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The Sites Teachers Choose: A Gauge of Classroom Web Use

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Abstract

The pervasive nature of the Internet, both in society and in America's schools, leads teacher educators to wonder how this dynamic tool is being utilized in the classroom and, especially, if it is benefiting students' understanding. This study analyzed 127 Web sites self-reported by in-service teachers as excellent for teaching. From these data, a majority of K-12 educators view the Web either as a lesson planning tool or as a place to turn for additional information to teach a particular lesson. The majority of sites designed for use with students were passive in nature. This paper offers a qualitative data analysis of the attributes of the sites, as well as implications of the selected sites on K-12 teacher beliefs regarding student learning.

The Sites Teachers Choose: A Gauge of Classroom Web Use

Throughout the late 1990s, much of the argument concerning technology integration in the classroom revolved around the issue of access. Now, with the inclusion of the Internet in 99% of current classrooms (Kleiner & Lewis, 2004), almost all teachers have access to this dynamic tool and are presumably using it for the benefit of their own knowledge, as well as that of their students. But how are teachers actually using the Web? The hope is that the Internet can assist teachers in the way they approach content in their classrooms, including introducing a variety of dynamic and interactive tools designed to improve and enhance instruction. The purpose of this study was to examine how a group of teachers in K-12 classrooms view the Web as it relates to education, as well as to see what they view as effective uses. The specific research questions were as follows:

- Given the opportunity, what Web sites will teachers identify as useful for education?
- What is the nature of the identified sites? What types of information and/or services do they provide?
- What does the nature of these sites indicate about how teachers perceive the Internet's role for education and use it in their classrooms?

Relevant Literature

Internet access has become widespread in modern day society, and schools reflect this trend. Although only 35% of schools had Internet access in 1994, by 2002, 99% of classrooms were connected. Since 1999, there has been no discernable difference of Internet access based on individual school characteristics (Kleiner & Lewis, 2004). Computers have gone from a relatively rare sight in the 1980s to quite commonplace in today's classrooms. The average school in the United States had one computer per every five students as of 2002, with 8% of schools having laptops available for student loan and 23% of schools having some type of wireless Internet connection (Kleiner & Lewis, 2004). Many school districts, and some states, are moving toward laptop initiatives in which students each have their own computer that can connect wirelessly to the Internet.

Although this increasing access clearly allows greater use of technology in the classroom, what remains to be seen is how it will be utilized to benefit student learning. Schofield and Davidson (2002) asserted that the advantage of using the Internet in the classroom clearly depends on the extent to which teachers are using it as an instructional tool and their purposes in doing so. Given the proliferation of Internet access in today's schools, the hope is that access to such a dynamic tool would be used to support student-centered, inquiry-based lessons in order to improve instruction. Unfortunately, this in large part remains unseen or unmeasured in modern day classrooms.

Despite pervasive access to this technology, the way in which it is used has a significant impact on the possible benefits to students. Historically, the focus has been on granting schools Internet access, instead of on how it is being used in the classroom. Bull and Bull (2003) reported, "As a consequence, we are not realizing the full instructional benefits of the technological infrastructure that has been constructed" (p. 28).

According to a recent Pew report (Levin & Arafeh, 2002), *The Digital Disconnect: The Widening Gap Between Internet-Savvy Students and Their Schools*, three out of five students under the age of 18 go online, along with more than 78% of students between the ages of 12 and 17. These students reported that there was a wide gap between how they use the Internet in preparation for school and how the Internet is used throughout their classes during the school day. The majority of students relied heavily on the Internet to complete their assignments, and they did so outside of the school day and building, without the help, guidance, or instruction of their teachers. When students did use the Internet as part of an in-class activity, students reported that the quality of their Internet-based assignments was poor and uninspiring. They expressed that they wanted to be assigned not only additional Internet activities, but ones that were more engaging and relevant to their lives (Levin & Arafeh, 2002).

The Pew study clearly identified that teachers manage students' use of the Internet. Teachers decide whether to forbid Internet use, to allow use of the Internet as a supplement to other sources and tools, or to assign activities that require Internet use (Levin & Arafeh, 2002). As Cuban (2001) found, the majority of teachers thought that

their teaching had changed positively as a result of the use of information technology; however, this change was in regard to specific professional areas—planning, communicating with fellow teachers and parents, and gathering materials for teaching from the Internet.

