Teachers' Link to Electronic Resources in the Library Media Center: A Local Study of Awareness, Knowledge, and Influence

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High school students often use online databases and the Internet in the school library media center (SLMC) to complete teachers' assignments. This case study used a survey to assess teachers' awareness of electronic resources, and to determine whether their directions influence student use of these resources in the SLMC. Participants were teachers from an Indiana high school. Findings revealed that teachers encourage student Internet use in the SLMC, but most do not direct students to use databases. Teachers consider information from electronic databases to be more reliable and focused, but they say the Internet is faster, easier to use, and has a greater scope of information. Findings, conclusions, and recommendations reported should not be generalized beyond the local environment for this exploratory study.

Over the past decade, high school library media centers have expanded their collections beyond traditional print resources to include those of an electronic nature, such as subscription databases and the Internet. Levin and Arafeh (2002) found that almost 80 percent of children between the ages of twelve and seventeen go online, and students view the Internet as a reference library. While it has been suggested that teachers do not understand the difference between subscription databases and Web sites (Pennavaria 2003), how much is known about teachers' opinions of electronic resources and whether teachers influence student use of these resources in the high school library media center?

Literature Review

Even before electronic resources were widely used for information searching, studies had examined the influence teachers have over student use of the school library media center (SLMC). The Young Adult Library Services Association (YALSA) Research Committee (2001), in a comprehensive bibliography on research related to young adult services, identified several studies that investigated how teachers and their assignments influence student use of the SLMC. Two of these studies (Burks 1996; Burks 1997) involved 186 teachers and over thirty-five hundred students in three Dallas-area high schools. These surveys concluded that teachers did not always keep SLMCs informed on student assignments, and one-third of the teachers surveyed never gave assignments requiring use of the SLMC. A study by Gordon (1996) found that teachers do not prepare their students for the style of learning involved in research in the SLMC.

Others have considered how teachers' backgrounds or training affect use of electronic resources, not for educational purposes in the SLMC, but in the classroom. Cohen and Heppell (2002) examined how teachers cope with changes in school culture due to technology, and concluded that some teachers have concerns and feelings of incompetence about adapting to new instructional styles involving use of electronic resources such as the Internet and information databases. In a survey of more than two thousand K–12 teachers in Florida (Barron, Kemker, and Harmes 2003), approximately half the teachers responding said they use technology as a classroom communication tool, while a smaller percentage use it for research. Fabos (2002) investigated teacher attitudes on commercialism in the classroom and found that teachers assign their students in-class projects involving individual research using the Internet.

Van Fossen (2001) also examined teachers' opinions on use of computer technology in the classroom. In this study, 191 Indiana social-studies teachers in grades 6–12 identified their greatest barriers to Internet use as lack of access and training. Teachers also expressed distrust of student Internet use, saying it led to plagiarism. Jaber and Moore (1999) conducted a survey of 339 K–12 teachers in West Virginia and concluded that teachers' experience with computers and their access to the technology affect student use of the Internet. Ristau, Crank, and Rogers (2000), in their survey of 196 Wisconsin high-school business teachers, also cited limited access to computers as a barrier to teacher use of the Internet. These teachers said they use the Internet as a teaching tool, but they feel the need to control or monitor student use. A survey of teachers' beliefs about technology and its use in the classroom (Iding, Crosby, and Speitel 2002), concludes that, while teachers are interested in learning more about technology for educational purposes, the majority use computers for their personal use rather than for teaching-related tasks. A survey of Massachusetts teachers (Russell, Bebell, O'Dwyer, and O'Connor 2003) found new teachers to be more comfortable with technology, and a study of preservice student teachers and veteran teachers (Williams and Kingham 2003) revealed that veteran teachers demonstrated very little use of technology in their subject areas. Harris and Grandgenett (1999) found no significant correlations between teachers' use of Internet tools and their demographics and beliefs in teaching.

