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"It'd Be Really Dumb Not to Use It": Virtual Libraries and High School Students' Information Seeking and Use—a Focus Group Investigation

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BACKGROUND

The effective virtual school library offers 24/7 accessibility, just-in-time/just-for-me learning opportunities, and customized resources, as learners navigate the often overwhelming processes of accessing and using information. Virtual libraries allow teacher-librarians to apply their traditional skills for collection development, collaboration, reference, and instruction in powerful new ways in highly populated, new information landscapes. They allow learners independence as they allow teacher/librarians opportunities for intervention. As scalable strategies, virtual libraries allow librarians and educators to guide unlimited numbers of students—onsite, at home, or otherwise distant. Through their virtual libraries, teacher librarians can extend their three roles as defined in *Information Power* (AASL & AECT 1998) Learning and Teaching, Information Access and Delivery, and Program Administration.

School virtual libraries have powerful potential, perhaps beyond the

potential of academic and public libraries. In addition to a clear mission set out by *Information Power*, teacher-librarians serve generally smaller, more homogeneous populations. Effective teacher-librarians regularly collaborate with teachers. They have clear understandings of the curriculum for the grade levels and content areas that are within the sphere of a limited learning community. School virtual libraries have the potential to provide extraordinary opportunities for customized online instruction and guidance.

Though studies of secondary students' use of the Internet largely examine the behaviors of novice information seekers, those without the benefit of the online presence of a librarian, few studies address the influence of teacher-librarian guidance through the framework of a learner-centered virtual library interface. While studies of the effectiveness of online interfaces exist for public and academic library environments, little serious research examines the effectiveness of *school* library service online, student response to online service, and specific criteria for evaluation of school virtual library interfaces.

RESEARCH QUESTIONS

Clearly, the hundreds of school virtual library efforts, compiled by such sources as SchoolLibrary.NET (Milbury, Woolls, & Loertscher 2005), are not equally effective. These professional efforts, range from single-page *library brochures* to dynamic, multipage learning environments. The disparity of these efforts, compounded by students' growing need for online intervention, suggests critical research questions:

- How do virtual libraries affect student information-seeking habits? How do they respond to virtual access to resources and guidance?
- To what extent are these interfaces effective environments for information access and for learning?
- In a Google-reliant world, would students be motivated to begin their searches in an alternate interface, even if that interface was customized to meet their specific information needs?

After nearly nine years of maintaining a school library site, six of these years at Springfield Township High School, I wondered how my

own online efforts affected student research and about student users' perceptions and appreciation of the library site. I asked the following questions in the focus group interviews:

Q1.   When do you use online school library services?
Q2.   What prompts you to use the school Virtual Library?
Q3.   Is it is usually the first place you go or your last resort?
Q4.   Can you describe the last success you had with the interface?
Q5.   What features of the school library website do you most value?
Q6.   How have those features helped you with your research? Your understanding of the scope of online resources?
Q7.   Does the librarian's influence appear to be present in the site?
Q8.   What problems or flaws do you encounter with the interface?
Q9.   What improvements or additional features students would like to see in the website?
Q10. Do you feel the school library website helped you prepare for college or real-life research?

(Question numbers throughout this report refer to student responses to the above questions.)

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 any high school community, I wanted 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. This study reports the findings of focus group interviews with four groups of Springfield Township High School seniors and is a pilot for a larger study of school library websites identified as examples of best practice. The full study, including student responses in a fourteen-school Web-based survey, will be described in my upcoming dissertation.

LITERATURE REVIEW

What Are Virtual Libraries?

The terms virtual library, digital library, electronic library, cyberlibrary, and library website are used in the literature of information sci-

ence and education to describe such dissimilar efforts as: 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—library websites developed by teacher-librarians to serve their own user groups who are predominantly learners.

Virtual school libraries generally extend their services beyond the creation of an online information delivery structure in their attempts to implement instructional missions. Distinguished from sites that merely house archives or collect bookmarks, virtual libraries in educational institutions can reach beyond intellectual access, utilizing the professional skills of the librarian to offer instruction in information literacy, as outlined in *Information Power: Building Partnerships for Learning* (AASL & AECT 1998). Marchionini and Maurer (1995a, paragraph 6) describe such efforts as "building intellectual infrastructures" and point to their potential for creating communities of learners. Neuman (1997) cites several studies that point to virtual libraries 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" (536).

Though researchers continue to disagree over terminology, this study will use the term *virtual library* to describe a customized, structured online learning environment/community, developed by a teacher-librarian to improve and extend the services and mission of the library program to the learning community.

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 et al. 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 et al. 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" (32).

College students, just one year beyond our high school seniors, may not be prepared to recognize quality or to realize their broader search options. According to the Pew study *The Internet Goes to College* (Jones & Madden 2002), nearly three quarters of students (73 percent) 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.

The Pew Internet & American Life Study, *Teens and Technology: Youth Are Leading the Transition to a Fully Wired and Mobile Nation* (Lenhart, Madden, and Hitlin 2005) reports that nearly nine in ten teens are Internet users and that half have broadband connections. The survey concludes that "teens are enveloped in a wired world" (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, stating that "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" (14), the report seems to equate library resources with library hardware. The word *database* does not even appear in the study.

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. Virtual libraries address young users' needs on both fronts.

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. It is natural for users of any age 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.

While popular media attribute near guru status to young adults (Prensky 1998; Tapscott 1997), our own literature, the literature of library and information science, documents students' feelings of confusion and frustration and less-than-effective approaches when interacting with information technologies. The 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.

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 percent 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 multiterm concepts.

In addition to their own developmental learning issues, young people come face-to-face with information glut as they confront hundreds of choices for any information task. Which search tools should they 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? What does quality look like? How should they 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 reach a satisficing choice and select disappointing sources. For some students, the major decision making *stop rule*, is the first acceptable option they come across. Reminiscent of Gross (1999), Agosto's students describe a dichotomy of tasks—the imposed query, as when there is a teacher-designed task and deadline for a school project, and the self-generated search.

The *2003 OCLC Environmental Scan* (De Rosa et al. 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" (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 alternative search tools.

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 infor-

mation is organized, and often misunderstood the structures of the electronic information resources they use.

The Importance of Mental Models and Navigation Aids

School virtual libraries attempt to organize the Web and other information sources for students through their use of image maps and other types 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, Nesset, 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 reveals 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 virtual libraries, 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. Barker concludes, "the design of effective and efficient end-user interfaces that

are able to stimulate the development of rich mental models will be of vital importance to the successful use of digital libraries as a teaching and learning tool" (6).

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" (535).

Park and Hannafin (1993) identify twenty empirically based principles relating to the organization of information. Among the most relevant of the principles for virtual libraries 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 providing hypermaps to visually guide learners to relevant instructional tools.

Marchionini and Maurer (1995a) argue that virtual 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" (paragraph 8).

Online Interventions and Emerging Instructional Roles for Librarians

School libraries share specific missions different from those of special, academic, and public libraries. According to *Information Power: Building Partnerships for Learning* (AASL & AECT 1998), the mission of the school library is, "to ensure that students and staff are effective users of ideas and information" (6). The document explains that this mission is accomplished through seven goals. By organizing collections of information in a single interface to serve the *curricular mission* of

the school, as well as the *learning missions* of the school library program, school virtual libraries can clearly translate and serve and extend at least four 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 (6–7).

Wang (2003) suggests that virtual libraries "should provide the infrastructure for supporting the creation, assimilation and leverage of knowledge" (113) and ought to be constructed by examining the needs of learners, their learning priorities, and the mission of the organization.