Research has suggested that the Internet can be a tool for providing more in-depth, rich, active learning (Jonassen, 2000). According to Becker (1999), "Along with word processing, the Internet may be the most valuable of the many computer technologies available to teachers and students" (p. 32). However, this potential value is dependent on how educators view their role in the classroom and their beliefs about how instruction should take place. As Coulter, Feldman, and Konold (2000) found, online resources will most likely be used productively in classrooms when inquiry methods are well established. Jonassen (2000) defined meaningful uses of technology as "mindtools," which he described as generalizable tools meant to engage and facilitate cognitive processing and meaningful learning. Meaningful learning is characterized as active, constructive, intentional, authentic, and cooperative (Jonassen, Peck, & Wilson, 1999). Following Jonassen's model, ideal use of the Web would adhere to the following criteria:

- Allow for active manipulation in which students can interact and observe the effects of their input in order to conclude their own interpretations about the topic.
- Provide for students to create a new understanding based on their prior knowledge.
- Allow students to describe their own learning goals and strategies and answers they have found.
- Involve a meaningful, real-world context that is either simulated, case-based, or problem based.
- Encourage social engagement, in which learners are able to work in groups to form a common understanding of the task.

These criteria describe the ideal active use of the Web to engage students in meaningful learning.

Although active use of the Internet holds the most promise for delivering beneficial outcomes, such as increased student understanding and achievement, there appears to be a discrepancy among teachers between using the Internet with students and doing so in an active, engaging manner. Tapscott (1998) described this distinction as the difference between "broadcast learning" and "interactive learning." He described this spectrum in his book, *Growing Up Digital: The Rise of the Net Generation* (see Table 1).

A study conducted by N2H2, a Seattle-based maker of filtering software used in nearly 2,000 schools to track Web sites, found that 100 Web sites represented half of the traffic created by 350,000 students across 43 major cities (Thomas, 2000). The content of these Web sites included primarily commercial, entertainment, and search-related elements—hardly what would be considered active uses of the Web.

According to Schofield and Davidson (2002):

> The questions of how Internet use is likely to influence classroom structure and functioning and how it will ultimately affect students and teachers are still largely to be answered. Because of the substantial cost of providing Internet access in classrooms, understanding its impact on classrooms, educators, and students seems essential. (p. 4)

Table 1
The Shift From Broadcast Learning to Interactive Learning (Tapscott, 1998)

Broadcast Learning	**Interactive Learning**
Linear, sequential/serial	Hypermedia learning
Teacher-centered	Construction/discovery
Absorbing materials	Learning how to learn
School	Lifelong
One-size-fits-all	Customized
School as torture	School as fun
Teacher as transmitter	Teacher as facilitator

The current study confirms that, although Internet access is an important element when it comes to using the Web in the classroom, simply providing the infrastructure is not enough to guarantee improvement in the overall quality of teaching. Through the careful examination of the Web sites that a group of teachers reported as excellent, we draw conclusions regarding what their responses indicate about teaching with technology in the 21st century.

Methods

According to Glesne (1999), "qualitative researchers tend to select each of their cases *purposefully*" (p. 29). One of the strategies of purposeful selection of informants is homogenous sampling, in which a group of similar cases are examined in order to describe a particular subgroup in depth (Patton, 1990). Utilizing this strategy, we selected as participants for this study 104 K-12 teachers within a school district located in a southwestern U.S. metropolitan city. These teachers were enrolled in an entry-level, technology-related graduate course, Internet for Educators, in four different sections over the course of three semesters. The course focuses on the potential of Internet-basd technologies to influence K-adult education, with students actively exploring (a) a wide variety of online informational, curricular, and interpersonal resources, (b) ways to successfully integrate online resources in teaching and learning, and (c) current issues, policies, and trends pertaining to global electronic networking.

Data for this study took the form of teachers' required online discussion board responses in four separate sessions of the course over three semesters. The course instructor, working in collaboration with the primary researcher, asked the teachers to post an Internet site and description on the discussion board within a Web-based course delivery tool as follows:

Weekly, one student will post an educational Web site of the Week (WOW). This posting will include a URL and a brief description. All other students are encouraged to comment on this site. During our face-to-face meeting, I described the WOW posting as, "An important site you feel that your colleagues need to know about." The WOW is an opportunity to share resources such that at the end of the course you will have a list of outstanding sites.

The primary researcher compiled these data and assigned pseudonyms to each of the teachers to protect their identity. During the preliminary analysis of the data, two initial

types of sites emerged: (a) Web sites geared toward use with students, and (b) sites intended for teachers' own professional purposes. Preliminary analysis revealed more categories of teacher-oriented Web sites, which then became a major focus of the study.

