NA	X		4/10
2. Local university		X			X	X		X	X	X	X	7/10
3. Public library		X		X	X	X	X	X	X	X	X	9/10
4. Interlibrary loan database (state or other)							X	X	X	X		4/10
C. Pathfinders How many?	Teacher Projects			X (44 middle,	X (13)	X (9)	X (13) )Northfield/45	X (7) current,	X (46) Research	X (27)	X (28)	8/10

(guides for specific assignments, units, information tasks)	Project links Research Guides/ Course Resources Class Projects			61 high school)			Winnetka)	136 in archive	Guides (Chart with teacher/term)		
D. Federated search tool											0/10
E. Ask-a-librarian, online, e-mail help or chat reference links											
1. Origination from school library media specialist(s)	For more information contact Contact Comments Ask-a-librarian E-mail-access before and after school Ask me	X	X	X	X	X	X	X	X	X	7/10
2. Link to remote service	Ask me		X (KanAsk)			X (AskAway)			X	AskHere (PA)	4/10
F. Subscription databases: periodicals, reference, video, e-books (How many?)	Online resources Online databases Electronic Indexes Electronic Resources Find magazine / newspaper articles Find a book Online databases	X (10)	X (13)	X (40)	X (23)	X (61)	X (33)	X (18)	X (175 Subject and A-Z lists)	X (9)	10/10
1. Annotated?		X	X	X			X	X	X	X	8/10
2. State purchased	Names of state system—Boces passwords, BlueSkyways, ACCESS PA	NA	NA	X	NA	X	NA	X	NA	X	4/10
3. Library or school district purchased		NA	X	X	NA	X	NA	X	X	X	7/10
4. Subscription e-book collections		X		X		X	X		X	X	6/10



5. Subscription digital audio-book collections																							0/10	
6. Subscription video collections	X																							3/10
7. Instructions for remote access / passwords	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	8/10
G. Journal / Periodical list (for online and/or offline holdings)	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	6/10
H. Links to school information homepage	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	10/10
I. Link to district information / homepages	NA	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	3/10
J. Links to teachers' websites (not pathfinders)	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	3/10
K. Links to free Web search tools	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	8/10
1. Annotated (what does each do?)	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	6/10
L. Links to Web reference sources / portals (free)	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	10/10









guidelines	<p>How do I cite my sources?  How do I avoid plagiarism?  Research Integrity Policy  X Advice for teachers on finding and combating Works Cited Guide, PowerPoint, Sample page, Parenthetical Source Cards, Plagiarism Policy, Anatomy of a Citation, Please Don't Cheat, WebQuest on Plagiarism, Library Bill of Rights, Bibliography Worksheet, Guidelines for Asking Permission, Plagiarism PowerPoint, Research Integrity Policy, Netiquette, Scenarios for teaching Internet ethics, sample permission letter</p>		
a. Citation generator	Citation Machine, NoodleBib, Knight Cite, EasyBib	X	6/10
b. School-specific style manual	Citation formats Format for citing your	X	7/10



















APPENDIX L

Aggregated Content Analysis Results: Characteristics

I. Connectedness to School / Curriculum / Learning											
Feature	Carthage	Glennie	Greece Athena	Hunterdon	Lawrence	New Trier	Newton North	Northfield Mt. Hermon	Springfield	Uni	Total
A. Age/ grade appropriate	X	X	X	X	X	X	X	X	X	X	10/10
B. Connected (links to, discussion & resources) relating to curriculum			X			X	X	X	X	X	6/10
C. Evidence of classroom teacher/librarian collaboration— lessons, booklists,pathfinders			X	X	X	X	X	X	X	X	8/10
D. Evidence of student collaboration & involvement relating to learning— book reviews, suggestions, discussion		X	X		X			X	X	X	6/10
E. Promotes (life-long) reading; encourages beyond-school reading		X	X	X	X	X		X	X	X	8/10
F. Other characteristics relating to school/curricular relevance											
II. Navigation / Organization											
Feature	Carthage	Glennie	Greece Athena	Hunterdon	Lawrence	New Trier	Newton North	Northfield Mt. Hermon	Springfield	Uni	Total
A. Readable for all students / users	X	X	X	X		X	X	X	X	X	9/10

