CHAPTER V
A VIEW FROM INSIDE

I think I'm like everyone else here...I'm immune to it. The only time I ever go to advertising is if I accidentally click on it. So, I think they're much the same way.
—Ted Rockenbrodt, 9-12th grade social studies teacher, 2001

I'm basically immune to it.
—Seb, 8th Grader, 2001

In the previous chapter, I reported the ways so many educators and librarians across the U.S. and elsewhere are working to help students navigate the web, make their searches worthwhile, and develop ways to think more critically about web content. These educational trends have also been documented in countless books, articles and studies. But for me, reading was not enough in my effort to assess the state of a commercialized internet in U.S. education. I wanted to see for myself what was going on in schools. And what I found, in my opinion, was a good deal of excellent teaching. In the very wired school district that I investigated for a year, I found that many teachers were using the internet extensively, requiring internet use by their students, and, most importantly, helping them both conduct rewarding online searches and evaluate what they found. Moreover, a number of teachers were approaching the web in ways far more sophisticated than anything I had read up to that point. There were many exciting aspects to my observations.

Although I witnessed what I considered to be very positive and commendable instruction, the story in this chapter is not all happy. The students I observed—as capable as they obviously were—did not choose to follow much of their teachers' good advice. In this sense, my investigations corroborate much of the trends elaborated in chapters 3 and 4: students use search engines for most of their school-related projects and persist in using them poorly, no matter what level of instruction. Meanwhile, they are inundated by commercial information, which either bogs down their searching or ends up in their final projects. This chapter details my observations of school internet use from the inside of a Midwest school district.

Welcome to Walnutville

Walnutville is not the real name of the city where I conducted my investigation. To protect the identities of the teachers and students in my study, I changed all their names, as well as the name of the town. [Walnutville seemed Midwestern enough (there are lots of walnut trees in the Midwest), and besides that, I happened to live on Walnut street at the time I worked on this project.] Walnutville has about 35,000 people, and is part of a metropolitan area of about 110,000. The city has three elementary schools, two junior high schools, and one high school. With impressive citizen and state support for large-scale school technology investment, computers and internet technologies are abundant in Walnutville. All elementary schools, both junior high schools, and the senior high school had a *minimum* of one linked computer in each classroom by 2000. Most had four to five per classroom, which was far above the national

average. There were also significant numbers of computer labs, which is where most of my observations took place.

I was interested in observing children ages 8-17 (kids who were just learning to surf as well as the more experienced teen users), so I picked the most technologically-rich of all the elementary schools (Hillup Elementary), the more wired (only slightly) of the two junior high schools (Homer Junior High), and the city's one high school (Walnutville High School). To begin my research at the three schools, I sent out a survey to determine the most common ways teachers used the web (and also to identify the most internet-savvy teachers). About half of all the teachers in the three schools returned the survey, and they revealed that the internet mainly functioned as a library substitute in these three Walnutville schools. Other internet uses, such as telecommunication exchanges or web page design, were a significant minority to projects asking students to do individual research—i.e., surf for information about a topic of their choice. Sixty-one percent of responding teachers assigned in-class projects that involved individual research in a school computer lab, with every student doing research on a computer. So, in general, Walnutville students surfed the web in pursuit of information on a self-selected topic, and wrote up research papers or created some kind of poster/presentation using that information.

My next step was to find teachers/media specialists at these schools who most frequently used the web in their teaching and encouraged online search activities during class. I contacted and interviewed 15 teachers/media specialists who were particularly avid internet users. Of these fifteen educators, I did additional in-depth research on four who taught specific internet units on online research: Jill Whitmore, the media specialist at Hillup Elementary; Jack Stroh and Miriam Lowell, who co-taught a technology elective at Homer Junior High; and Steve LeRouge, who taught English at the High School. Besides formally interviewing these four educators at least twice, I observed them in the classroom, observed their students' classroom research processes, and talked with them informally numerous times.