It became evident that in order to analyze the similarities and differences among a large quantity (127) of Web sites identified by the subjects as excellent, a coding strategy would need to be developed to organize the data. A framework developed as a result of this analysis. According to Glesne (1999), "Coding is a progressive process of sorting and defining and defining and sorting those scraps of collected data....By putting like-minded pieces together into data clumps, you create an organizational framework" (p. 135). After looking at randomized groups of Web sites and comparing 10 to 20 at a time, certain patterns began to emerge. This resulted in what Spradley (1980) called a taxonomy, which shows the relationships between defined terms.

After dividing the sites between those for teacher and those for student use, commonalities became evident. Once these categories were determined and characteristics of each began to emerge, a template analysis strategy adapted from Crabtree and Miller (1992) was used to code and interpret the data. This technique, as mentioned in Marshall and Rossman (1999), emphasizes developing a set of codes to apply to the gathered data where these codes can be revised as the analysis progresses. One of the advantages of using this particular strategy is that the template was more specific, allowing researchers to more efficiently identify where in the taxonomy the remaining sites fell.

When necessary, the template was adjusted until it encompassed all of the identified sites. The researchers examined the Web sites separately and met several times in order to collaborate on the emerging criteria, as well as to negotiate differing responses regarding the specific elements of each site. Once the characteristics were decided, a template was developed, and the Web sites were classified in a dichotomous fashion as either demonstrating each characteristic or not.

Results

Of the 127 Web sites reported by 104 teachers as being "excellent" or "exemplary" uses of the Internet in education, 108 were geared more for teachers, 19 were specifically for student use, and 35 overlapped between teacher and student. Based upon their characteristics, teacher-oriented sites were categorized into one or more of the following areas: teaching content reference, general/supplemental reference, lesson planning, classroom management/parent communication, professional development, and professional learning community (Table 2).

Teacher Sites

The overall distribution showed that a majority (58%) of the sites had some type of lesson planning bank on which those in the classroom could rely in order to borrow ideas for teaching a particular lesson. This category was closely followed by sites that teachers could use to gather background information in preparation for teaching a given lesson (43%). These two categories stood out, as a multitude of sites included elements of either lesson planning and/or reference. After this category, professional development ranked

next (11%). Trailing behind were those sites concerned with general reference and learning communities (10%), and finally, a relatively new category of Web sites involving managing grades/progress online for communication with others (3%; see Figure 1).