Kuhlthau (1997) describes virtual libraries 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 virtual libraries as constructivist learning environments and argues that when virtual libraries 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 virtual libraries to meet the needs of specific learners, students are less likely to be overwhelmed by irrelevant information options. Clyde (1997) contends that a home page moves a school library "from being a user of online information to being an online information provider" (see "Rationale: Why have a home page?" section, paragraph 1). Clyde sees the virtual library's primary purpose as instructional—the delivery of "information skills that will be the essential life skills of the information age" (Introduction, paragraph 1).

Neuman (1997) recognizes the value of virtual libraries in gathering the specific information resources students need and sees the virtual library as "an essential venue for learning the concepts and skills neces-

sary for conducting research and handling information in an information age" (79). Neuman also notes that teacher-librarians who study use, can improve their online instructional practice.

Virtual libraries 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 and "just-in-time, just-enough and where-I-am learning" ("Individual learning model" section, paragraph 4).

Marchionini and Maurer (1995b) describe and predict the future of the virtual library medium in the school environment. They point to the ability of virtual libraries to break down physical barriers and facilitate communication "outside the formal learning environment" (paragraph 9).

Jenny Levine (2004), well 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 suggests, "librarians have to start adjusting now. I call that adjustment 'shifting' because I think you have to start meeting these kids' information needs in their world, not yours. The library has to become more portable or 'shifted'" (paragraphs 7 and 8).

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." Roes believes librarians must develop their "unique skills to support educational innovation" and function as role models for their institutions.

Evaluation of Virtual Libraries

Little research exists on evaluating school virtual libraries. Bruce and Leander (1997) note that research is heavy in virtual libraries for specialized workplaces, but see an unrealized potential for the development of educational digital libraries. They argue for the evaluation of school virtual libraries 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, virtual libraries 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."

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" (11). They admit that it is too early to set standards that might "freeze innovation," but note that it is not too early to urge professionals to consider evaluation as a critical part of digital library evolution. Saracevic (2000) both asks and partially answers the ultimate question: "How are digital libraries transforming research, education, learning, and living? At this stage we don't have the answers, but we have indications that significant transformations are indeed taking place" (368). Wang (2003) notes that educational virtual libraries should be maintained and modified according to user feedback, specifically relating to success and failure navigating the interface and unanticipated results.

Clyde's (1997, 2000) research centers specifically on the evolution and the evaluation of school virtual libraries. 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; and
- 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. Regrettably, while in 1997 Clyde saw endless possibilities, her early, small-scale content analysis revealed that most existing sites lacked purpose and made little effort to identify their users' needs. Clyde's (1999) longitu-

dinal analysis of school library websites 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.

METHODOLOGY

Four focus group interviews with high school seniors were conducted in an attempt to gain a clearer sense of *why* and *how* students use a virtual library site. I sought to get a snapshot of the environment, to better understand students' experiences and behaviors using or not using the site for school research.

Focus groups were used to gain deeper insights into attitudes, opinions, experiences, needs, and concerns. This method was selected in the belief that the reflections of learners are critical in understanding use and information-seeking behaviors, and in planning and improving instruction and service. Focus group interactions also allow researchers to observe levels of consensus and disagreement in both words and body language.

Students were asked to reflect on their long-term experience using Springfield's Virtual Library interface. Specific questions addressed patterns of use—the *whys* and *whens*, the features students most value, how those features help them with their research, what problems and flaws students encounter with the interface, and improvements or additional features students would like to see. A full list of questions is appended.

After being granted approval for all components of the study from the Institutional Review Board at the University of North Texas, I videotaped and transcribed the discussions. The transcribed discussions, as well as qualitative data gathered from a Web-based survey, were coded using WEFT QDA 9.6. These four focus group interviews are one component of a larger mixed-method study that includes a Web-based survey of 1,257 high school seniors in fourteen schools with websites identified as *best practice* and a content analysis of those websites. The results of the larger study will be described in my dissertation. Three open-ended questions from the Web-based survey are analyzed in this chapter to validate the focus group responses.

Students were purposively selected as peer groups to inspire relaxed

and easy discussion in the hope that individuals who shared commonalities would more likely share information with others like them. Volunteer students were selected from both Advanced Placement and regular academic classes to compare student responses in homogenous peer groups. Would honor students be more serious users of the Virtual Library? Would they employ more sophisticated information behaviors? Or was the influence of the Virtual Library broader, more universal, influencing the larger school population?

Volunteers were solicited from groups of Springfield Township High School students participating in the Web-based student survey also conducted during the first week of May 2005. Two of the groups were pulled from one Advanced Placement English class. The other two groups were pulled from two Global Studies classes scheduled for library research. I selected the first students willing to volunteer from each of the classes. The first group was girls only; the other three groups were mixed gender. The groups were ethnically mixed, and roughly reflected the 20 percent minority (predominantly African American) population of the school. The four groups were composed as follows:

- Group 1: Seven girls from AP English
- Group 2: Six students—four girls, two boys—from AP English
- Group 3: Seven students—four girls, three boys—from regular academic Global Studies
- Group 4: Six students—three girls, three boys—from regular academic Global Studies

Students eighteen years old and over signed a consent form prior to the discussions. Students younger than eighteen submitted signed parent consent forms. Students appeared eager to participate. Following certain housekeeping details—adjusting the camera, ensuring that students were comfortably seated, and collecting consent forms, the purpose of the study was explained and I assured students that their responses would be anonymous and that I sought their honest responses and was sincerely interested in learning from their experiences. Students sat in a semicircle in the library office in comfortable, upholstered chairs. They were offered refreshments. Each of the four discussions lasted approximately thirty minutes. The groups were sensitized to the

focus group discussion questions, having first participated in the Web-based survey about the library website.

BACKGROUND: ABOUT THE
VIRTUAL LIBRARY

The Virtual Library has been in existence at Springfield Township since the current librarian arrived in September 1998. In 2001 the site won the IASL/Concord School Library Website of the Year Award (IASL 2003). According to Web counting software, over the course of the last school year, the site hosted 15,142 visitors per month. Students use the website when they are not at school. Though the counter software used does not allow differentiation of Springfield Township student users from nonstudent users, approximately 15 percent of total website use occurs on Saturdays and Sundays and 38 percent of usage occurs during the hours after school.

The homepage is an image map, a metaphor representing a physical library. The image of the librarian invites e-mail help. Among other features, the homepage leads to:

- *Catalogs and Databases*, which displays icons for the library's own subscription databases, those funded by the state of Pennsylvania, the library's online catalog, e-books collections, the state-wide interlibrary loan catalog and the online catalogs of the local public library and two nearby universities. The library staff regularly updates and distributes a list of passwords for the databases for students' home use.
- *Online Lessons*, which links students to an archive of many of the lessons, handouts, and assessment tools developed by teachers in collaboration with the librarian.
- *Research Guide*, formerly a lengthy print document, it describes school expectations and presents models for preparing formal papers and projects.
- *Reference Desk*, which leads students to free online almanacs, dictionaries, encyclopedias.
- *MLA Style Sheet*, which leads students to documentation advice

and models. At the request of the Science Department, the librarian recently added APA examples to this page.

- *Pathfinders*, a collection of librarian-created guides to resources supporting major student projects and types of projects. Pathfinders include: Social Issues, Literary Criticism, Primary Sources, Nations and Travel, Doing the Decades, Elizabethan/Shakespeare, the Middle Ages, Health and Diseases, College Search, and Streaming Video Resources.
- *Search Tools*, which lists and categorizes a wide variety of search tool choices for the free Web.
- Students also have one-click access to the Noodle Tools citation generator and to Turnitin.com, used for checking drafts of their work for originality.

BACKGROUND: ABOUT THE SCHOOL

Springfield Township is a suburban high school located just outside the Philadelphia city border. The student population of 900 students includes grades eight through twelve. The school community is experiencing growth as families from the city seek to move to the suburbs for the reputation of the small suburban district. The 2005 senior class consisted of 132 students. A total of 78 percent of them planned to continue to higher education, with 67 percent attending four-year colleges and 11 percent attending two-year colleges.