Finally, I interviewed a group of 21 students (selected from both Stroh and Lowell's and LeRouge's classrooms) as they conducted classroom online research. Using a "think aloud" method of interviewing, I videotaped students' computer screens to record their selections and talked to them to get them to verbalize their decisions as they surfed the web. Thus, I was able to visually document the choices they made as well as the surfing strategies they used. I supplemented all of these observations and interviews with other student data: web critique assignments that the junior high and high school students had completed at one point during the semester, and their other finished projects—the results of their in-class web research.

Teachers: In Search Engines We Trust

Based on my interviews with all the 15 teachers and media specialists, I found that nearly all regarded search engines as the most obvious and efficient way to find information on the world wide web. They had faith that their students could find trustworthy informational sites related to a particular topic of study using search engines. They also, by and large, trusted their students' searching skills. Many used the word "savvy" to describe their students' search engine abilities, and marveled at what they saw was an increasing dexterity with online material.

Sixth grade teacher Melanie DeBower, for example, asked her students to search for online facts when she taught units on wetlands and famous people. Her students incorporated the information they found into HyperStudio (a presentation software that stacks pages and incorporates photos and graphics) and a written report, respectively. DeBower easily justified

sending her students to search engines: most had computers at home and were already used to conducting free-form searches on the web; others with less search engine experience could benefit from such activities. She also found that pre-selecting sites for her students was often prohibitively time-consuming on her end, and that her students enjoyed being "set free" on the web.

Both 9th grade English teacher Miriam Lowell and 7th grade science teacher Joe Doherty also let their students search the web during class time, although they often asked their students to begin their searches by visiting a number of sites they chose ahead of time. For Lowell's "Odyssey" and "Renaissance" units, for example, she gave her students a handout containing specific URLs as a way to get them on the right track. "I give them a starting place, that's the way I phrase it," she said. "This is your starting place. Get into the links, at least two or three of the links you should be looking at, and then go from there." Similarly, Doherty directed his students to the NASA page or other government resources before letting them explore the web independently. Surfing, he explained, was an important lesson in and of itself:

> I do think that's important because some of our kids have vast amounts of
> experience with the Internet and some have none, and so I think it's important
> for them to have that opportunity and go on there and surf about, and we take
> a couple of days where I know that some time will be killed. Necessary evil I
> think. Just to get the experience of wandering around that great big vast array
> of information.

Jack Stroh, who co-teaches an 8th grade elective called Electronic Technology and Learning with Miriam Lowell, was a particular advocate of free-form web surfing during class. To facilitate an even wider use of search engines, Stroh adjusted the Internet portal in the school's Mac Lab (normally set to Yahoo!) so that a list of 21 search engines appeared on the screen with their accompanying logos. As the most technologically literate instructor in the junior high school, Stroh had faith in his students' ability to research diverse topics and find factual information by typing in applicable key words. He was encouraged by what he felt was his students' emerging web proficiency.

High school teachers in this study also tended to assign research projects that welcomed, and even required web research. Of the five papers English teacher Trina Matthews assigned over a given semester, four of them required her 11th/12th grade students to use Internet search engines and cite web sources in the papers. Biology teacher Dutch Hurley assigned two or three research papers a semester to his upper level students. These projects were so integrated with the web that Hurley welcomed his students to design web pages, which incorporated links to relevant sites, in lieu of written papers. Social studies teacher Ted Rockenbrodt assigned multiple web research projects to his four U.S. History (9th and 10th grade) classes and his Developing Nations (11th and 12th grade) class. English teacher Steve LeRouge also assigned research papers that required in-class web research in both his advanced and lower level English classes.

All these teachers—elementary, junior high, and high school—reserved time in one of the school's computer labs so that students could search the web for these assignments during class. Sometimes they collaborated with the school's media specialists, who facilitated student research projects in the media center when students visited during reserved class time or during free periods. "The Internet has just opened everything up," high school media specialist Karen Truax said. "I just think that students feel like there's little information that they can't find." For these

educators, the world wide web was a library of facts and search engines were the most logical pathways to these facts.