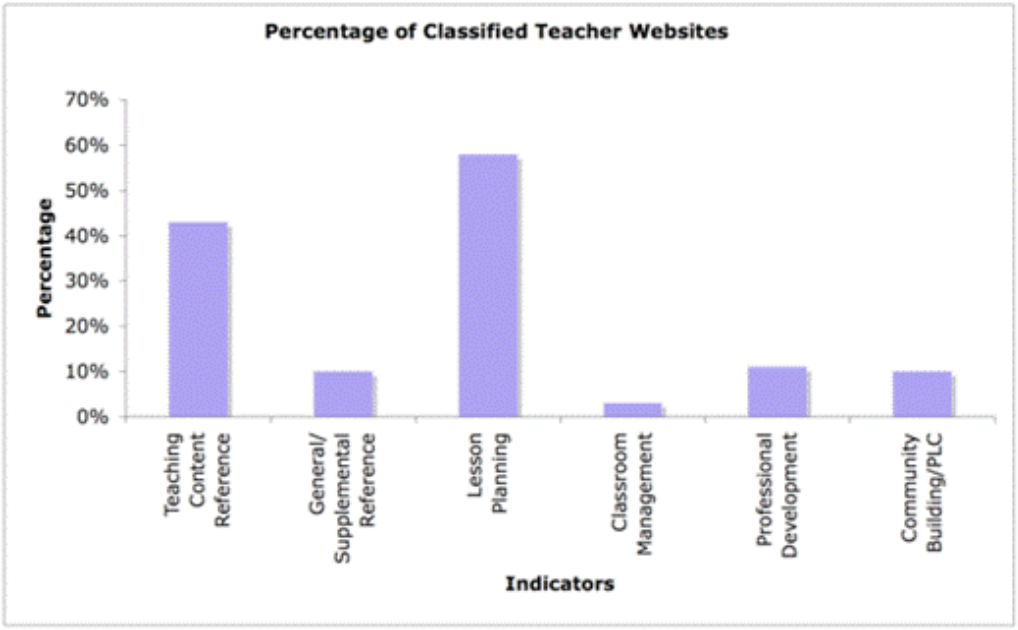

Figure 1. *Percentage of classified teacher Web sites.*

Lesson Planning Sites. Initially, one may conclude that the motivation behind teachers' selection of Web sites, with a predominance intended for their own professional use such as lesson planning and personal reference, was related to time and money (both of which teachers never have enough). There may be other reasons, though, that teachers used the Web in this manner. Many of these sites contained searchable databases of hundreds of possible lesson plans. The most common responses among teachers throughout this study were sites either geared toward providing teachers with lesson plans, offering a place to turn for reference in order to prepare to teach a lesson, or combining elements of both. For example, one of the sites, abcTeach (http://www.abcteach.com), focuses on providing a wealth of teacher materials, as Jane noted in her post:

> The web site I want to let everyone know about is http://www.abcteach.com. Mostly geared toward elementary teachers, this site is full of resources for teachers. The main page features a menu with eleven different choices from flashcards to theme units. ABC Teach offers teachers over 5,000 free printable pages. In the Basics area, you can print off handwriting practice, ABC activities, or other basic activities. The Research section offers teachers report forms, report helpers, and even maps and flags. You can print calendars, certificates, nametags, and bookmarks in the Teaching Extras section. The portfolio section allows you to print covers, forms, dividers, and assessments. If you are teaching a theme such as animals or countries, the Theme Units section is a must. To help your students with reading comprehension, there is an area useful for teaching test-taking tips. For fun, there are puzzles, games, and word searchers to print off. The site also offers a Flashcard section and a Forums section. In the Forums, you can join on-line communities categorized in various ways. All of that is free. If you want to subscribe to their site, it is $25.00 per year. You get additional resources, access to over 3,000 documents, and a monthly newsletter. I have found this Web site to be a great tool and provides many things for teachers. I hope that you will all take time to look at it and enjoy!

Jane brought up a key point in her post, specifically whether or not the site required a subscription for total access. After the first 10 sites were classified, another criterion was added to address whether or not the site required some type of subscription. This weighed heavily in teachers' decisions in selecting a particular site, as Anna's response to Jane attested:

> http://www.abcteach.com was a very comprehensive site. You are right though it is geared for primary. It did seem to be after your subscription money, having several places to sign up. It did have a lot to offer for free though and that is what counts! Thanks for sharing it with us.

Of the total 127 sites (both teacher, student, and combined), only nine required subscriptions in order to gain access. In choosing sites for inclusion, this proved to be a major factor for teachers, as they valued sites that offered materials free of charge.

Another element, although of less importance, was the usability of the site based on grade level. As Janet commented about one site,

> "Excellent site! Though the information contained in the site appears to be mostly for elementary school students, I believe much of the information could be adapted to middle or high school students. I was so fascinated with researching the site that I almost forgot to return and reply to your message. I am sure I will return to my bookmark for the site many times. I particularly liked the reading section which had information on one of my favorite writers, Judy Blume. It is easy to tell that the author of this web page did a very thorough job of researching their URLs."

Even though the responses indicated that this particular site was geared more for elementary students, teachers expressed their ability to adapt the resources as necessary to meet their particular needs. The main feature teachers liked about this lesson planning site, as well as numerous others like it, was the fact that they provided a wide variety of teaching material that would save time and money.

Reference Sites. Next to lesson planning, teachers most often turned to reference sites intended to offer background content information about a given topic. For example, Dana mentioned Black Women in Mathematics (http://www.math.buffalo.edu/mad/wmad0.html) as a "cool" site for mathematics. Her classmates agreed: "More cool Web sites, Dana. I love these Web sites! I enjoyed checking out the women in mathematics site. How great for girls to see women who made and are making great strides in mathematics. Excellent!"

Teachers turned to many of the Web sites in this category to gain information about teaching a particular lesson when they did not know enough about the content. Teachers often used the Internet in this fashion when they themselves needed background material in order to be able to teach their students. As Janice wrote, "Great sites, Jody. I visited every one of them and learned something new. They are full of information, and I especially enjoyed learning about the early pioneers in math and science who were women. Thanks."

Professional Development Sites. Although the majority of Web sites listed by teachers focused primarily on lesson planning or gathering background information, a smaller number of sites featured professional development material, including strategies, resources, and methodological ideas for improving teaching in the classroom. One

example shared by Maria was the Classroom Management page of Education World's site (http://www.educationworld.com/a_curr/archives/classmanagement.shtml), which provided a wealth of information for new teachers, with a specific focus on classroom management.