The school offers include seven Advanced Placement courses (English, U.S. history, calculus, physics, statistics, computer science, and environmental science). Honors courses are also offered in English, Social Studies, Mathematics, and Science.

As a culminating graduation requirement, twelfth-grade students complete Senior Seminar, a course that requires students to create an independent project based upon an area of interest. In addition to the project, students prepare a thesis-based research paper and incorporate technology in a formal presentation to faculty and peers. The course assesses students' grasp of information and communication fluencies learned over their high school careers.

ASSUMPTIONS

It was assumed that Springfield Township seniors were not novice information seekers. Springfield students are consistently involved in research projects for the five years of their high school careers. For the past four years, Springfield Township has focused efforts on improving student research. Courses and units examine essential questions. Student projects are inquiry and thesis driven. The principal requires one of each of the teachers' annual professional goals to address improving student research skills. Most of the seniors interviewed in the focus groups experienced four or five years of Virtual Library use, a hybrid experience involving both independent use and instruction occurring as students visited with their classes. Password lists are regularly distributed to students visiting individually and with their classes promoting the use of subscription databases at home. A schoolwide Research Integrity Policy (http://mciu.org/~spjvweb/acadintegrity.html) defines plagiarism and lists its potential consequences.

Students are encouraged to reflect on the effectiveness of their research. Teachers are expected to reflect on their own practice. Focus groups are part of the larger school culture. Over the past two years I and other members of the school faculty have conducted focus groups with students to explore such issues as student motivation, diversity, and effectiveness of rubrics as tools to guide learners. For the past five years I have been conducting exit interviews with seniors to better understand their learning relating to research and information fluency skills.

LIMITATIONS OF THE STUDY

Students in the four groups knew me as their librarian. Finding a qualified, trained moderator presented a challenge with time running out before seniors left school for their internships, the LEAP Program, in mid-May. I therefore opted to function as moderator because of my unique understanding of the interface and because of my connections with the students. The existing relationships with the students allowed a relaxed, informal atmosphere that encouraged the students to freely

express opinions. Indeed, the students appeared comfortable and participated with enthusiasm and energy. Their honesty was confirmed by the more anonymous Web-based survey in which student responses to three qualitative items mirrored the responses of the students in the focus groups. Though the twenty-six students in the discussions also completed the Web-based survey, creating overlap, an additional thirty students (a total of fifty-six) provided remarkably resonant responses.

Though it is possible the students wanted to please me, due to long-established relationships, students were encouraged to respond honestly and were assured their anonymity would be respected. I was mindful of maintaining a climate in which students were comfortable in expressing their feelings freely. Students interviewed were merely three weeks away from graduation and felt little academic pressure to respond in a positive manner.

Like other students in schools with virtual libraries, Springfield students live in a hybrid environment. Though Springfield's Virtual Library exists in cyberspace, it also *lives* in the students' physical learning space. It is part of the school culture. The librarian and the faculty use it as an instructional tool. Teachers contribute to its growth and rely on it in their classes for reinforcing learning. It houses an archive of collaborative lessons, handouts, and student tools. Students use the site independently when they are in school and when they are home or otherwise remote. Findings relating to student use of the website naturally relate to its interconnected influence within the school culture of teaching and learning.

The four focus groups displayed strong group-to-group validation. In fact, the degree of consensus within and across the groups was extraordinary. Although it might be expected that honors or Advanced Placement students would approach the discussion or their work more seriously than general academic classes, each of the groups responded thoughtfully and discussed their research experiences with evident pride. Each described similar satisfaction and similar issues with the interface.

In each group, students were classmates and appeared comfortable and secure in their peer groups. The groups shared common research assignments and experiences and, in discussions, built on each others' comments, both positive and negative. The interaction among the participants was synergistic and spontaneous.

The degree of emotional engagement, as evidenced by the students' body language, animation, and frequent "chiming in" to agree was impressive, especially when it is noted that these are students discussing subjects that traditionally move librarians only. All students responded that they used the site. Several responded that they "love it." Nearly all agreed it was the first place they went when they started a research project (Q3). All students responded that they used it when they were not at school (Q1). Many noted that it was bookmarked on their home computers. Some said they had made it the homepage on their home computer. All were enthusiastic about the guidance offered by the Virtual Library over the course of their high school years. All noted that they relied on it heavily for school projects, most recently their Senior Seminar, English, and Global Studies classes (Q2 and Q6). They understood that the site was designed for them, that specific pages were created and maintained to meet the needs of specific Springfield assignments and specific Springfield teachers (Q7). Students understood the structure of the site. They knew the categories and why each was useful. Some commented that they liked the little pictures and found the site "pretty" (Q6).

Students spoke predominantly of their school research needs, queries inspired or imposed by their assignments and their teachers, although a few also described searches relating to personal information needs—for instance, the search for college information or for suggestions for books to read for leisure reading either from the Web-based OPAC or the linked reading lists (Q2).

RESULTS: GENERAL FOCUS
GROUP OBSERVATIONS

The most common reasons students listed for accessing the site were to use the subscription databases, to check documentation styles, to find quality resources and primary sources, and to use curricular tools developed collaboratively by their teachers and the librarian (Q2).

In each of the four groups, the favorite or most used area of the site was Catalogs and Databases, where students had access to subscription databases, the OPAC, and the catalogs of other libraries for interlibrary loan. Students described their favorite databases as if they were *fans*, as

they might describe their favorite actors or musicians. "I love GaleNet." "I am obsessed with ABC-CLIO." When students suggested site improvements, their improvements focused heavily on improving their access to databases (Q5).

Students appeared to have understanding that Google was a wonderful search engine, but that it was not the best strategy for beginning academic research tasks. In fact, it made their academic research harder to manage. They relied on the school library website as a quality filter (Q6).

Students described their thoughtfulness in selecting quality information. They used the word *scholarly* thirteen times. Use of this word is likely connected to Springfield teachers' requirement that upperclassmen cite content from peer-reviewed journals in their projects. The website is part of the larger school culture that values high-quality resources and is dependent on the site to guide students to quality (Q4 and Q6).

Second to the Catalogs and Databases area in student preference in all four groups, was the MLA Style Sheet and assistance with documentation. Students universally noted appreciation that the sources they were looking for were used as examples. They clearly appreciated customized documentation advice available whenever they needed it (Q7). Many expressed enthusiasm for NoodleBib, a citation generator added to the site late last school year. Students noted that their teachers were serious about documentation. Their grades were related to their ability to document accurately. The format listed on the website was the format their teachers required (Q2, Q5, and Q6).

Students were eager to compare their experiences to those of their peers who do not have access to library websites. They displayed serious pride about their abilities and their knowledge of their Web options compared to their friends' in other schools (Q6).

Student responses are listed verbatim to illustrate the ranges and richness of responses. Grammar has not been corrected. Group numbers are included to illustrate the significant resonance of the responses across student ability levels.

"It'd be really dumb not to use it. Everything there's laid out for you." Reasons for Use (Q1, Q2, and Q5)

Students offered several reasons why they use the library site. Recurring concepts included:

- that the site is customized to their needs
- that it makes research expedient
- that the site functions as a quality filter
- that their teachers trust and recommend its resources

In all the groups, students noted that they used the site "whenever we have projects to do." Interestingly, only two students discussed searching for information when the search task was not imposed. They described personal searches for college information facilitated by the College and Career Pathfinder. In a school where research is regularly assigned, students themselves limited the conversation to information needs that addressed school research.

Among the academic reasons listed for use were:

A: If you need help with citing, you go and it has everything basically that you'll ever need.