Even as they embraced search engines, the teachers and media specialists I talked to fully recognized that much of the information available online was not appropriate for student viewing or relevant for fact-based assignments. Search engines were chaotic places and the lists they generated were as full of garbage as they were of useful information. The challenge for many of these educators, then, was to help students wade through a large number of web sites and find the kind of unbiased and trustworthy information they needed to complete a fact-based research assignment. Educators generally had three strategies for doing this. First, at least for the lower grades, they did the search engine wading *for* their students, getting on search engines themselves and locating applicable sites to introduce in class. Second, they taught power searching strategies to generate more relevant search result lists. And third (and by far most common) they taught web page evaluation techniques so that their students could better judge the validity and quality of individual web pages on their own.

Teaching Strategies: Subject Gateways

Only educators in the lower grades pre-selected sites, or turned to subject directories like Yahooligans! Hillup's media specialist, Jill Whitmore, was perhaps the leading advocate of web site pre-selection. She felt strongly that the web was too huge a database for elementary students to handle, and sending students all over the web on fact-finding missions was a waste of classroom time. Accordingly, she advised teachers to select quality sites ahead of time. Realizing that this could be time consuming, Whitmore offered to help by passing around a sheet once a month asking teachers to designate topic areas that she might investigate for them. Whitmore also advocated educational subject directories like KidsClick, which was developed by K-12 media specialists, librarians, and educators. "We preview textbooks for kids," she said. "There's a whole selection criteria. We should be doing the same for web sites." Whitmore was so bent on pre-selection that she was working on creating her own list of web sites that could be accessed through the Hillup's online library database.

Third grade teacher Judy Valencia had taken a cue from Whitmore, and often searched for sites beforehand rather than let her students look for sites themselves. She had watched one of her students mistakenly open up a pornography site while doing research on Olympic figure skater Michelle Kwan, and from that point on decided to search for quality sites on her own. Like Whitmore, she also thought free-form searches wasted instructional time, but admitted that finding applicable sites for particular class units took *her* time (she had not yet relied upon Whitmore's assistance). Consequently, she often did not have enough hours in the day to do these searches. Valencia's alternative to pre-selecting web sites was sending her students to "safe" subject directories that offer lists of sites already pre-screened by "content experts" or "academics," and organized into basic categories (e.g., Art, Education, Science). Her directory of choice was Yahooligans!.

At the junior high level, 8th grade English teacher Suzanne Rommel also felt more comfort in pre-selecting web sites for her students rather then letting them loose on search engines. Besides finding web pages herself for particular units (e.g., on the Holocaust and on certain authors), she was particularly pleased with her textbook, *Prentice-Hall Literature*, which suggests applicable URLs in her teacher's edition (not the student version). "It's all there, it's absolutely great for us," she said. "Here are the web sites that you might go to and here's where

you might find the answer." Although Rommel relied upon her textbook as a kind of directory to Internet sites, she had little or no knowledge of online subject gateways such as Britannica.com or AOL@School. Indeed, only a few teachers I talked to at the junior high and high school level had heard of these services. Most felt they were not worthwhile or too elementary, preferring to send their students to search engines instead.

Teaching Strategies: Power Searching

Introducing students to "power searching" techniques was common at both the junior high and high school but not in the elementary school. Power, or advanced, searching refers to the use of Boolean operators (e.g., *and, or, not*) to more successfully narrow down a web search, and understanding the differences between various search engines (e.g., search engines vs. metasearch engines). In the 8th grade elective Stroh and Lowell co-taught called "Electronic Learning and Technology," they asked their students to complete an online tutorial that took them through the basic concepts of Boolean syntax as it related to the web. Students worked on the tutorial during one or two class periods (depending on how quickly the student learned that material) and took a graded quiz on the concepts they learned.