As Susan mentioned, she found the beginning teacher site particularly useful to share with other colleagues: "I will pass on the new teachers' site. It is loaded with great links for first year teachers and as a refresher for all teachers." Sharon echoed this sentiment stating, "I like to go back and look at class management instructions and sites for new teachers at the beginning of each year. I think it refreshes me before getting back to the old grind (lol). Thank you very much!"

Many of the sites, whether they were geared more toward professional development or lesson planning, also included a place for teachers to share ideas and support one another. In addition to professional development aspects, some sites had chat rooms, forums, and electronic bulletin board features, and this characteristic became the category of community building, or professional learning community (PLC; Fullan, 2001). None of the mentioned sites were specifically designed to support PLCs, but many included elements that created an encouraging environment.

Classroom Management Sites. The least popular Web site feature fell into the category of using technology to manage or communicate students' progress online. This element is becoming increasingly common among Web sites due to the need for individualized instruction and monitoring student progress along with test score data, and it is currently changing how technology is viewed as a classroom tool.

One example was MyClass.net (http://MyClass.net/), shared by Janie, who wrote, "This is a great resource that allows teachers to communicate with their students, post assignments, submit assignments and use email with students and parents. It is easy to use and easy to maintain." Other teachers liked the idea, but worried about privacy issues. When reassured by Janie that the logins and passwords were all private, they thought that it was a great idea and a wonderful tool. However, online classroom management, while gaining increasing use, appears to be lagging behind use of the Internet for gathering lesson ideas or background material in order to teach.

General/Supplemental Reference Sites. Many of the Web sites had searchable features allowing teachers to use them as quick reference sites, with a focus on answering a specific question. Greg cited Computer User's High-Tech Dictionary (http://www.computeruser.com/resources/dictionary/noframes/index.html), which in his words, provided "computer/technical and non-technical information and terms that might not be available on the tip of your tongue. There are also MANY other parts of this Web site that could be helpful if you have other computer questions." Although Kim thought the site was useful, especially because she was transferring to a technology-rich school, Janie found it intimidating:

> Just going to that site intimidates me just a bit. There is so much vocab that goes along with tech stuff that it can be most overwhelming. I think this would be a great place to start when you have questions, but it's not helping me get my PowerPoint published.

Student Sites

Nineteen sites of 127 were specifically meant for use with students at the computer. Thirty-five sites could be viewed as either for teacher or student use. Because these sites covered a wide variety of content areas, a more general taxonomy was used to classify the site as active or passive based on the following elements: engagement, generativity, control, and assessment (Table 3). For a Web site to be considered "active," it should allow students to manipulate information in order to interact with the topic and be able to observe the effects of their input to conclude their own interpretations about the topic. It should also provide for students to create a new understanding based on their prior knowledge, along with allowing them to describe their own learning goals, strategies, and answers they have found. In addition, the site should involve a meaningful, real-world take that is either simulated, case based, or problem based. An active site would allow students the ability to move through the content at their own pace and would provide ongoing dynamic assessment that would tailor the content that was being presented (Jonassen, 2000; Jonassen et al., 1999). Based on this framework, the taxonomy presented in Table 3 was used to analyze the student Web sites.

Table 3
Student Web Site Classification

Characteristic	Active	Passive
Engagement	Web site involves students interacting with and manipulating information. Site may allow for students to observe the effects of their input to interpret results.	Site provides curriculum-related information to students, but in a traditional format that would be similar to print material found in texts. Intention is for students to be consumers of information, without manipulation or interpretation.
Generativity	Web site involves students engaging with provided material to form an artifact of learning that reflects their own comprehension of the information (rather than the teacher's).	Students take provided information from Web site, reconstitute it, and submit it back to teacher or class; represents teacher's understanding of the material.
Control	Student is able to manipulate through site to form their own critical thinking of the topic.	Site navigation is directed by teacher/system. Step-by-step instructions are prescribed and student outcome is predetermined according to teacher's view of information
Assessment	Site can measure student learning of a given topic using the advantage of technology to "crunch responses" and provide dynamic, immediate data. Site involves a feedback loop that adjusts content based on student responses.	Online site where student learning responses are evaluated in a traditional correct/incorrect manner. No further instruction takes place based on results.