1. Text is written at student audience level. Avoids use of jargon, libraryese.	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	8/10	
2. Text is legible. Font readable, consistent	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	9/10
3. Printable: no problems with background, etc.	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	8/10
B. Embedded explanations— rollovers, pop-ups, other text clues	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	6/10
C. Links annotated for student users	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	9/10
D. Intelligible structure. Links and features organized	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	8/10
1. Graphic metaphors on homepage																					2/10
2. Use of tabs, frames, icons to guide	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	10/10
E. Categories clearly labeled with age-appropriate terminology, language meaningful to students	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	8/10
F. Consistent design, navigation, layout, titling. Use of branding to represent school or library. Homepage has clearly designed layout. Second & third pages display names and logos	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	10/10
G. Important stuff front & center— catalogs, databases,	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	7/10







4. Forums																		X			2/10
5. Slide shows (Flickr, PowerPoint, etc.)																			X		4/10
6. Video tools or other multimedia elements																			X		1/10
7. Interactive forms																			X		5/10
8. Inclusion of student work																			X		5/10
B. Overall Web 2.0 approach—is the site itself a wiki or a blog? Using a content management system (like Drupal, or even a blog platform like Wordpress) allows the librarian to add new content without all the hassle of re-coding the site.																			X		2/10
C. Opportunities for personalization / opportunities to push content																					0/10
<b>V. Freshness: Regular updates and revisions—including what's new to keep users coming back.</b>																					
Feature	Carthage	Glennie	Greece Athena	Hunterdon	Lawrence	New Trier	Newton North	Northfield Mt. Hermon	Springfield	Uni	Total										
A. Page demonstrates evidence of updates and revision. Postings show currency and recent attention. Links work Homepage link date?	X			X	X	X	X	X	X	X	8/10										
B. Speaks the current visual language	X	X	X	X	X		X	X	X	X	6/10										
											6/10										

## APPENDIX M

### *Collected Mission Statements of Sample Sites*

(Seven of the ten sites shared mission statements.)

Glennie:

The Glennie Information Resource Centre will become the centre for learning within the school.

Mission: The Information Resource Centre strives to provide a vibrant environment for teaching and learning within the school which meets the current information needs of staff and students while facilitating the acquisition of the information skills that form the basis of lifelong learning.

This mission will be achieved by addressing the following goals

Goals

1. Provide an aesthetically pleasing and practical learning environment
2. Provide access to a wide variety of resources to meet the current information needs of staff and students
3. Facilitate the acquisition and development of the information skills that form the basis of lifelong learning
4. Foster a love of reading for pleasure
5. Win the resources required to provide a high quality service to the Glennie School community

Greece Athena:

To ensure that students and staff are effective users of ideas and information

Lawrence:

Building a community of readers. Resources, education, adventure, diversity, success

New Trier:

Promoting information literacy. Our mission: To commit minds to inquiry

Newton North:

The philosophy and goals of the NNHS Library are founded on the systemwide goals and the core values of our schools. The purpose of the school library media program is to function as a learning laboratory, where students acquire knowledge of and familiarity with various information tools, and an appreciation of reading and literature, that will enable them to become critical consumers of information and self-sufficient life-long learners. Through planned and purposeful integration of library resources and services with ongoing teaching and learning in the classroom, students acquire and strengthen skills in locating, synthesizing, evaluating, and communicating information. In the library media program, the learner interacts with others, masters knowledge as well as skills, and achieves greater self-motivation, discipline, and capacity for self evaluation.

Northfield Mount Hermon:

The mission of the Northfield Mount Hermon Library and Information Commons is to support, stimulate, and inspire the educational environment of the school. Personnel, facilities, technology and collections support community members' growth and the institutional mission to develop the head, the heart and the hand.