At the high school level, media specialists Karen Truax and Sandy Ingersoll explained Boolean strategies to all tenth graders at the beginning of the school year as part of their library orientation. They mainly applied this presentation to the school's subscription-based Internet databases available through the high school media center, although they also explained that the same methods could be used for many search engines. Some teachers later invited the school's media specialists to their class for a refresher session on Boolean search terminology and web page critique strategies. English teacher Trina Matthews, for example, asked Truax and Ingersoll to talk to her 11th and 12th grade classes before they began working on their web research projects. English teacher Steve LeRouge also touched upon the basics of Boolean operators in his own classes and discussed a number of search engines he found to be the most useful (e.g., Sherlock and Google). Other teachers, like social studies teacher Ted Rockenbrodt, felt confident that the sophomore library orientation was sufficient for their students, and believed that his students applied Boolean strategies during their web searches at home and in school.

Teaching Strategies: Evaluating the Web, Page, By Page, By Page…

To many of the educators in my investigation, the web could be easily tamed—and could fulfill its promise as an educational resource—if students could learn to distinguish the good content from the bad. Following the liberal-humanist tradition of critical reading, which values truth, objectivity, and attempts to identify author intent (see Cervetti, Pardales and Domico, 2001), a "good" page was one that offered straightforward, trustworthy, and factual information; a "bad" web page was one that demonstrated obvious bias and had sloppy, misleading information. Educators generally felt that learning to wade through the "garbage" of any given web search also offered a means for learning critical thinking skills; the more pages students had to wade through, the better their critical thinking skills could become. With these skills, the web as an overwhelming database could be surmountable. As such, the majority of the teachers and media specialists I spoke to made admirable efforts to educate their students about the potential biases of various kinds of online materials, and to distinguish between good and bad content. "Kids don't always know what's real and what's not," high school biology teacher Dutch Hurley

remarked. "And I think that's good. Part of the whole learning process is that they have to sift through what's garbage and what's real."

Of the fifteen educators I interviewed, nine taught their students evaluation criteria outlined in the previous chapter—Authority, Accuracy, Objectivity, Currency, and Coverage—as discussed in Chapter Four. Most teachers had gathered information for such discussions from education articles passed along to them at conferences, and at internet workshops held by the local education agency or in-service teacher training—an indication of the pervasiveness of this discourse. This evaluation criteria put an emphasis on the individual web content author and his/her expertise in a given subject area, and, not surprisingly, the educators I interviewed tended to highlight the notion that web sites authored by ordinary people are the most likely sources for misinformation on the web, and are responsible for making web searches so unwieldy and cluttered. Seventh grade science teacher Joe Doherty was typical of the teachers I interviewed:

> I mean, anyone can put anything they want on the web. I can make up my
> own site and say 'I am the Ozone watchdog for the Midwest.' I could make
> up some name and call myself some society, and I could put any cacamana
> on there—and I think I could and some people do!

Because "anyone can put anything on the web," (a phrase that kept recurring in numerous discussions I had with teachers and media specialists), the web page evaluation methods at Hillup, Homer and Walnutville High placed a priority on establishing web page authorship. At the elementary level, media specialist Jill Whitmore (and not the Hillup teachers themselves) handled such discussions for the school's 5th and 6th grade students. "We go through a checklist of criteria for a good site," she told me. "Is there an author, a creator? When was it last updated? Is it an '.edu' or a '.com?' Where is this person coming from? Do the links work?"

At the junior high and high school levels, class discussions about untrustworthy authors and their potential biases happened more frequently and spontaneously. For example, when both seventh grade science teacher Doherty and high school biology teacher Dutch Hurley asked their students to investigate current scientific events online (projecting a certain web page on a screen to generate class discussion), they would bring to their attention the dubious nature of some web pages. Describing his teaching, Hurley explained:

> We look at what's real science and what's not real science, and I incorporate
> some of the web sites that we found by accident. Human cloning is a big one.
> There are millions of sites out there that claim that they've cloned humans and
> if you send me $300 and some DNA I can clone you and stuff. And we look if
> this is real or if this is not.