Looking beyond the K–12 classroom environment, more specific research on teacher attitudes of student use of the Internet in a library setting have been conducted at the

university level. Tenopir and Ennis (2002), in a survey of university libraries, reported that more faculty have become comfortable with the Internet over the past decade, but they are unhappy with the Internet resources their students are using and depend on librarians to help instruct students on reliable resources. Herring (2001) surveyed faculty in Alabama universities on their attitudes toward students' use of the Internet as a research tool. Faculty responded that they have accepted the Internet as a resource for their students, but they question the accuracy and reliability of Internet material and their students' ability to evaluate it. A case study of students and faculty in English classes at a community college (Grimes and Boening 2001) found that students went directly to Web resources without consulting librarians, and none interviewed for the study used databases available at the library. The same study concluded that a gap exists between the resources faculty expected students to use in the campus library and what students actually used.

Lack of adequate training in the search for and use of online information by teachers as well as lack of confidence or even basic awareness of information quality may continue to be prevalent among high school teachers. Access to documents, authoritative and not, has increased in quantity and ease of access since many of the above reported studies have been conducted. As models for information selection and use, teachers may not hold the adequate skills for searching and selecting online information. Limitations of time for truly meaningful information consideration, as well as the pressures to complete assignments efficiently within just a few hours, may force low-quality information selection by both the teacher and the student. The literature suggests these problems exist and this local study attempts to explore similar situations.

Method

The focus of this study was to explore the influence teachers have on the use of electronic resources in the high school library media center. For the purposes of this study, electronic resources were defined as those used by students for information seeking and collection, including online encyclopedias, subscription databases and indexes, and the Internet and related search engines. Many of these resources are accessible via the SLMC's Web site.

Specifically, the research team wanted to know what the teachers' awareness levels were of electronic resources, whether they assigned or required students to use them in the SLMC, and whether there were relationships between the teachers' own computer use and their awareness and use of electronic resources in the SLMC.

This study involved faculty from Carmel High School (CHS), part of the Carmel Clay Schools district, located in Carmel, Indiana, an affluent suburban area north of Indianapolis. At the time of the study, 250 teachers supported the school's enrollment of 3,600 students in grades nine through twelve. In 2002–2003, 90 percent of CHS tenth-graders passed state achievement exams, and 91 percent of CHS graduates pursued college. The CHS SLMC has a budget for online resources of approximately $20,000,

and a current staff of three full-time school library media specialists (SLMSs) and three full-time support-staff members.

To collect information for this study, a Web-based survey was designed using Test Pilot software, version 3.2.5. The survey was approved by the school's teachers association, and faculty members were contacted by mailbox flyers and e-mail. A $10 gift certificate was used as incentive to respond.

Using primarily Likert-type questions, the survey focused on topics related to teachers' computer literacy, their knowledge of electronic resources in the SLMC, teacher assignments involving the SLMC, and the impact of the Internet as a student resource. The data were analyzed using Statistical Package for the Social Sciences (SPSS) version 12.0 to run frequencies, descriptive statistics, and bi-variate crosstabs. Chi square was used to determine the significance. Two open-ended questions on teachers' use of the Internet for classroom assignments and SLMC resources to support teaching were analyzed using qualitative research methods.

Results

A total of 164 CHS teachers from fifteen academic departments completed the survey, for a response rate of 67 percent. The combined results of four departments (English, math, science, and social studies) accounted for 54 percent of total responses.

Although the study's primary research questions focused on electronic resources, teachers were also asked more general questions about their overall use of the SLMC. Most teachers said they required their students to use the SLMC one to three times during the last school year. However, the majority of English and social-studies teachers required their students to use the SLMC more often, and most math teachers said they never required use of the SLMC.

The faculty was asked to assess the quality of the resources in the CHS SLMC. More than 90 percent of those responding felt the resources support their assignments and curriculum, are current enough, and are relevant. More than 36 percent felt that scheduling restrictions in the library do not allow adequate time, and 29 percent felt they were unaware of the resources in the SLMC. Most teachers said they bring their classes to the SLMC for information seeking, computer access, or research papers.

The general information described above was examined in more detail as teachers were also asked to provide responses for specific issues related to the study's four research questions.

Research Question 1: What are teachers' awareness levels and opinions of electronic resources in the SLMC?

One section of the survey asked teachers questions about their awareness levels and opinions of electronic resources in the SLMC. Given a list of specific electronic resources

(such as Bigchalk ELibrary Database, Gale, Opposing Viewpoints), most of the teachers indicated they were “not familiar” with the databases. The percentage of teachers not familiar with a specific resource ranged from 54 to 83 percent, depending upon the database. Resources that received a majority of responses in the “familiar” or “very familiar” level were the CHS Web page (99 percent), the Carmel Clay Schools Web page (99 percent), CHS’s library catalog (88 percent), and the Internet (99 percent).