A: Primary sources are a big one that it's really hard to find if not using the website, so we also go to that. (Group 1)

A: I'm trying to find like literary criticism or scholarly articles, I always go there first. But sometimes I'll type the Google search in first to give me like a general idea of what I should be looking for, and then I'll go there. But I pretty much always use it.

A: I love the pathfinders. I make good use of them. Extremely specific. You just go "doot" and then you're there. (Group 2)

A: It's usually the first place I go to primary search anything.

A: When I do a research paper, like a lot of MLA styles to make sure I'm doing the citations right. Databases too, like you want some scholarly articles you can go on, Bigchalk like one of those big databases that can really be helpful. (Group 4)

Many students felt the site offered them expedience in the research process:

A: It makes it a lot quicker to do research, whereas otherwise you'd have to go through like pages and pages of useless stuff, but it's a lot quicker and it's a lot more consistent. (Group 1)

A: And it also makes the research process less time-consuming, so if you have a project you're going to go to that because it's easy to use and it's fast, and it gets you right to where you need to be. (Group 2)

Students understand that the site is dynamic—that this page and others is responsive to new resources (Q7).

> A: I use it every year. You see it changes every year. And it keeps it updated so I know it's still there, reliable resources.

"They say you need scholarly things." Influence of Teachers in Encouraging Site Use (Q2, Q3, and Q5)

Students noted that they used the site because their teachers recommend it. They notice their teachers' roles in developing the online lessons, handouts, and pathfinders. Students from both regular academic and honors classes perceived that the site allowed them to meet their teachers' requirements for using *scholarly* sources.

> A: The teachers, you know, when they say you need scholarly things. (Group 1)
> A: And also teachers lead us towards the website for different classes. They have like their own little section set up so I use it then. (Group 2)
> A: Yeah, many of them just place emphasis on using the website for primary sources, and literary reviews, so in English and history, the more social type classes use it quite often. And also for like biology because you have like databases and pathfinders that you can use. (Group 2)
> A: I like it because they give you scholarly articles and most teachers require that, so it's a good place to start. (Group 3)
> A: And a lot of the teachers will have a place on the library's website where you can go to find assignments if you've missed any, which is another useful amenity. (Group 4)

Some students said that their teachers recommended it, but they would use the site even it that were not the case.

> A: I find myself going to it not just because the teachers wanted us to but because it was a good resource.
> A: Well, over the years I've found it useful.
> A: Yeah.
> A: Yeah.
> A: It's never like a last resort, because it'll be easier just to go straight there and see if it has it, because it usually does, and then do Google. (Group 2)

When do students use the site? Students clearly use the site at home, in the evenings, and on the weekends. In each group students noted that

the site was either bookmarked at home or was their homepage on their home computer (Q1, Q2, and Q3).

> A: If I have a project, I'll use it at home to work on the projects. So I do use it at night and on the weekends sometimes.
>
> A: Basically whenever I have to research for a project, I use it, whether that's at home and on the weekends or at school, it'll be the first stop. (Group 2)
>
> A: And it's easier to use than, like if I'm at home I can use it instead of just having to go to the (public) library and hoping that the library has what I need, and sometimes it doesn't, so . . .
>
> JV: So do you guys use it at home, evenings, weekends?
>
> All: Yes.
>
> JV: You all use it at home.
>
> All: Yes.
>
> JV: Is it bookmarked?
>
> All: Yes. (Group 3)
>
> JV: Is it usually the first place you go or the last resort, or somewhere in between?
>
> A: Usually the first place.
>
> A: Yeah, the first.
>
> A: Yeah.
>
> A: It's my home page at home, so it's the first place I go. (Laughter) (Group 4)

"There's a database for everything." Virtual Library as Quality Filter (Q5 and Q6)

Students spoke often about the importance of discerning quality information, the importance of being able to locate primary and scholarly sources. They valued pathfinders as a way to quickly get to resources for specific assignments and to quickly access particular information formats. But perhaps the biggest revelation from the groups was the enormous appreciation students felt for access to online databases. Student voices gushed as they easily listed and described their favorites. GaleNet, especially its Opposing Viewpoints database, was universally acclaimed. A kind of "me too" syndrome emerged in each group as they discussed their most-loved databases. Though students had their favorites, they recognized that they each had particular strengths and choosing the right one for a particular information task was important. Some displayed surprising understanding of which database was pro-

vided by which vendor. (In a perfect virtual library world, that concept would be transparent to the user.)

> A: I like e-library.
> A: Me too.
> A: I like GaleNet.
> A: I love GaleNet.
> A: I love EBSCOhost.
> JV: Why do you like the databases?
> A: Because they really give you good essays and good material. Like you're not getting little flimsy thingies from Google, you're getting good solid essays.
> JV: So databases seem to be like the primary value.
> All: Yes. (Heads nodding in agreement) (Group 1)
> JV: What features of the library website do you value the most?
> A: Catalogs and Databases. (Yes, all, laughter)
> JV: It seems like that's a value for everyone?
> All: Yeah. (All responding at the same time) GaleNet—yes, GaleNet! EBSCOhost, I like e-library. e-library is the best for Global.
> JV: It's interesting to see that it is such consensus over the databases. Why is that, do you think?
> A: 'Cause they have everything. It links you to the whole world.
> A: There's a database for everything. Like if you need newspaper articles, there's one for that. If you need like scholarly sources, there's one for that too. If you need like pictures or reviews, there's stuff for them too. (Group 2)
> A: I use it when—actually, I'm a dork. I use it when I don't know anything about that particular issue just to read up on it, or also if we have debates like the UN model that we did in one of our classes, I wanted to know a lot about my position that I was given, so I used Opposing Viewpoints and Research Gold (Student Resource Center Gold) which actually really helped me to get in-depth what I needed to learn.
> A: I like how there's like a myriad of different databases in there, because if I'm in GaleNet's Opposing Viewpoints and I type in my topic and I only get three articles, I go search at e-Library and I find 20 articles. (Group 3)

Why the universal acclaim for databases? They give students efficient access to the materials their teachers value and those they have come to value themselves. Students noted that databases offered greater searching flexibility and more options than free Web search tools. They knew that databases offered opportunities to filter for peer-reviewed materials and to search by media or document type.

A: And also because you can be really clear about what you're searching for, and you can say like peer-reviewed or only magazines or only video pictures, primary sources. Just the options make it valuable. (Group 1)

And students appreciate the portability of their database options.

JV: So you appreciate search options in databases.
All: Yes.
A: A lot. And I also use them at home too since we have the passwords. And I usually go back and research further at home on the databases on my own computer. (Group1)

Students explained that their strategies for evaluation extend to examining database result lists. In Group 3, one young man brought up a selection process that moves well beyond satisficing. He described the importance of the critical evaluation of results even when they appear in already filtered databases.

A: The other thing is the ability to differentiate. I mean, yes, you have something like GaleNet and Opposing Viewpoints. But even Opposing Viewpoints might have articles that don't hold up to par as some others might, and you learn to look at those with a critical eye, learn to differentiate between good articles. I mean, it's not like looking at Google and GaleNet. You're looking at something that's very good and then deciding between great and better. (Group 3)

"I really don't have to Google things anymore, to aimlessly research." Comparing Google to the Databases and Virtual Library Resources (Q6 and Q10)

Convincing students to look beyond the free Web and commercial search engines has been described by many researchers as an uphill battle. (De Rosa, Dempsey, and Wilson 2003; Fallows 2005; Griffiths and Brophy 2005; Mann 2005). In fact, the OCLC Environmental Scan quotes one content vendor saying, "Google is disintermediating the library" (De Rosa, Dempsey, and Wilson 2003, introduction, paragraph 2). For the students in the focus groups, there are times to use Google, and there are clearly times when Google does not quickly get them what they need. A student in Group 1 expressed an understanding of

Google's limits, noting, "Apparently there's an invisible Web that I didn't even know about."