High school English teacher Trina Matthews also referred to biased author pages in larger discussions about language use. In three of her upper level composition classes she had taken her students through a sample essay that presented itself as a factually-based document. After highlighting words that indicated the writer's bias, she extended the lesson by stressing the ubiquity of biased resources online and the "misinformation on personal pages," which can contain similar language styles. Similarly, in his goal to have his students be "efficient users of the internet," high school social studies teacher Ted Rockenbrodt frequently interjected advice

about domain names as his students were researching during class-time, "so that they know if they go to Joe's Basement page, that's not where I want to be for valid information, whereas Tulane.edu, you're probably going to get some good stuff there." Generally, these educators deemed web pages that had no identifiable author but were created by a known organization or company (and looked professional), more sound and truthful than pages created by individuals. This practical standard relates to what I discussed in Chapter 4, what I call the "aesthetic of credibility"—an aesthetic that satisfies many of the credibility criteria (e.g., contact information, good grammar) but may not necessarily be credible.

Some teachers developed web page evaluation units that spanned days or even weeks. For their eighth grade elective Electronic Technology and Learning (a class that serves about 20 students each semester), Stroh and Lowell led lessons about the internet and web content that were quite remarkable in their depth. They developed a three-week long unit called "The Internet," which was broken up into "Terms and Concepts" (email, the world wide web, internet service providers), "Web Page Evaluation" (domains, author validity, meta-tags, link investigation), and "Search Techniques" (engines and directories, Boolean operators, metasearch, local sources). They taught the "Internet" unit in the first third of the Fall 2000 semester. Stroh and Lowell assigned a significant amount of class time for the various activities, and students basically worked on their computers as the two teachers assisted individual students. The co-teachers worked from materials they had collected at the state's annual educational technology conference and from handouts from the area education agency. One article from the monthly newsletter *Classroom Connect* was particularly informative in their teaching: "Information Literacy and the Internet: How to Sort 'Good' Online Information From the Bad" (Information, 1996). They also drew upon their own expertise. Stroh is a computer whiz who troubleshoots technology problems throughout the school; Lowell has taken courses on web design at the local university and with an academic librarian for a spouse, she has a personal interest in information evaluation.

For their discussions devoted to "Terms and Concepts," Stroh and Lowell worked to improve their students' understanding of the internet's different components—the technology behind the information tool. This in and of itself, I found, was impressive. As they moved to "Web Page Evaluation," they were more typical at first, beginning discussions about authorship validity by defining domain categories, explaining their differences, and issuing warnings about certain URL addresses that could indicate misinformation or bias. For one class period, Lowell explained the individual domain categories (.edu, .com, .gov, .org, .mil., and .net). "You have a fighting chance if it's an ".edu" that the information will be accurate," Lowell said, and underscored that "safe" domains such as ".edu" can also be misleading and biased. To illustrate, she and Stroh highlighted the infamous web page authored by Northwestern University professor Arthur R. Butz (pubweb.northwestern.edu/~abutz), who makes absurd claims that key events documented about the Holocaust didn't happen. Stroh and Lowell discussed the way authors can seem reputable on the outset (like Butz appearing on a university server), but espouse extremely biased points of view. An academic-sounding ".edu" site should not be trusted unconditionally they warned, noting that a URL with a tilde is also an indication of a potentially untrustworthy page. (As I discuss in Chapter 4, warning users about tildes is a prominent theme in the current literature).