To this end, the NMH Library:

- Develops collections and provides resources to support the curriculum, enhance personal development and encourage pleasure of reading and learning
- Teaches information literacy skills
- Provides access to global information
- Preserves and promotes use of school history via the Archives
- Offers individual attention to students and faculty
- Serves as a community resource

Springfield:

At Springfield Township High School Library, our goal is to ensure that students graduate as competent, critical, and ethical users of information. It is our mission to prepare lifelong learners; information literate citizens able to determine their information needs, recognize relevant information, solve problems and effectively communicate the results of their research. We strive to model our school's shared core values: respect, excellence, integrity, and community.

Instruction, formal and informal, provides students with a process transferable across subject areas and from academic to real life. The bulk of the learning is laboratory style, with students involved in guided, inquiry-driven research using resources in all formats.

Welcome to our virtual annex!

Our mission at the Springfield Township High School Virtual Library is to translate the mission of the school library for our learning community in school, at

home, anywhere. The website allows us to open our library—its customized instruction and its services to users 24/7!

## Uni

The mission of the University Laboratory High School Library is to provide a collection of materials to implement, enrich, and support the curriculum of University Laboratory High School and to meet the individual educational, emotional, and recreational needs of students, faculty, and staff. In addition, as a departmental library of the University of Illinois, the University Laboratory High School Library also provides service and materials to the University community at large.

For supplemental blog accessible from main library Website

- Librarian or teacher-led threaded discussions about particular book.
- Postings about innovative student work with links to actual products (e.g. PowerPoint) if clearance is obtained through parental consent forms.
- Podcasts of student produced-programs or special events organized by library.

For supplemental wiki accessible from main library Website

- Librarian or teacher-maintained group project work related to class assignments.
- Librarian or teacher-organized work related to school improvement or professional development activities.

## APPENDIX N

### *Baseline Content in Clyde's (2004) Longitudinal Study Compared with Sample*

Content/Feature	Clyde 1996 (50 sites) n (%)	Clyde 1999 (37 sites) n (%)	Clyde 2002 (32 sites) n (%)	Valenza 2007 (10 sites) Chart / Category n(%)
1. Name of school and library	41 (82)	31 (83.78)	29 (90.62)	Features/Program Administration/ District name & school address 9 (90)
2. Links to selected resources about the Internet	31 (62)	25 (67.56)	22 (68.75)	Features/ Distributed among various categories: Searching guidance, Technology how-tos, Internet safety, etc.
3. Information about the school library	29 (58)	25 (67.56)	22 (68.75)	Features/Program Administration General information about the library Composite 10 (100)
4. Interactive e-mail contact address	28 (56)	25 (67.56)	23 (71.87)	Features/Program Administration/ "District name & school address" 9 (90)
5. Link to a school home page	24 (48)	20 (54.05)	28 (87.5)	Features/Program Administration/ District name & school address 9 (90)
6. Date of last update of the page	19 (38)	20 (54.05)	14 (47.35)	Characteristics/Freshness/ Date of last homepage update 6 (60)
7. Links to Internet search engines	15 (30)	21 (56.76)	18 (56.25)	Features/Information Access & Delivery Links to free Web search tools 8 (80)
8. Address of the school /library	14 (28)	16 (43.24)	16 (50)	Features/Program Administration/ District name & school address 9 (90)
9. Counter	11 (22)	9 (24.32)	6 (18.75)	Features/Program Administration Data mining features 2 (20)
10. Information about Internet projects undertaken in/through the school library	9 (18)	3 (8.1)	6(18.75)	Not listed on taxonomies
11. Research skills information, e.g. the Big 6, Be Definite, research guides	8 (16)	9 (24.32)	9 (28.13)	Features/Teaching and Learning/ Overview of information seeking process, Big6 or other model, 5 (50) Research project guides 5 (50)
12. Links to Internet resources for teachers	8 (16)	12 (32.43)	12 (37.5)	Features/Teaching and Learning/ Lesson creation tools 4 (40) Links to learning standards 2 (20) Rubric resources 3 (30) Content related to professional development 4 (40)
13. Links to Internet resources for school librarians	8 (16)	9 (24.32)	4 (12.5)	Features/Teaching and Learning/Resources for Librarians 2 (20)
14. List of CD-ROMs in the school library	8 (16)	6 (16.22)	2 (6.5)	Not in taxonomies
15. Book reviews, lists of books recommended by students, school book club choices, etc.	7 (14)	10 (27.03)	7 (21.88)	Features/Books and Reading/Under various categories: New materials, Class-specific lists, Online book discussion/digital booktalks, Links to book-related