When searching options are no more than an extra click away, and when use of those options are highly valued by their teachers, the slope to develop a richer searching tool kit does not seem as steep. Without prompting, nearly all the students were eager to compare their experiences with the world's most popular search engine to their experiences with the Virtual Library for academic research. Students compared their lack of success with Google to their positive experiences with the website twenty-three times.

While students continue to use Google's significant information reach for other information tasks, their academic behaviors and attitudes fly in the face of the Pew findings relating to college students who ignore their university's resources. The Pew researchers observed "students who were using the computer lab to do academic-related work made use of commercial search engines rather than university and library Web sites" (Jones and Madden 2002). Each focus group repeatedly expressed the belief that their school library's customized interface was better able to give them what they needed, as well as what their teachers hoped they would find. Google didn't "cut it" for their school projects. It wasn't efficient for their information needs; it didn't filter for quality. It didn't have the type of search features they found in their favorite databases.

> A: When you research at the Virtual Library, you know that you're getting like correct information and stuff. Like going to Google and getting someone's like crap. Or a student project. (Group 3)
> A: If you end up going to Google, you have all sorts, you have all this huge pile to sift through, but the library's already sifted through all of those. (Group 4)

Students often compared Google to subscription databases. Though Google may have quality materials, students generally felt it would be more expedient to use databases. (Interestingly, these same students are linked on the Virtual Library to Google Scholar, Google Print, and Google's Advanced search screens. In the short answer items of the Web-based survey, students noted appreciation for being introduced to these extended Google tools.) The focus group students appear to

understand the difference between general free Web search tools and databases.

A: Google doesn't really come up with . . .

A: Scholarly articles. That's how the Virtual Library helps us out. (Group 1)

A: I think I understand more about like general Google searches versus the databases, like how they're separate and how they each kind of do different things for you. (Group 2)

A: To me a good researcher is someone who doesn't try to find the easiest way out. I mean, it can take you, yeah, ten seconds, whereas ten minutes you can find twice amount of articles, journals, scholarly articles than you could have found on Google or Jeeves. I mean, they're search engines, and that's what they're specified for, search engines. They're not in-depth scholarly articles. You're not going to find Harvard Journal . . . and if you do, maybe Google's stepping up their game. (Group 3)

A: I know that like before my boyfriend got into a different private school, the teachers don't even know what a database is. They are just like go on Google or something. . . . And then I compare it to students at this school, and it's like this is real information, I see that it's from a scholarly article rather than like someone's website project or something. (Group 3)

A: I think it's a waste to go on Google, because like five articles from Google equal one from GaleNet. (Group 3)

Group 4 noted that other school websites may have limited resources and they feature prominent links to Google. The group laughed and wondered why a library would bother to link students to create such a link.

A: I went to sites from a different high school and they had like a website but it didn't have any databases, good ones, they had maybe like two, it was like Ask Jeeves and Google. (All laugh)

A: A link to Google. (Laughter)

JV: Why do you laugh when you hear that?

A: 'Cause it's so . . .

A: It's like a joke to us.

A: Cause now we have all these resources.

A: All we go to Google is for pictures now.

A: When we started out to research, every time we'd go to the library to research, we hear, now don't just go to Google." And other schools are like, "Hey, go to Google."

A: In eighth grade they used to tell us all Google, and sites like Dogpile.

A: And now when I go to Google and I actually read stuff, I'm like, did a 12-year-old write this?

A: And they're just like weak. (Group 4)

Students sensed that the sources found using databases would be preferred by their teachers. Although the search engine would not likely be visible in the URL in a standard citation, the here student refers to the general quality of the choices (Q4):

A: Well, the other thing is when your teacher looks at your citations he or she is not going to see Google, Google, Google, Google, Google, Ask Jeeves. It's personally embarrassing for me to have that, so having something like New York University Medical Journal . . . that's a very good thing to have. And the teacher says okay, this person took time to do it. (Group 3)

"And I always know to like click on the desk if I want help." Instruction and Intervention (Q7)

Students noted with laughter that the Virtual Library continually expresses the librarian's voice and reinforces face-to-face instruction. Students' appreciation of this type of online intervention echoes Kuhlthau's (1997) descriptions of students' affective response to school research and the importance of adult intervention at critical points in the process, as well as the growing potential for intervention online. Students view the website as a hybrid experience. Instruction they receive formally or informally from their teachers and librarian during school hours is continued after school or when they are in school but not in direct contact with faculty.

Students understand the e-mail button is really their librarian and that she understands their information needs. Some students noted that they made use of e-mail help.

A: I know I can click on the desk if I need help. (Group 1)

Students as a group have come to understand that the sites preferred by their librarian, and their teachers are noted and might be worth visiting first. Formal lessons and over-the-shoulder instruction appear to resonate during students' independent use of the site.

A: I see like a lot of the databases and like how things are set up, it's like what you teach us to go to, and I can see how you're trying to get us to access those things that you tell us are useful for us.

A: And I think there's a lot of instructions on the page that kind of mimic your voice. It says I know when you come to like the classrooms telling us what to do, like if you look at the website, look at like what you have to do in the pathfinders or if you're going to a certain type of website, then like your voice is there because you're leading us towards it without you actually being there. (Group 2)

A: It's there. Yes.

JV: In what way do you hear my voice when you're at home?

A: When you research, you're like, when you're typing in the key words . . .

A: To rephrase it.

A: Yeah, to rephrase it if you don't . . .

A: To not just give up, not just give up if you don't get a match right away.

A: Keep doing all kinds of . . .

A: And to use different databases.

All: Yeah. (Group 4)

Although students in Group 1 didn't recognize they were using what the librarian called "Pathfinders," they later described these customized instructional tools as very useful. One young woman in Group 2, raved about their ease of use for specific projects:

A: "You just go 'doot' and there you are." (Group 2)

A: I think that's the main thing for me. And they give you so many options to choose from. It's like a win-win situation that you don't really lose from it. (Group 4)

"And it's pretty, so you don't think about having to do research." Schema and Organization as Implicit Instruction (Q6, Q4 and Q7)

The organization of the Virtual Library is designed to be implicitly instructional, with search choices and other resources categorized around an image map, guiding students to both Web and school-specific resources. Students felt that the scaffolding of choices reduced their cognitive load and made research more enjoyable.

A: I think it's cute. It's like a graphic organizer with pictures you can find. And it's pretty, so you don't think about having to do research. So it makes it easier. It makes it happier.

JV: In terms of the organization, does it help you?
All: Yes. (Group 1)

A number of instructional tools were developed for and are archived in this central location in order to facilitate access and reinforce instruction. Students understand that many teachers had favorite places on the site and places they themselves helped to develop—that their teachers' voices, as well as their librarian's, are present. For instance, as a school devoted to inquiry, the faculty offers supports to help students develop thesis statements.

A: We definitely use the thesis test just about every time. That's helpful just because you have the five questions to check yourself with.
A: I know in Senior Sem our teacher printed out a few of the resources I haven't seen. Some are on like more than just the thesis generator. There was one that was like different ways to word your thesis. You can use like comparisons, or like most people think this but in truth it's this. And I actually hadn't seen those before so it was really helpful.
A: There is like a list of good introductory phrases that help in generating a thesis. (Group 1)

"Every citation on every paper." Documentation Help and Information Ethics (Q4 and Q5)

Second to databases, students noted the most useful feature of the Virtual Library was its guidance in documentation. Students appreciated the customization of the examples.

JV: After databases, what do you like?
A: Citations.
A: Noodletools and the MLA style sheet. (All nodding heads)
A: They have the like style sheet. I use it for every paper. (Group 1)
JV: What other features do you use?
All: Definitely. The style guide. Yeah! (Nodding heads, enthusiasm) (Group 3)
A: The other thing is every time a teacher says you have this paper to do, oh and by the way, you have to do the MLA citations and works cited, so it's perfect to print it out and have it. (Group 3)
A: I would do it like at nights to make sure that I have good sources, I'll go over and recheck them on the websites, and the MLA really helps you a lot, because there's a lot of different, there's a lot of different little stuff

that you can miss if you don't look at it correctly, and it gives you an example, which is always good.