Like so many educators nationwide, Stroh and Lowell viewed sites designed by individual people—personal pages—with the most mistrust. They advised students to visit the online bookstores Amazon.com and Barnes&Noble.com to see if web authors had also published

reputable books—a helpful way, in their view, to determine an author's legitimacy. They also discussed ways for their students to identify the type and number of external pages that chose to link into a particular site in question (e.g., go to the Alta Vista search cell and type "link:" and the site's web address). A site was presumed to be more legitimate if numerous sites linked to it from their web page (Google uses a similar strategy to determine relevance). Stroh and Lowell also told their students not to automatically exclude .coms as biased and opportunistic, and gave the example of a "beautiful and informative" page about the Sistine Chapel renovation that is sponsored by an air conditioner corporation charged with keeping the climate controlled for the renovation. Finally, they mentioned the page's currency, and whether or not a visitor could email the page's author, as a marker of web site legitimacy.

Finally, the two teachers introduced "Search Techniques," where they discussed various practical differences between search engines (which engines were Boolean-friendly, which were not), had students go through a Boolean tutorial (described above), and showed students how to identify metatags that define a site (go to View-Source on the web browser to access the HTML code). For this component, Stroh and Lowell asked their students to consider the way a particular site positioned itself within the context of search engine searches.

This impressive instructional unit for the eighth grade level went one step further, as Stroh and Lowell integrated their web page evaluation discussions with a number of small assignments meant to increase students' understanding of web domain categories. They asked students to email a commercial, noncommercial, and government web site of their choice and see what kind of response (if anything) they would receive; they asked students to choose three out of five web sites Stroh and Lowell had pre-selected under each of the six domain categories (.gov, .edu, .org, .com, .net and .mil), follow at least two links to get a better sense of the overall site, and write brief summaries of the type of information they found. They also asked students to visit the Walnutville city web site and review some of the listings they found there as a way to orient them towards the web's civic potential. Finally, Stroh and Lowell assigned timely reading selections drawn from current newspapers and magazines that centered on five topic areas they had identified about technology: Privacy (censorship, copyright, personal freedoms); Education (today's technology in education, global education); Consumerism (e-commerce, savvy consumerism, gadgets, games & toys); Society (careers, impact of technology on society); and The Future (new technology, scientific or medical technology). "Both of us read journals on the internet," Stroh explained, "and these were the issues we picked out that were the most common, that people were writing editorials about."

After "The Internet" unit, Stroh and Lowell turned to a unit called "Computer Graphics" unit, which introduced students to digital cameras and other technology accessories. The third and final unit, "Web Page Building," occupied the last month and a half of the semester. Students began the unit learning the basics of web page design using a Claris Home Page tutorial. Then Stroh and Lowell assigned the class' final project: Students had to pick a topic that they had covered (or were about to cover) in another class, and apply the web researching and evaluation techniques they learned earlier in the semester to gather online information and visuals. They then had to use the information and graphics they found to be the most credible and build their own informational web page. Stroh and Lowell also required that students document their web sources, define the web source's domain, write down the individual or group responsible for maintaining the site, and document what other sites linked to their source sites.

Combined with the work students did in the first "Internet" unit, all these exercises were meant to help students decide if the sites they chose for their research were valid and

trustworthy. Indeed, this list of activities was both ambitious in scope and, based on my review of current educational practices, particularly unusual for the 8th grade level. In subsequent semesters, Stroh and Lowell decided to place the Internet unit and the Web Page Building unit closer together. According to Stroh, students had forgotten much of the power searching and web page evaluation skills they had learned by the time they had a chance to apply them.