				databases, Support of school/library reading programs, Student-created reviews, etc. (All have some elements) 10 (100)
16. Photograph of the school library	6 (12)	12 (32.43)	16 (50)	Not listed on taxonomies
17. Information (or links to information) about compiling bibliographies	6 (12)	5 (13.51)	12 (37.5)	Features/Teaching and Learning/Information Ethics, documentation, antiplagiarism 9 (90)
18. Links to HTML guides of information about creating a Web page	5 (10)	4 (10.81)	3 (9.37)	Features/Teaching and Learning/Links to resources for Web development 4 (40)
19. Links to resources about the local area/region	5 (10)	2 (5.4)	5 (15.63)	Features/Information Access and Delivery/Local News 8 (80)
20. News about the library or library activities	4 (8)	2 (5.4)	5 (15.63)	Features/Program Administration/Library news/newsletter 4 (40)
21. Information about the Internet for library users	4 (8)	8 (21.62)	3 (9.38)	Not listed on taxonomies
22. Internet tutorial	4 (8)	7 (18.92)	3 (9.38)	Not listed on taxonomies
23. Online reference desk	3 (6)	1 (2.7)	2 (6.25)	Features/Information Access and Delivery/Ask-A-Librarian, online, e-mail help 7 (70)
24. Information about Internet access and policies in the library	3 (6)	4 (10.8)	3 (9.38)	Features/Program Administration/Library Policies 6 (60)
25. The library rules	2 (4)	2 (5.4)	4 (12.5)	Features/Program Administration/Expectations of users (rules) 3 (30)
26. Electronic magazines	1 (2)	0 (0)	0 (0)	Not listed on taxonomies

## APPENDIX O

### *Additional Content/Features of School Library Sites Discovered in Clyde's (2004) 1999 and 2002 Studies Compared with Sample*

Content/Feature	Clyde 1999 (37 sites) n (%)	Clyde 2002 (32 sites) n (%)	Valenza 2007 (10 sites) Chart / Category n(%)
1. Links to online indexing, information and current news services [defined as commercial databases]	12 (32.43)	20 (62.5)	Features/Information Access and Delivery/Subscription databases 10 (100)
2. Links to the school library OPAC	12 (32.43)	14 (43.75)	Features/ Information Access and Delivery/School library OPAC 10 (100)
3. Links to other library catalogs	11 (29.73)	17 (53.13)	Features/Information Access and Delivery/Links to other libraries/OPACs 9 (90)
4. Links to online encyclopedia, reference works	8 (21.62)	16 (50)	Features/Information Access and Delivery/Links to Web Reference 10 (100)
5. Mission/goals of the school library	8 (21.62)	7 (21.88)	Features/Program Administration/ Mission statement/goals 8 (80)
6. Classroom-library projects (not Internet based)	7 (18.92)	3 (9.38)	Not specifically listed in taxonomies
7. Links to the home page of the school librarian/media specialist	7 (18.92)	4 (12.5)	Features/Information Access & Delivery Links to free Web search tools 8 (80)
8. Information or links for parents	6 (16.22)	2 (6.25)	Features/Learning and Teaching/ Resources for parents (general and other subcategories) 3 (30)
9. IT awards or citations won by the school library or Web site	6 (16.22)	3 (9.38)	Features/Program Administration/ Combined category: Library promotional materials—posters, awards, news stories 7 (70)
10. Information about courses run through the school library	5 (13.52)	5 (15.63)	Not specifically listed on taxonomies
11. Information about the school/library computer network	5 (13.52)	4 (12.5)	Not specifically listed in taxonomies
12. School library club activities	5 (13.52)	3 (9.38)	Not specifically listed in taxonomies
13. Virtual tour (in photos) of the school library	5 (13.52)	5 (15.63)	Features/Teaching and Learning/ General library orientation or tour 1 (10)
14. The Dewey Decimal Classification outline	3 (8.1)	2 (6.25)	Features/Information Access and Delivery/ Information relating to how the Dewey Decimal or other system works—outline of subjects 1 (10)
15. Links to school/library intranet	2 (5.41)	1 (3.13)	Not specifically listed in taxonomies
16. Online guestbook	2 (5.41)	1 (3.13)	Not specifically listed in taxonomies
17. Links to recreation resources for kids/teens	2 (5.41)	6 (18.75)	Not specifically listed in taxonomies
18. Access to e-mail for library users	2 (5.41)	3 (9.38)	Not specifically listed in taxonomies
19. Links to online news stories featuring the library	2 (5.41)	0 (0)	Features/Program Administration/ Library promotional materials—posters, awards, news stories