A: Even doing works cited since you were in middle school, but I still, every time I do works cited, I still need to glance at the home page just to make sure everything's right, just periods and everything like that. (Group 4)

This year students were offered a citation generator as well as the style guide. Though they were always linked to free citation generators, NoodleBib is full-featured and includes specific guidance for citing all the school's databases services.

A: I like the citation generator this year as well.

A: Yes.

A: Yes

A: I use that quite often, especially when I've done a paper and it's all done and I've done my research and everything, and it's like the day that it's due and I'm like, oh no, I didn't do my works cited, I have to run up to the library and do that, and I just use the generator.

JV: NoodleBib works pretty well for you?

All: Yeah. (Group 3)

A: NoodleBib's amazing.

A: I like it because all you have to do is like enter in the information.

A: It's basically a template of all the information that you want to, what you'd add in for a works cited, and it just does it for you. (Group 4)

"So are you talking about interlibrary loan? A: Yes, that's it." Interlibrary Loan (Q4 and Q5)

Though no one could actually name the service, several students raved about the statewide interlibrary loan system. In an age of immediacy, where alternate information is likely available via e-books, websites, and full-text databases, this particular move away from satisficing speaks to student willingness to plan and to wait a couple of days, or even a couple of weeks, to get preferable information sources. It also speaks to student willingness to use print. Through the discussions, students revealed their understandings that libraries are networked environments and that university and public libraries generally have collections different from, and often larger than, school library collections. I attribute this willingness and these understandings to instruction in interlibrary loan use for major projects; the efficiency of the state-

wide catalog system, Access PA; the accessibility of local online university OPACs; and the ease of access to these services from the Catalogs and Database page.

> A: I was looking for information about films that weren't just reviews of films, and I found a lot of stuff through the library website that were actually through other universities and things like that.
> JV: Are you talking about interlibrary loan, the university catalogs?
> A: That too, but also using other schools' catalogs and things that we might not have here but we have connections to get to them, so that was very helpful. (Group 1)
> A: And like my senior project, I got to order those books from other libraries, the local libraries don't have them, and that really helped, especially when you don't really have access to things that you need for your projects. (Group 2)
> A: Also the Pennsylvania—my personal favorite is, next to GaleNet and e-Library, next is the Pennsylvania exchanges.
> JV: Do you mean interlibrary loan?
> A: Yeah, interlibrary loan, and you get it within two days, it's perfect, especially when you're on a deadline. It's the best. (Group 3)
> A: Via PA Electronic Library or whatever, where all the libraries in PA are connected, so if our library doesn't have a book, it'll tell you where you can get it.
> JV: So are you talking about interlibrary loan?
> A: Yes, that's it. (Group 4)

"Much better. So much better. We have a lot of advanced programs here." Compared to Other Schools (Q4, Q5 and Q10)

Students spoke of their research skills with confidence and were eager to compare their experiences to those of their friends in schools without the guidance of virtual libraries. In fact, this comparison sparked animated conversation and agreement in all four groups. Students noted that other high schools do not focus on student research. They suggested that teachers in other schools may not know what a database is. The students expressed gratitude for the resources to which they had access and clearly realized that not all their peers had access to online guidance, customized curricular resources, and easy access to databases to support their academic projects. These students regularly guide stu-

dents in other schools—high school students as well as students in higher education—to the Springfield Township site.

One senior who transferred to Springfield as a sophomore, made this comparison to her former school, which had a limited website.

> A: Not many libraries have set up what we have because other schools websites that I went to. And they might give you links to stuff that's going on in the library, but not Catalogs and Databases that we have available to us. They have like this online website and I wish in previous years back like I had access to it and knew about it, because it makes things so much easier with researching. (Group 1)

Another student noted that the site was important because it matched the strong research focus of the school. She suggested that students in other schools, with lower expectations for research, may not have the need for an extensive site.

> A: I know that I talk to a friend who goes to a Catholic school, a couple of schools, and they said that they really didn't write long papers, they usually write five-paragraph expository essays and that they only wrote a couple long papers in their high school career, and I feel like we are a lot more research-driven in that we write a lot more longer papers with scholarly articles cited, so I feel that we've been research-driven pretty much, and the website has helped with that. (Group 2)

Students spoke with evident pride of helping friends whose school libraries did not maintain extensive sites.

> A: And I know that friends, some of my friends from other schools, they always ask me where did you go to find the research for the information, or ask me to help them with their research because I know I can just go to the school website and then it'll be just that simple. (Group 2)

Students in Group 3 compared their experiences to their friends', admitting that they "illegally" shared their licensed database passwords. They were proud to be able to display their abilities to efficiently access quality material for school research.

> JV: Can you compare your research experience with those of your friends in other schools?

A: Better.

A: Much better. So much better.

A: A lot better. (Nods, agreement)

A: My friend was doing a senior project the same time I was, and she was like I need some more sources, like I can't find anything on Google or Yahoo or anywhere else she was searching. So I had to give her like my list of passwords and like the sites that I use. I was like, oh, don't give this to anybody else. She's like thanks so much. And I like did some research for her because I had the access to it. It only took me like five minutes to find just like a packet of stuff just to give to her, and she's like this is more than what I've gotten by myself in like a month.

A: Yeah, I do the same thing. Like if my friends are in trouble and I'm just like, oh, here, let me show you a place to go, and I pull up GaleNet, and I pull up Opposing Viewpoints, and they're like oh my gosh, thank you so much, this is exactly what I need. But my school doesn't have this. (Group 3)

The comment and the general feeling, "We have a lot of advanced programs here," is a little surprising. Strangely the students compared their *privileged* experiences to students whose schools had, at very least, access to the statewide Access PA POWER Library databases, an extensive collection that includes the EBSCOhost suite of databases. These databases are available free to most students in the state through either their schools or public libraries. Participants perceive that they are uniquely gifted with many of these free databases through the Virtual Library. They believe that their friends' access to these resources is limited, possibly because of limited awareness of the site through which the resources are available.

A: I know we just have a lot of advanced programs here. Especially online, but also if I talk to people that go to [the local community college], they struggle with writing papers that we could have written in like eighth grade.

A: I don't know if other schools really have everything that we have.

A: Yeah, my friend from (a local high school) couldn't even write like a paper and have all the resources like us. It was like a joke paper to us.

A: I went to sites from a different high school, and I felt I really didn't have, they had like a web site but it didn't have any databases, good ones, they had maybe like two, it was like Ask Jeeves and Google. (All laugh) (Group 4)

"I plan to use it next year." College Research Readiness (Q4, Q6 and Q10)

Nearly all students spoke of their attachment to the site. And although they all expressed their feeling that the site helped them prepare for college research, some expressed concern about moving on to new and larger interfaces. "I think I am still confused. I am sheltered within the system," said one young woman in Group 2. "I don't know what I would do in researching without it." This particular young woman's comments were both reassuring and distressing. She spoke to the comfort level students felt with the interface, as well as a certain lack of confidence for moving on. She was not alone. Several students expressed the fear that their college might not have a website that would be as easy to use. After the student expressed that thought, others responded that they suspected university library sites had similar structures and they would likely to be able to transfer concepts and understandings to the more academic environment.

Though most students expressed their readiness for college and academic research, each group noted they would likely return to the high school site. Several students noted that older siblings, because they are so comfortable with the interface, continue to visit as alumni. They grow especially reliant of databases that proved successful to them in their high school years. Though the sharing of a database password violates the school license, students are obviously using these passwords well beyond their high school tenure.