High School English teacher Steve LeRouge, like Stroh and Lowell, was also especially committed to teach his students web page navigation and evaluation skills in his two advanced Comprehension and Perception classes. He had been teaching some form of web page evaluation since 1996, and during the semester I observed his class he was teaching an entire unit on internet research. He introduced the unit by showcasing his favorite search engines (Sherlock and Google), reiterating "power search" strategies, and outlining the various internet domains. The bulk of the unit, however, was spent on web page evaluation skills, and was informed by the same *Classroom Connect* article used by Stroh and Lowell (Information, 1996), as well as the online (now offline) document, "It Must Be True, I Saw It On the Net: Real Research On the WWW," which LeRouge received at an Area Education Agency workshop in 2000. Drawing upon the recommendations in this web page evaluation tutorial and his own web researching experience, LeRouge spent an entire class period critiquing the web page "www.designer-drugs.com," which featured an article called the "Future Synthetic Drugs of Abuse" and a list of pro-drug-related links. As his students simultaneously scrolled through the article and specific links on their individual computers, LeRouge pointed out various elements that deemed the article's author, and the web page itself, either trustworthy or troubling. This is an excerpt of LeRouge's class lecture:

> If you look at this it seems pretty reputable. It seems to be set forward in a scholarly format, there's a nice solid title. There's a person, David A. Cooper, he has a pedigree, Drug Enforcement Administration, Mclean Virginia, yeah, the home of the [CIA]. So in fact you'll see that you also have an index at the very outset, and that particular index is basically a page where you can scroll up and down that page.

> As you look at it then again it seems set up in pretty straightforward, almost scholarly fashion. You have the introduction that lists the hallucinogens, the sub groups to hallucinogens, stimulants, sedatives, etcetera. If you scroll down so you have the introduction in the middle of the page, I want to show you things that are seemingly pretty solid bits of information, and he introduces this, a kind of attractive prose style, kind of that quasi-scientific style, with a lot of passive verbs in it. You know—"It is determined"—those types of things.

LeRouge continued to illustrate how a seemingly scholarly, relatively current page (he showed his students how to determine currency by selecting "View" and "Page Info" on the browser) had some suspicious links: Future Opioids (http://opioids.com), a "pro-drug rant" that led to other peoples' rants about the orthodoxy of self-medication; The Good Drug Guide (http://biopsychiatry.com) that called itself "The responsible parent's guide to healthy mood-boosters for all the family"; and BLTC Research (http://www.bltc.com) that promoted "paradise engineering" to "abolish the biological substrates of suffering." Besides pointing out the pro-drug bias of the web page links appearing alongside this particular article, LeRouge also asked

his students to do an author check on David A. Cooper by inserting his name into the search engine Google (this was a strategy similar to that of Stroh and Lowell, who recommended plugging a web page author into the Amazon.com database). Because the same article (but none others) appeared on multiple sites, LeRouge illustrated how this author's name was potentially fabricated, or how the author had less credibility than someone listed within the context of a larger, known organization. "If you can't find anything else by him," he said, "I would probably hesitate to use him as a major source. I might use him as a secondary source, but not as a major source." Like Stroh and Lowell and their focus on the Arthur R. Butz web site, LeRouge was directing his critique on a single web page author who held a particular point of view. The currency of the web site, and the presence of contact information, were also priorities in determining the web page's credibility. LeRouge's message was consistent with Stroh and Lowell: web page bias and misinformation is rampant on the web, and one has to be a sleuth in the search for factual information.

LeRouge's "Internet Research" unit included two related assignments. First, he asked his students to conduct online (and other library) research on a topic of their choice and write a fact-based research paper using the information they found. Second, he assigned an "Online Critique," a checklist of 13 questions, which students had to apply to one particular web page they had found for the topic they were researching. The 13 questions came from the same *Classroom Connect* newsletter (Information, 1996), and were meant to help students differentiate between "good" and "bad" web content. For example, the handout asked students to consider authority, accuracy, objectivity, currency, and coverage, and to compare the web page with any library materials they may have found (**See Appendix—I could also put this document in the text of Ch. 4; I refer to it there. Then here, I could ask the reader to see page XX. Please advise**). LeRouge scheduled three class periods for students to conduct online research and complete their web critique, which they had to write up and hand in. As they worked, LeRouge spent these class periods visiting with individual students and continuously helping them sift through the legitimacy of particular web sites. In this particular discussion, LeRouge talked to one student researching Ritalin as they both viewed the web site http://www.breggin.com:

LeRouge: This guy has a clear bias, what's his clear bias?