			7 (70)
20. Distance learning	2 (5.41)	0 (0)	Not specifically listed in taxonomies
21. Pages for author visits	2 (5.41)	1 (3.13)	Not specifically listed in taxonomies
22. Annual report of the school library	1 (2.7)	0 (0)	Features/Program Administration/Library reports, annual report 3 (30)
23. Access to the library CD-ROMs	1 (2.7)	0 (0)	Not specifically listed in taxonomies
24. Site map	1 (2.7)	3 (3.98)	Characteristics/Navigation and Organization/Site map 5 (50)
25. Student librarians page	1 (2.7)	0 (0)	Features/Program Administration/ Student volunteers / workers 2 (20)
26. Homework help	1 (2.7)	1 (3.13)	Features/Learning and Teaching/Homework guides 1 (10)
27. Online form for teachers to submit assignment information	1 (2.7)	0 (0)	Features/Learning and Teaching/ Planning form to submit assignment planning information 2 (20)
28. Internet evaluation checklist (for students to fill out for each site visit)	1 (2.7)	1 (3.13)	Features/Learning and Teaching/ Worksheet for Evaluating Websites (Counted from coding notes. Category more inclusive.) 4 (40)

## APPENDIX P

### *Additional Content/Features of School Library Sites Discovered in Clyde's (2004) 2002 Studies Compared with Sample*

Content / Features	Clyde 2004 (32 sites) n(%)	Valenza 2007 (10 sites) n (%)
1. Access to online databases and services from home as well as school	7 (21.86)	10 (100)
2. Site search engine	5 (15.63)	6 Search engine (60)
3. Reading program	4 (12.5)	10 (content relating to books & reading (100)
4. Collection development policy	3 (9.38)	4 (40)
5. List of new periodicals/books in the library	2 (6.25)	5 (50)
6. Statement of purpose/goals of the Web site	2 (6.25)	7 (70)
7. Library Webcam	1 (3.13)	0 (0)
8. Web page hosting for library users	1 (3.13)	0 (0)
9. New library materials request form	1 (3.13)	3 (30)
10. Interactive ask-a-librarian service (through a Web-based form)	1 (3.13)	7 (70)
11. Virtual museum	1 (3.13)	4 (40)
12. Welcome message from the librarian	1 (3.13)	1 (10)

## APPENDIX Q

*ATRC Accessibility Results Output (University of Toronto)*

Web Accessibility Checker Version 0.8.9

*Problems sorted by accessibility guidelines.*

*Report: Carthage High School Media Center*

Status: FAIL WCAG 2.0 L2 Problems: 137 known, 0 likely, 100 potential. Decisions: 0.