Most Web sites intended for use with students were passive in nature. Specifically, 72% showed passivity for engagement, 91% for generativity, 80% for control, and 93% for assessment (Figure 2). From these data, it seemed that though teachers may be using the

Internet with students, they are using it simply to access additional sources of information. This use of the Internet transforms a dynamic, interactive tool into a passive resource, such as a written text or encyclopedia.

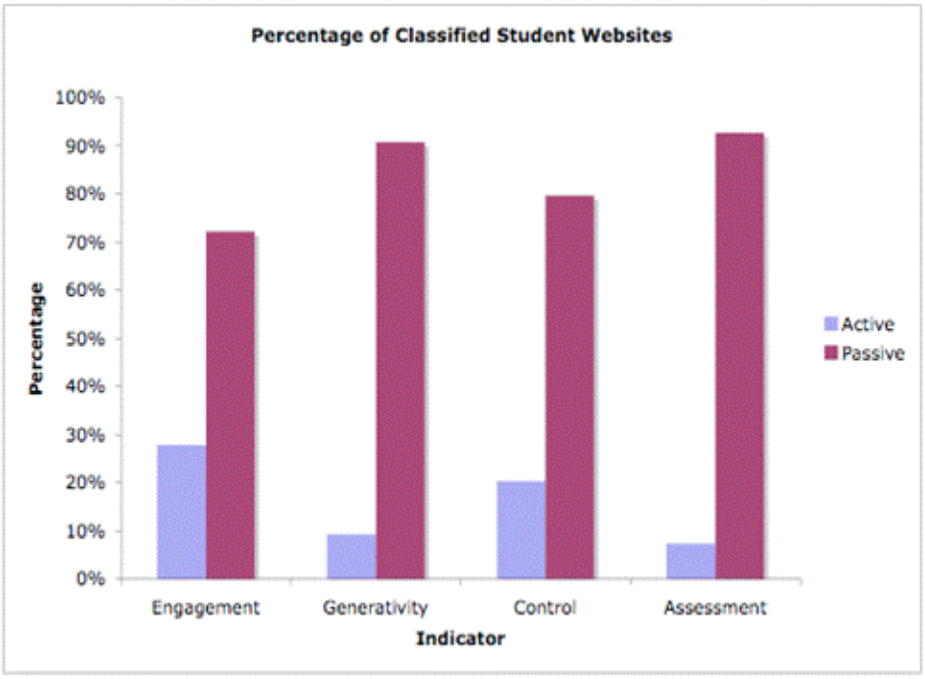

Figure 2. *Percentage of classified student Web sites.*

However, some of the sites reported by teachers as excellent for use in education were, in fact, active. An example of an entirely interactive site was the National Library of Virtual Manipulatives (http://nlvm.usu.edu/en/nav/index.htm), which Jose mentioned in his post:

I have spent a lot of time over the last few years looking for useful, interactive, interesting, and fun math web sites. By far, one of the best is National Library of Virtual Manipulatives for Interactive Mathematics. The Library, developed at Utah State University and funded by an NSF grant, contains online versions of many of the manipulatives math teachers have grown to love. There are literally hundreds of java applet manipulatives, and, fortunately, the site is organized by grade level (Pre-K-2, 3-5, 6-8, and 9-12) and topic (Number and Operations, Algebra, Geometry, Measurement, and Data Analysis and Probability).

Sasha immediately recognized that this was a site for use with students and one that would benefit her teaching: “This web site looks like a good one to use in my room. I have a wide range of student abilities and challenging those students with high math scores is difficult. This looks like a good site for them to peruse.”

On the other end of the spectrum was a clearly passive site, such as The American Museum of Natural History's Infection Protection Detection page (http://www.amnh.org/nationalcenter/infection/index.html). Although the site was

created by the American Museum of Natural History, it provided only static information, similar to reading about the topic of infection and disease control in a printed publication. It was colorful and designed to appeal to kids, but students using it remained passive consumers of information.

Other Web sites demonstrated a combination of active and passive elements. Most often, sites allowed interactivity in the areas of engagement. These sites prompted students to interact with and manipulate information; students could input some of their own knowledge, observe the effects of their input, and then interpret the results. Another element, control, also had a higher degree of interactivity and provided students the chance to navigate through the site themselves, forming their own critical judgment of the topic after having visited the site. One example fitting this criterion was Pearson Education's Funbrain page (http://www.funbrain.com). As Cindy pointed out, this site can be used by teachers and students:

> This Web site has several resources available for everyone. There is a section for students and teachers as well. You can generate tests, worksheets, get lesson plans for thematic units etc. The student area contains games that reinforce basic skills in math, science, etc.