For these students, the site seemed almost like the neighborhood candy or convenience store. They know where the candy bars are and they know the shopkeeper behind the counter. The word "pretty," used by a young woman in Group 1, is likely used to refer to the image map that has served as a consistent schema, or mental map, for students over the years.

A: I plan to use it next year.

A: Yeah.

A: We'll be coming back. (All)

A: Everyone who's graduated says that they get a password sheet and use it so you can use it in college. I know my sister asked me for a password to use it for a student in college, and it makes me nervous, I'm afraid I'm going to go to college and they're not going to have like all this stuff to use.

JV: It's funny, because they will have really much bigger databases there.
A: They might not be pretty. (Group 1)

Another student reassured his group that they should be able to transfer their knowledge of the types of resources available to the university interface.

A: I think that it will help us in college with our university web pages, because I know that there's other institutions that have web pages set up like ours, so I think it helps us navigate in those sorts of databases. (Group 2)

A young man echoed the feeling of comfort, predicted a similar desire to return, and expressed understanding that the university site would lead to even richer options.

A: At first, when I go to college I'll probably still want to come back and use these databases. There's liable to be a whole ton more there, but I know how to use these. I mean, they've been effective. When I need more, I'll go find more, but so far, most stuff I've gotten here in high school has been amazing. (Group 3)

A young woman described her experiences using the site to help her brother, a Springfield graduate who is currently an engineering student. Though his college library likely had more extensive resources, he felt more comfortable using the familiar environment of the high school site. His younger sister spoke with obvious pride of her ability to help him.

A: Like just over this weekend, my brother called me. He graduated three years ago. And he called me to get the list of passwords to our databases. He's like (sister's name), I really need this, I have a project. And I was like, why can't you use the information that your teachers gave you? He's like 'cause I know that the information on this virtual library will give me the correct things that I need. He said I need EBSCOhost but I don't have the password, and that's what my teachers asked for. I was like I have stuff here as a high school student that college students need, and I think that prepares me well for college because now I know where I have to go, what I need, and I already know this stuff before I even get there.
A: Mm-hmm. (All) (Group 3)

While each group responded that they felt the website "definitely" helped them prepare for next year's college research, Group 4 was emphatic, and felt that they understood the need for quality, expressed confidence in their abilities, as well as concern about losing access to their familiar databases.

> JV: Do you feel that the school library website helped prepare you for doing college or real-life research?
> Several: Yeah.
> A: Definitely.
> A: Because you know that there's going to always be a better research thing out there. You can always get better information if you're not satisfied with what you do have. Like in college it's not going to be laid out for us like this, but at least we know now—
> A: We can keep the passwords.
> A: Yes. I'm definitely keeping them.
> A: Can we get a printout?
> A: You don't change the passwords every year, do you?
> JV: In other words, you feel prepared.
> A: Yes, definitely. (Group 4)

These discussions about college readiness point to the need for potential lessons introducing university interfaces to college seniors, so that students might transfer their understandings of categories of resources available to a larger interface. If students saw familiar, if extended, resources on these larger sites, the transition might be far less intimidating.

IMPROVEMENTS (Q8 AND Q9)

Students thought seriously about potential site improvements and were quite frank about their suggestions, despite any perceived investment of the researcher/librarian. Five major themes emerged as students described strategies for improvement of the site.

"Big list of links." The Need to Weed and Annotate!

For some students dead links were a problem. While the Virtual Library has been gradually evolving from a focus on lists of links to annotated

Pathfinders, old pages remain to frustrate student users. Students noted that they read and rely on annotations as clues to relevance and they would like to see more of them.

> A: For some of the links, I know I've come up to pages where it's just like a big list of links, and it would be kind of be helpful I think if there was like just a little star or something that just describes what the site is or what it has, because some of them are broken and some of them aren't what you were looking for or whatever. (Group 1)
>
> A: For me, I think on some of the less-used links, like the links to quotes, links to books. Some of them are broken, and have been for a lot of years. (Group 1)

"There should be a topic list for the databases." Describe and Organize the Databases!

In each group students wanted more information upfront describing the databases. They knew they had many choices, but were not always sure where to begin. Students felt they missed some of the *good stuff* because they had trouble identifying the best database for a particular task. Though individual databases, like Gale's Biography Resource Center and EBSCOhost's Business Source Premier are separately identified in the Pathfinders as students work on individual projects, databases are arranged by vendor in the Catalogs and Database area. This organization is meaningless to the student user. Several students requested that we organize the individual databases by subject, or perhaps create topical pull-down lists of databases for various information needs or for commonly researched questions. Following the focus group discussions, the librarian responded by adding mouse-over descriptions for many of the databases and plans to create pull-down links organizing databases by subject.

> A: There's should be like a topic list for the databases, so that way like common questions that kids ask while they're on there, they could just have a list of databases that apply to each topic.
>
> A: If there was a description of like the databases underneath or somewhere near so you could find it, to help you like direct to where you should actually be looking for a topic. 'Cause a lot of times I would be looking in different databases and I'd ask somebody, the librarian would say no, you

should be looking here or here. If there was a description underneath the databases, that would help. (Group 3)

"I don't have those sheets." The Problem with Passwords

Each of the groups noted frustration with the experience of losing the database passwords when they need to work at home. They wanted to see better strategies than lists of dozens of passwords, different for each database. These issues seem worth investigating and are not unique to Springfield Township. Many universities allow students to log in to all their online resources with the same student number and password that they use for many other academic and campus life purposes. K–12 vendors do not seem to be promoting similar strategies. As a result of the focus group discussions, the librarian plans to negotiate with the vendors for more uniformity in remote passwords.

> A: Sometimes when I want to access it from home I don't have those sheets to use it or something, and maybe they could put them on the website instead.
> A: It might be good to have like a website that has all the different passwords but have only like one password that you need to access that website so that you don't have to remember as many passwords at a time, and you can just access that if you need it. (Group 2)
> A: I think something that would be really cool would be like, you know how there's like that password sheet that you said is also in the background somewhere, I think it would be helpful if you could log in as if you were, like kind of like remote accessing something, you could log in as your first—or your last name, first initial and your password that you use at school, and then so that at home you could just click on all the different databases and not have to put in the new codes. (Group 3)

"Because I pick the wrong words . . ." Trouble Naming the Need

In each group students discussed their difficulty in expressing searches. This is consistent with much of the research describing issues with expressing information needs as well as the many researchers who suggest the importance of supports to help students as they search (Brown 1995; Fidel et al. 1999; Large & Beheshti 2000; Neuman 1997; Shenton & Dixon 2004). It is impressive that the focus group students actu-

ally recognize their issues as relating to *their own* limitations. They recognize that poor searches get them fewer results or results of lesser quality. To a small degree, this issue may be addressed in Pathfinders for individual projects, but would it be far more effectively addressed if search tools more seriously considered the vocabulary limitations of children and young adults. Working independently, students need the support of thesauri and systems that make alternative descriptors and related words and phrases more evident.

> A: I found even I'm using a database, sometimes I don't know exactly what to search under, and I try a bunch of things. Sometimes it helps, sometimes it doesn't. But if I had like a more direct purpose in my search terms, it would save a lot of extra searching that I have to do.
> JV: You're talking about developing key words?
> A: Yeah. (Group nodding heads) (Group 1)
> A: I remember having to do an exposé on Chinese prisons and I kept writing China prisons, and it wouldn't give me anything, it kept saying specify, specify, and that's really hard to do because you don't know how more specific to make it. So you put it in quotations, you do italics, you don't know. (Group 3)
> A: That would be cool if they had some feature where you could type in what you want to search for, but it comes up as like twenty different ways to say it, because I pick the wrong words and then—
> A: Cause it matters how you word stuff, how much information you get. (Group 4)

"The more we can get similar to that, the better." More Databases, Please!