The teachers’ assessment of the value of specific electronic resources was related to their familiarity with them. Most teachers answered they “never use” specific databases; however, more than 80 percent ranked the SLMC’s catalog and the school’s Web page as “good” or “excellent.” More than 36 percent ranked the value of Internet access as “good” and more than 56 percent described it as “excellent.”

Teachers were asked to rate the value of the Internet for student learning. A high percentage of those responding rated it in the “good” or “excellent” range for three different categories: 71 percent for homework assignments, 85 percent for “teachable moment” information, and 91 percent for special reports or projects. The data reported no differences between teachers’ departments and their reported value of the Internet.

Table 1 presents how teachers compared the value of electronic databases and the Internet as information resources. Teachers responded “no difference” or “don’t know” for most of the questions; however, they selected electronic databases to provide more reliable and focused information. Of the teachers who indicated a preference between electronic databases and the Internet, most indicated the Internet was faster, more current, easier to use, and greater in scope of information.

Data were collected to identify any relationships between how teachers said they valued specific electronic resources and how they rated the reliability of databases compared with the Internet. No matter how teachers ranked the value of specific electronic databases, they always rated databases as more reliable than the Internet. Also, those teachers who were least familiar with specific databases were more likely to rate the Internet as easier to use.

Support for the Internet was confirmed in teachers’ answers to an open-ended question. When asked to comment on use of the Internet for classroom assignments, more than 100 CHS faculty members provided favorable comments on the Internet, using terms such as “excellent,” “useful,” and “valuable” to describe it.

Research Question 2: Do teachers assign or require their students to use electronic resources for education purposes?

As highlighted in table 2, teachers were asked how often they direct their students to use specific print and nonprint resources in the SLMC. More than 27 percent “sometimes” direct students to use electronic databases, 18 percent “often” do, and less than 42 percent “never” do so. While 78 percent of the faculty “sometimes” or “often” refer their students

to the Internet, 30 percent or more “never” refer students to specific print reference materials, multimedia resources, and electronic databases.

As shown in table 3, less than 69 percent of teachers say they “never” tell students not to use the Internet as their only resource; however, a similar percentage also say they “never” tell students not to use the Internet at all. More than half of teachers said they “never” tell students to consult print before electronic resources or to use electronic databases before the Internet.

Data were collected to determine the differences between the faculty departments and their responses. More than 45 percent of the faculty in the math department said they “never” allow the students to choose their own resources. For use of electronic databases before the Internet, the numbers for the English department were reversed from the overall data: 56 percent responded that they “always” tell students to consult electronic databases before the Internet, 28 percent responded “often,” 16 percent said, “sometimes,” and no one said “never.” In the English department, 60 percent “sometimes” and 12 percent “always” tell the students to use print resources before electronic resources. In the social-studies department, more than 33 percent “sometimes” and 20 percent “often” tell them to use print resources. In the art department, 43 percent “often” tell the students to use the Internet only, and 84 percent of the English department faculty “sometimes” tell the students not to use the Internet.

Research Question 3: Is there a relationship between teachers’ own computer use (for any task, but particularly for information searching), and their instructions for student use of electronic resources in the SLMC?

The teachers were asked a series of questions to rate their computer knowledge. Using ratings of “beginner,” “basic,” “proficient,” and “expert,” more than half the respondents rated themselves as “proficient” in overall computer abilities and Internet-use skills (52 percent); however, they rated their skills in using electronic resources for information searching much lower: “beginner,” 24 percent; “basic,” 40 percent; “proficient,” 30 percent; and “expert,” 6 percent. Table 4 depicts these findings in more detail.

The higher teachers rated their computer experience, the more familiar they were with specific electronic databases and the more likely they were to direct students to use them. As illustrated in table 5, almost 80 percent of those who said they were “beginners” at using electronic resources for information searching said they “never” direct their students to use electronic databases in the SLMC, but 60 percent of those who rated their electronic resources skills at the “expert” level said they “always” direct students use electronic databases. Also, the higher teachers ranked their own electronic resources skills, the less likely they were to tell students to use the Internet as the sole source of information.