### All Problems By Accessibility Guideline

Guideline	Known	Likely	Potential
1.1 Provide text alternatives for all non-text content	59	0	0
1.3 Ensure that information and structure can be separated from presentation	2	0	25
1.4 Make it easy to distinguish foreground information from its background	1	0	14
2.1 Make all functionality operable via a keyboard interface	62	0	0
2.3 Allow users to avoid content that could cause seizures due to photosensitivity	0	0	3
2.4 Provide mechanisms to help users find content, orient themselves within it, and navigate through it	12	0	7
2.5 Help users avoid mistakes and make it easy to correct mistakes that do occur	0	0	16
3.1 Make text content readable and understandable	1	0	1
3.2 Make the placement and functionality of content predictable	0	0	34

*Report:Glennie*

Status: FAIL WCAG 2.0 L2 Problems: 71 known, 1 likely, 109 potential. Decisions: 0.

### All Problems By Accessibility Guideline

Guideline	Known	Likely	Potential
1.1 Provide text alternatives for all non-text content	35	0	19

1.3 Ensure that information and structure can be separated from presentation	0	1	11
1.4 Make it easy to distinguish foreground information from its background	1	0	44
2.1 Make all functionality operable via a keyboard interface	20	0	0
2.3 Allow users to avoid content that could cause seizures due to photosensitivity	0	0	1
2.4 Provide mechanisms to help users find content, orient themselves within it, and navigate through it	14	0	21
3.1 Make text content readable and understandable	1	0	1
3.2 Make the placement and functionality of content predictable	0	0	12

*Report: Greece Athena*

Status: FAIL WCAG 2.0 L2 Problems: 23 known, 1 likely, 34 potential. Decisions: 0.

All Problems By Accessibility Guideline

Guideline	Known	Likely	Potential
1.1 Provide text alternatives for all non-text content	17	0	3
1.3 Ensure that information and structure can be separated from presentation	0	1	11
1.4 Make it easy to distinguish foreground information from its background	3	0	5
2.3 Allow users to avoid content that could cause seizures due to photosensitivity	0	0	1
2.4 Provide mechanisms to help users find content, orient themselves within it, and navigate through it	2	0	11
3.1 Make text content readable and understandable	1	0	1
3.2 Make the placement and functionality of content predictable	0	0	2

*Report: Hunterdon Central Library*

Status: FAIL WCAG 2.0 L2 Problems: 15 known, 3 likely, 188 potential. Decisions: 0.

All Problems By Accessibility Guideline

Guideline	Known	Likely	Potential
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1.1 Provide text alternatives for all non-text content	11	0	43
1.3 Ensure that information and structure can be separated from presentation	0	3	26
1.4 Make it easy to distinguish foreground information from its background	0	0	29
2.3 Allow users to avoid content that could cause seizures due to photosensitivity	0	0	5
2.4 Provide mechanisms to help users find content, orient themselves within it, and navigate through it	3	0	82
3.1 Make text content readable and understandable	1	0	1
3.2 Make the placement and functionality of content predictable	0	0	2

*Report: Lawrence High School*

Status: FAIL WCAG 2.0 L2 Problems: 132 known, 7 likely, 244 potential. Decisions: 0.

All Problems By Accessibility Guideline

Guideline	Known	Likely	Potential
1.1 Provide text alternatives for all non-text content	54	0	6
1.3 Ensure that information and structure can be separated from presentation	3	7	64
1.4 Make it easy to distinguish foreground information from its background	1	0	58
2.1 Make all functionality operable via a keyboard interface	62	0	0
2.3 Allow users to avoid content that could cause seizures due to photosensitivity	0	0	7
2.4 Provide mechanisms to help users find content, orient themselves within it, and navigate through it	11	0	60
2.5 Help users avoid mistakes and make it easy to correct mistakes that do occur	0	0	4
3.1 Make text content readable and understandable	1	0	1
3.2 Make the placement and functionality of content predictable	0	0	44

*Report: New Trier High School*

Status: FAIL WCAG 2.0 L2 Problems: 17 known, 0 likely, 127 potential. Decisions: 0.