Tammy also liked the features of this site:

> This site was introduced to me in ICS 760. I have used the quiz lab in my science class. You can schedule the computer lab at your school, and let them all take a quiz at the same time.....it grades it for you!!!!

However, in terms of generating a unique product that demonstrates students' understanding of the topic as a result of visiting the Web site, or providing a feedback loop to adjust content based on student responses, this particular site fit the passive criteria.

Conclusion

In conducting this study, the researchers were interested in finding out what types of Web sites teachers would identify as useful for education, the commonalities among these sites, and what this data meant regarding teachers' perceptions of the Internet as an educational tool. As Schofield and Davidson (2002) contended, the advantage of using the Internet in the classroom hinges on the manner in which teachers are using the Internet as an instructional tool and their purposes in doing so.

From the analysis of the 127 Web sites rated by teachers as excellent for use in education, it is clear that the vast majority of the teachers in this study were using the Internet, but doing so for their own purposes, primarily for gathering lesson plans and reference information for teaching in a traditional, linear format. Teachers identified a Web site as outstanding when it (a) had had some type of lesson planning database designed for sharing ideas for teaching a particular lesson and (b) contained background information in preparation for teaching a given lesson. These two categories stood out, as a multitude of sites included elements of either lesson planning or reference. Other sites included elements of professional development, learning communities, and online grading/progress communication.

Of the educational Web sites designed for use by students, the vast majority of Web sites mentioned by teachers were passive in nature, used primarily as an addition resource to gather information, much like a written text or encyclopedia.

Limitations

Although these results imply that teachers are heavily using the Internet for their own purposes, such as accessing lesson plans and resources, other interpretations may also be plausible. It must be acknowledged that generalization of our results is limited by the small sample of a self-selected group of subjects who felt they needed to learn how to better use the Internet in their classrooms. Due to the fact that the sites were gathered from teachers in an online course forum, they may have specifically selected those sites that would be applicable to the entire group, such as large lesson planning sites that allow users to enter in their specific grade level and content area.

Also, because these teachers were taking a specific course titled, Internet for Educators, they represent a self-selected group of educators who may have enrolled in the course with the intention of improving their level of Internet use with their students. As a result, the specified sites may not adequately represent those being used by the general teaching population. However, in light of current literature (Bull & Bull, 2003; Cuban, 2001; Levin & Arafeh, 2002), we believe our interpretations are warranted. Although it seems that Internet access is pervasive throughout public schools, its use appears traditional and passive in nature. Much remains to be done in order for the Internet to be implemented in the classroom as a dynamic and rich educational tool.

Implications

In analyzing the results, the nature of these sites and what they indicate about teachers' perception of the Internet's role for education became central. Initially, one may conclude that the motivation behind teachers selecting Web sites, to support their own professional use such as lesson planning and personal reference, was related to time and money. Yet there appear to be deeper implications for why teachers are using the Web in this manner. Teachers may be seeking lesson plans and resources on the Internet because it validates their view that learning should be structured, planned, controlled, and linear. They see themselves as the provider of all knowledge to students—a very traditionally held teacher belief. What teachers may not realize is that this view influences them to seek out knowledge themselves so that they may then distribute or bestow it upon their students.

Since the proliferation of Internet access in today's schools, the assumption may be that access to such a dynamic tool would be used to support student-centered, inquiry-based lessons in order to improve instruction throughout America's educational system. Unfortunately, the current study reveals that this is not the case. To address this issue, technology-related graduate courses for current teachers, as well as undergraduate technology in education courses, need to focus on broadening teachers' view of instruction, not only concerning the use of the Internet in the classroom (with students), but the overall role of the teacher.

Educators need to be taught explicitly the shift from "broadcast learning" to "interactive learning" (Tapscott, 1998). In this particular study, many teachers viewed their role in their classroom as a "broadcaster," a transmitter of knowledge, as illustrated by the Web

sites they chose as excellent for use in education. This traditional perception needs to be challenged throughout course and fieldwork in preparing future educators to enter the classrooms of the 21st century.

Courses such as the one described need the creation and use of Internet activities to focus on learning that is active, constructive, intentional, authentic, and cooperative (Jonassenet al., 1999). The perceptions of teachers concerning the Internet, specifically its purpose and function in education, need to continue to be measured so that the full potential of the Web in today's classrooms can be more fully realized.