Additional data related to this question, shown in table 6, demonstrated that the younger the faculty, the higher they ranked their electronic database skills, and the more likely they were to tell students to use electronic databases before the Internet.

There were no statistical differences to report between the responses of faculty members with a bachelor's degree and those with a master's degree.

Research Question 4: Should SLMCs develop a tool to bridge any gaps between teachers' knowledge and opinions of electronic resources and how these resources are best used by students?

Teachers were asked to rate the value of specific methods for providing information about media resources. Out of the eight methods listed in table 7, the two rated most highly were one-on-one instruction and class or group instruction by media professionals. Methods most often rated as "average" or "poor" were online tutorials and audiovisual training materials.

The data were analyzed to determine if teachers' rating of methods varied depending upon how they felt the SLMC resources supported their curriculum and their awareness level of resources. Most of those teachers who ranked the method of e-mail communication as "good" were those who agreed that media resources do not support their curriculum, and of the sixteen teachers who ranked instructional handouts as "excellent," all were from the group who disagreed that resources do not support their curriculum. Those who were most aware of resources were more likely to rank collaborative teaching as "excellent," while those who agreed they were unaware of resources were more likely to rate it as "average."

In response to an open-ended question regarding resources that could be added to the SLMC to support teaching, about twenty teachers specified the need for more SLMSs. Many cited the need for more audiovisual materials and equipment to support teaching, and four teachers requested more math resources. One teacher commented on the need for more instruction on media resources by saying, "I suspect that if I had knowledge of some of the database sources referred to in this survey that I could use resources that are already available to me. We obviously need some inservice that will enable us to make appropriate use of the vast resources and skills of our media center."

Conclusion and Recommendations

Overall, CHS teachers are satisfied with resources of the SLMC, and they believe these resources support their curriculum. The majority bring their students to the SLMC one to three times a year, most often for information searching, computer access, and research papers. Most CHS teachers say they are aware of the SLMC resources, and they have some influence over how students use them.

Based on the survey results, it was concluded that CHS teachers encourage student use of the Internet in the SLMC. The CHS teachers say they know more about the Internet than they do about electronic databases. They consider the Internet to be faster, more current, easier to use, and greater in scope of information than electronic databases; however, they consider information from electronic databases to be more reliable and focused.

Age makes some difference in how CHS teachers direct their students to use electronic resources. The survey found that the younger CHS teachers (those in their twenties and thirties) are more likely to tell their students to consult electronic databases before the Internet. Also, those teachers who rated their electronic database skills the highest were more likely to direct their students to use databases before the Internet.

A difference was noted in the response given by English teachers as it pertains to their recommended use of online database resources versus the Internet. No other subject-area group showed significant differences. This may be due to the strong collaboration of the SLMSs with the faculty of that department. This collaboration results in increased training for English teachers and perhaps contributes to their greater awareness and use of the online database resources.

To learn more about SLMC resources, CHS teachers favored personal methods such as one-on-one instruction and class or group instruction over more impersonal techniques such as online tutorials and e-mail communication.

Three groups of teachers (younger, technologically experienced, and those in the English department) demonstrated a greater understanding of the use of databases. A conclusion can be drawn that exposure to the technology increases understanding and use of the databases. The influx of younger educators to replace retirees should naturally result in greater understanding of the value and use of electronic databases.

Based on the research results, recommendations can be made, although not widely generalized, regarding teachers and use of electronic resources in the high school library media center. SLMSs need to develop instructional methods to teach the teachers how and when to direct their students to use electronic resources. The instruction should include how the resources differ, the scope and currency of information provided by the resources, the credibility and reliability of each source, and how to win the battle between ease of use and speed and quality of response. Further research would be needed to identify the most effective methods.

Although they acknowledge that the databases are more reliable, teachers find Internet search engines such as Google and Yahoo easier to use. The challenge is to vendors to improve the database interface to make it less cumbersome and easier for teachers and students to access the information.

SLMSs also need to evaluate their online database holdings for cost effectiveness and to ensure that these resources support the curriculum and teacher needs. The database evaluation should also provide input toward understanding faculty-training requirements.