Despite the fact the library website displays a wide variety of database options, Springfield students know that university budgets provide for a far greater array of resources. They expressed their desire for even more resources.

> A: Well, I've seen like some of those university websites and they just have so many databases on there, and I guess a lot of that is a money issue, but GaleNet and e-Library, like we find there are like some databases that are just really good, and the more that we can get similar to that, the better. (Group 2)

RESULTS FROM THE WEB-BASED SURVEY

As part of the larger study of fourteen schools, Springfield Township High School seniors participated in a Web-based survey prior to the focus group discussions. The open-ended responses of fifty-six Springfield Township seniors (42.4 percent of the class) who participated in a survey help to validate the data expressed in the focus groups. Though overlap exists—the twenty-six focus group participants were among the fifty-six responders—the Web-based survey includes thirty additional students from other visiting classes. Web survey participation was more anonymous. No librarian observed. No camera intruded. Students who might have easily opted to answer only the "less energetic," quantitative items, clearly spent time composing responses in three concluding qualitative questions. These open-ended items corresponded to questions asked in the focus groups. All but one student wrote several sentences of responses to the following items:

- Can you describe a successful experience you have had using the school library website (Q4)?
- What additional features or improvements would you like to see the librarian(s) make to the site (Q8 and Q9)?
- In your own words please describe the influence the school library website has had on your high school studies (Q6).

Responses to the Web-Based Survey Questions

Student responses to the Web survey questions echo the responses of the focus group participants. (The following discussion connects the focus group questions to the Web survey responses.) Common themes for the "successful experience" item included the students' appreciation of access to databases, citation advice, and easy access to interlibrary loan. Students used the word *scholarly* nine times (Q4 and Q6).

Again they compared the use of the site to their experiences with Google:

> It showed me different alternatives in researching other than going straight to Google.
> I have learned how to decide if a site is credible or not, and I have learned

how to find more information and better ways to finding it rather than Googling everything.

They noted their appreciation for access to databases and an understanding that they have both free and invisible Web options:

The databases are essential to most school projects and provide a lot of quality material that can't really be found on the free Web.

I have recently finished a paper and project about Africa and the majority of my resources for the paper came from links on the school library website, such as SIRS, EBSCO, and GaleNet sources.

Next to the databases, students commented that they appreciated advice in documenting their sources:

Recently, I had to use the MLA style citation guide for a annotated bibliography for my English class. Many of the sources I used, I had never really used before, and this site was helpful in demonstrating the proper way to cite them.

They expressed satisfaction with online library services and connected its use to their academic achievement:

I have used the library website for every major project at school. In my junior year, I did my end-of-the-year project worth 170 points using only the library resources and I got an A on my presentation which was graded by the one of the teachers that is an extremely hard grader.

I have used the school library website for almost every project I have done in High School. . . . This website has saved my life many times during school and I couldn't have done as well as I did in High School without it.

I used the website for help in all major papers when it came to research and citations so that I was not to plagiarize. I relied most in my high school career on the Library web page for help in researching my senior thesis paper and project. It has been a great help and I may have been lost with out the guidance of the web page.

Though more than half of the students said the site was just fine as is, the Web responses relating to suggestions for improvements also echoed those of the focus group participants. Students requested even more databases, online password lists for easier access to databases at home, and more annotations for the links. They wanted the dead links

fixed. And they wanted more support for searching vocabulary (Q8 and Q9):

> Sometimes I forget to take the sheets that the library provides for passwords to use when accessing the website features at home. Then I have no way to access the things I need.
>
> While I often have the search engines and databases I need to search with, the search terms I am using often don't come back with the results I am looking for.

One student apologetically suggested that the site should go beyond research needs and focus on students' leisure interests:

> Maybe there could just be a site to link up to popular interest sites so that it does not overwhelm students and so that the web page is not used strictly for work. If I missed a link that sends students to sites for leisure, I am sorry, just an idea.

Student responses to the item on the influence of the site on their high school career overlapped themes covered in the item on successful experiences. Among the typical responses were (Q6):

> The library website has broadened not only my knowledge in all research topics, but has also helped me to better understand where to find the best information on the Internet.
>
> It has completely changed the way I research for a project. I no longer Google everything. I am better able to find information, and I am able to find the information more quickly.
>
> It easily guides the student through the research process, allowing them the luxury to focus on the content, style, grammar, and mechanics of the project itself. It truly makes the research process less arduous and time-consuming.
>
> Every paper or research assignment that I have had throughout my high school career, I have used this site for just about all of my research. I show it to all of my other friends that don't have a virtual library and they love it. I couldn't live without it.

CONCLUSION

The focus groups sessions clearly demonstrated that these four groups of students valued the library website and relied upon it heavily. Spring-

field students' responses to the qualitative items on the Web-based survey resonated with the focus group responses. What was especially surprising was the degree of consensus, both within and across the four focus groups, as well as the survey questions.

Student use the site when they are at home—evenings and weekends—and when they are at school (Q1). For many, it is the starting point for academic research and it is bookmarked on their home computers. Students in each group appeared eager to share successes with the interface. They believe that over the course of their studies, the website not only guided them to useful resources, it guided them to better grades. The site helped them meet their teachers' expectations (Q1, Q3, Q4, and Q6).

These are not novice users. These students display sophistication in their information seeking and appear to have learned from the site over their five-year high school experience. Students were well aware that their information choices extended far beyond the result lists of commercial search engines. These students consistently move beyond satisficing. They voluntarily and energetically seek out the nonimmediate and nonelectronic, as demonstrated in their interest in interlibrary loan. They are serious about evaluation. While current studies (De Rosa et al. 2003; Fallows 2005; Griffiths & Brophy 2005; Mann 2005) note that the general public relies heavily, often exclusively on Google, students in the focus groups noted that they avoided Google for their academic assignments and relied on the other search tools, including databases they discovered on the library website and the multiple sources types they discovered in customized pathfinders (Q6). They universally appreciate access to databases and recognize even within databases there is good information and great information. These students understand the need to use information ethically and demonstrate pride as they discuss the care they take in documenting sources with the guidance of resources available on the interface (Q5 and Q6).

Feedback from the groups spotlighted problems students faced in deciding which databases to use for particular tasks and how to develop a good query. The discussion confirms the need for both instruction and for database and website support for students looking for keywords as they search. It also confirmed the need for improving website annotations and for a more user-centered access plan for remote database users (Q8 and Q9).

Clearly, it is not the website alone that is inspiring the serious research behaviors. Use of the site for these students is a hybrid experience. Springfield Township teachers are users and advocates of the site as well as contributors to the site. Students note that they hear the actual voice of the librarian, as they interact online. That voice reinforces advice they hear when they are in the physical library (Q2 and Q7). Students expressed a confidence in their research skills that they attribute to use of the Virtual Library. Though they expressed interest in continuing to visit the site after graduation, they also expressed the feeling that the site helped prepared them for the types of resources they would likely encounter in an online academic setting (Q6 and Q10).

While the results of these focus groups cannot be generalized, these students are likely representative of students in their classes and they provide encouraging feedback and thoughtful suggestions for improvement of online service and instruction and suggest the possibilities that students can be influenced by virtual libraries to move beyond novice use of information.

Clearly designers of school library websites cannot make assumptions that strategies that work in one culture will work in other school communities. Currently both qualitative and quantitative data from the larger study of fourteen schools identified as best practice in school library websites is being examined to extend the study. A content analysis of the sites will compare the features and services presented and a Web-based survey of nearly thirteen hundred high school seniors will offer a larger picture of the impact of virtual library service. Will the data from the other schools resonate with the data from Springfield Township? To what degree does library online instruction and guidance influence the information-seeking habits of young adults? What role does school culture play in use and effectiveness of these sites?

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