Policy makers and education faculty members need to realize that because schools have access to technology, specifically the Internet, it does not automatically mean that teachers know how to use it in ways to enrich and increase student learning. Professional development opportunities, as well as college coursework for both in-service and preservice teachers, must continue to challenge educators to implement technology in ways that encourage more inquiry-based learning. Current and future teachers need assistance with implementing the Internet in the manner in which Jonassen (1999) described—including incorporating activities that are active, constructive, intentional, authentic, and cooperative. Only then can the Web be considered a dynamic and powerful educational tool for classrooms of the 21st century.

References

Thomas, K. (2000, February 17). Online schoolkids search, play all day. *USA Today*, p. 3.

Becker, H. J. (1999). *Internet use by teachers: Conditions of professional use and student-directed use*. Irvine, CA: Center for Research on Information Technology and Organizations.

Bull, G., & Bull, G. (2003). The digital disconnect. *Learning and Leading with Technology, 31*(4), 28-31.

Coulter, B., Feldman, A., & Konold, C. (2000). Rethinking online adventures. *Learning and Leading with Technology, 28*(1), 42-47.

Crabtree, B. F., & Miller, W. L. (1992). *Doing qualitative research*. Newbury Park, CA: Sage Publications, Inc.

Cuban, L. (2001). *Oversold and underused: Computers in the classroom*. Cambridge, Massachusetts: Harvard University Press.

Fullan, M. (2001). *The new meaning of educational change* (3rd ed.). New York: Teachers College Press.

Glesne, C. (1999). *Becoming qualitative researchers* (2nd ed.). New York: Longman.

Jonassen, D. H. (2000). *Computers as mindtools for schools*. Upper Saddle River, NJ: Merrill, Prentice Hall.

Jonassen, D. H., Peck, K. C., & Wilson, B. G. (1999). *Learning with technology: A constructivist perspective*. Upper Saddle River, NJ: Merrill/Prentice Hall.

Kleiner, A., & Lewis, L. (2004). *Internet access in U.S. Public schools and classrooms: 1994-2002*. Washington, DC: National Center for Education Statistics.

Levin, D., & Arafeh, S. (2002). *The digital disconnect: The widening gap between Internet-savvy students and their schools*. Washington, DC: Pew Internet and American Life Project, American Institutes for Research.

Marshall, C., & Rossman, G. B. (1999). *Designing qualitative research* (3rd ed.). Thousand Oaks, CA: SAGE Publications.

Patton, M. Q. (1990). *Qualitative evaluation and research methods* (2nd ed.). Newbury Park, CA: Sage Publications, Inc.

Schofield, J. W., & Davidson, A. L. (2002). *Bringing the Internet to school*. San Francisco, CA: Jossey-Bass.

Spradley, J. P. (1980). *Participant observation*. Stamford, CT: Thomson Learning.

Tapscott, D. (1998). *Growing up digital: The rise of the net generation*. New York: McGraw-Hill.

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Table 2
Teacher Web Site Classification

Characteristic	Descriptive Question	Focus	Example
Teaching Content Reference	Is the site used for teacher's own knowledge in order to gain background information about a particular topic?	Emphasis is on gaining background content information in preparation to teach a particular lesson.	Black Women in Mathematics (http://www.math.buffalo. edu/mad/wmad0.html)
General/ Supplemental Reference	Is the site used by teacher to conveniently look up material quickly using search feature?	Emphasis is on quickly answering a specific question.	Computer User High-Tech Dictionary (http://www.computeruser.com/resources/dictionary/noframes/index.html)
Lesson Planning	Is the site used to access ideas to teach various concepts and/or to "borrow" activities to use in the classroom?	Emphasis is on lesson planning.	abcTeach (http://www.abcteach.com)

Characteristic	Descriptive Question	Focus	Example
Classroom Management/ Communication	Is the site used by teachers to record and/or communicate student progress, classroom events, information related to classroom format (i.e., course expectations, assignments, grades, etc.)	Emphasis is on keeping parents/administrators informed in an ongoing, up-to-date basis.	MyClass.net (http://MyClass.net/)
Professional Development	Is the site used to provide professional development for teachers, providing teaching strategies, resources, method ideas?	Emphasis is on improving teaching.	Education World Classroom Management (http://www.educationworld.com/a_curr/archives/classmanagement.shtml)
Community Building/ Professional Learning Community	Is the site used to connect teachers with one another so that they can share stories with one another in order to provide support?	Emphasis is on establishing a sense of a professional learning community.	Included as a part of many sites with professional development and lesson planning aspects, such as LessonPlansPage (http://www.lessonplanspage.com)