All Problems By Accessibility Guideline

Guideline	Known	Likely	Potential
1.1 Provide text alternatives for all non-text content	15	0	64
1.3 Ensure that information and structure can be separated from presentation	0	0	16
1.4 Make it easy to distinguish foreground information from its background	1	0	36
2.4 Provide mechanisms to help users find content, orient themselves within it, and navigate through it	0	0	8
3.1 Make text content readable and understandable	1	0	1
3.2 Make the placement and functionality of content predictable	0	0	2

*Report: Newton North High School Library I*

Status: FAIL WCAG 2.0 L2 Problems: 42 known, 0 likely, 110 potential. Decisions: 0.

All Problems By Accessibility Guideline

Guideline	Known	Likely	Potential
1.1 Provide text alternatives for all non-text content	13	0	7
1.3 Ensure that information and structure can be separated from presentation	6	0	15
1.4 Make it easy to distinguish foreground information from its background	0	0	16
2.1 Make all functionality operable via a keyboard interface	22	0	0
2.3 Allow users to avoid content that could cause seizures due to photosensitivity	0	0	9
2.4 Provide mechanisms to help users find content, orient themselves within it, and navigate through it	0	0	45
2.5 Help users avoid mistakes and make it easy to correct mistakes that do occur	0	0	4
3.1 Make text content readable and understandable	1	0	1
3.2 Make the placement and functionality of content predictable	0	0	13

*Report: Northfield Mount Hermon*

Status: FAIL WCAG 2.0 L2 Problems: 267 known, 0 likely, 477 potential. Decisions: 0.



All Problems By Accessibility Guideline

Guideline	Known	Likely	Potential
1.1 Provide text alternatives for all non-text content	118	0	42
1.3 Ensure that information and structure can be separated from presentation	2	0	182
1.4 Make it easy to distinguish foreground information from its background	0	0	141
2.1 Make all functionality operable via a keyboard interface	114	0	0
2.3 Allow users to avoid content that could cause seizures due to photosensitivity	0	0	2
2.4 Provide mechanisms to help users find content, orient themselves within it, and navigate through it	32	0	60
2.5 Help users avoid mistakes and make it easy to correct mistakes that do occur	0	0	4
3.1 Make text content readable and understandable	1	0	1
3.2 Make the placement and functionality of content predictable	0	0	45

*Report: Springfield Township High School*

Status: FAIL WCAG 2.0 L2 Problems: 8 known, 27 likely, 99 potential. Decisions: 0.

All Problems By Accessibility Guideline

Guideline	Known	Likely	Potential
1.1 Provide text alternatives for all non-text content	5	0	30
1.3 Ensure that information and structure can be separated from presentation	0	27	12
1.4 Make it easy to distinguish foreground information from its background	1	0	6
2.3 Allow users to avoid content that could cause seizures due to photosensitivity	0	0	2
2.4 Provide mechanisms to help users find content, orient themselves within it, and navigate through it	1	0	42
2.5 Help users avoid mistakes and make it easy to correct mistakes that do occur	0	0	4
3.1 Make text content readable and understandable	1	0	1
3.2 Make the placement and functionality of content predictable	0	0	2

*Report: Uni*

Status: FAIL WCAG 2.0 L2 Problems: 60 known, 1 likely, 155 potential. Decisions: 0.

All Problems By Accessibility Guideline			
Guideline	Known	Likely	Potential
1.1 Provide text alternatives for all non-text content	16	0	52
1.3 Ensure that information and structure can be separated from presentation	1	1	28
1.4 Make it easy to distinguish foreground information from its background	1	0	24
2.1 Make all functionality operable via a keyboard interface	38	0	0
2.3 Allow users to avoid content that could cause seizures due to photosensitivity	0	0	13
2.4 Provide mechanisms to help users find content, orient themselves within it, and navigate through it	3	0	12
2.5 Help users avoid mistakes and make it easy to correct mistakes that do occur	0	0	4
3.1 Make text content readable and understandable	1	0	1
3.2 Make the placement and functionality of content predictable	0	0	21

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