Future Research Questions

This study addressed some initial questions about current teacher expectations and student use of electronic information in one high school setting. Future studies should explore such areas as:

- What training and orientation sessions are most effective in increasing teacher and student awareness of effective search and selection of electronic information?
- In what manner might provision for more time (for search and comparison of findings) along with more individualized instruction and information advisory help to improve the quality of electronic information selection and use by teachers and students?
- Does the level of training in online information use differ among subject areas, assignments, student grade, or ability level?
- In situations where the school library media program is not as well funded or as well staffed as this one are there even more critical problems that result in inefficient use of online information systems?

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Web Links

Carmel High School Library Media Center (http://carmelhighschool.net/departments/media/index.shtml)

ClearLearning's TestPilot Software (www.clearlearning.com/)

Survey Questions and Teacher Responses to Open-Ended Questions (http://carmelhighschool.net/Highsmith.htm)

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Table 1. Comparison of Electronic Databases and Internet as Information Resources (Percent of Faculty)

	Electronic Databases	Internet	No Difference	Don't Know
Greater Scope of Information	20.1	34.8	4.3	40.9
More Current Information	12.9	34.4	7.4	45.4
Ease of Use	17.8	31.9	12.3	38.0
Faster Response	16.0	26.4	6.7	50.9
More Reliable Information	53.0	4.3	4.3	38.4
More Focused Information	52.4	5.5	3.7	38.4

Table 2. Percent of Faculty Directing Students to Specific Resources

	Never	Sometimes	Often	Always
Internet	13.0	39.8	37.9	9.3

Media Specialist	22.6	37.7	22.0	17.6
Library Catalog	29.6	39.0	20.1	11.3
Print Reference Materials	31.9	36.3	24.4	7.5
Electronic Databases	41.8	27.2	18.4	12.7
Multimedia Resources	33.5	37.9	21.1	7.5

Table 3. Directions to Students for Using Electronic Resources (Percent of Faculty)

	Never	Sometimes	Often	Always
Tell Them to Choose Their Own Resources	12.3	40.1	25.3	22.2
Tell Them to Consult the Media Specialist	18.8	41.3	25.0	15.0
Tell Them to Use Electronic Databases Before the Internet	18.8	22.8	9.9	10.5
Tell Them to Use Print Resources Before Electronic Resources	60.9	29.8	6.8	2.5
Tell Them to Use the Internet Only	68.5	27.2	3.7	0.6
Tell Them Not to Use the Internet	69.6	29.2	1.2	0.0

Table 4. Faculty Ratings of Their Computer Skills (Percent of Faculty)

	Overall Computer Abilities	Electronic Databases	Internet Skills
Beginner	4.9	23.8	6.1
Basic	31.9	40.2	29.4
Proficient	50.3	29.9	51.5
Expert	12.9	6.1	12.9

Table 5. Comparison of Teachers' Electronic Database Skills and How Often They Direct Students to Use Electronic Databases in the Library Media Center (Percent of Faculty)

	Never	Sometimes	Often	Always
Beginner	78.9	15.8	5.3	0.0
Basic	39.7	39.7	17.5	3.2

Proficient	23.4	19.1	31.9	25.5
Expert	0.0	30.0	10.0	60.0

Table 6. Age Group and Reported Faculty Database Skills and Directions for Student Use (Percent of Faculty

	20–29	**30–39**	**40–49**	**50–59**	**60+**
Rate Themselves Proficient or Expert at Using Databases for Information Searching	55.1	35.0	31.7	31.0	0.0
Direct Students to Sometimes or Often Use Databases Before the Internet	41.3	40.0	34.2	22.4	0.0

Table 7. Value of Method for Learning about Media Resources (Percent of Faculty)

	Poor	**Average**	**Good**	**Excellent**
Workshops/Inservice	4.4	27.0	50.9	17.6
E-mail Communication	6.1	28.8	47.9	17.2
Instructional Handouts	5.6	32.9	50.9	10.6
Online Tutorials	8.3	48.7	35.3	7.7

Class or Group Instruction by Media Professionals	3.1	19.5	50.3	27.0
One-on-One Instruction	1.3	11.3	40.9	46.5
Audiovisual Training Materials	6.3	42.4	44.3	7.0
Collaborative Teaching (Media Specialist and Teacher)	1.3	21.9	46.5	30.3