Student: To keep kids off.

LeRouge: To keep kids off of Ritalin. Okay? He's a medical doctor, it says M.D. Now we don't know if he's a general practitioner, we don't know if he's a family doctor, we don't know whether he's a podiatrist, for crying out loud. Okay? "Founder of the International Circle of Study." Okay, he's the founder….okay….that says something…Where is this coming from. It's a .com. This is a good thing you might want to critique, because while [the text] says one thing, [the sponsorship] says another. What do you suppose that links to? Go ahead and click it…see what happens…(reads). Let's see. Oh, make payment in dollars. Twenty-five bucks. So here is a question. If it's a nonprofit organization, right? It's going to send you a button, you're going to send them $25. How much does it cost to put up a web page as an M.D.? Do you really think he can afford a web page? So that's an interesting one. I would take it with a grain of salt. Again, some of the information may be interesting information that you may be able to check against other

information that you get. But if you were to critique this site, you may want
to make a point of saying what kind of information…does he have any links
to any other sites, is there any bias to the author, you can say "Yeah…" You
might also ask "why is this information online." You can say the guy put this
information up to inform. On the other hand he's also making money for a
supposedly nonprofit organization and trying to encourage membership.
That's what I would do.

This student would later choose this web page for his 13-question Online Critique.

    After all students had completed their critiques and handed them in, LeRouge visited with each of them individually as he returned their papers. During these impromptu teacher-student sessions, LeRouge reiterated what he wrote down on their critiques: he pointed out that a page that was not recently updated was suspect, that nothing on the web should be trusted until the web page and web author satisfied numerous authorship, accuracy, objectivity, currency, and coverage criteria, and that commercial pages (".coms") featured potentially compromised information. Even then, LeRouge recommended that the web page be cross-listed and compared to other online information on the same topic, and he frequently suggested that students email the author for additional source ideas.

Teachers' Personal Views on the Web

    As I have tried to illustrate, teachers regularly assigned web-based research projects in their classrooms in the Walnutville school district, and in some cases talked about internet technology and web page evaluation strategies extensively. Teachers were generally concerned with information overload, and with equipping their students so they could find the most useful sites. Some, like LeRouge, were concerned about helping their students read against the commercially-biased content they encountered. But, although teachers and media specialists were certainly annoyed by advertising, they didn't see banner ads interfering with their students' research projects. "I don't know, you're living in America, you know, you're in a capitalistic society, and the kids are pretty savvy to that, in a way," one teacher remarked. "I don't think that they are unaware that everything comes with a little price tag and a little hook for advertising there."

    Similarly, teachers at Walnutville were not overly concerned with the numerous online games and contests that attempt to extract personal information from players, mostly because they didn't see these issues as affecting in-school experiences. Hillup's media specialist Jill Whitmore did introduce her 5th and 6th graders to the concept of cookies. Indeed, she had adjusted the preferences in all the media center's computers so that students were constantly warned whenever a cookie was being sent. Whitmore wanted her students to know that computers may be monitored by outside entities via cookies, and that it should be their decision what they wanted to show, and whether to accept a cookie or not. (Of course, by not accepting a cookie, a user is often denied access to the site.) Stroh and Lowell had also discussed cookies and spam with their students during previous semesters, asking them to read articles on issues of junk mail and profiling. During the semester I observed Stroh and Lowell's class, they chose to focus on other technology issues.

    Regarding search engine commercialization, most educators I talked to embraced search engines as the most effective and trustworthy means of finding quality web content, so there was

little reason for them to critique such popular tools. "Usually they can find something worthwhile," one media specialist said, "even if it takes some extra time." Moreover, educators did not foresee search engines changing dramatically in the future, question search engine effectiveness (given the increasing number of web pages to sift through), or question the commercial nature of search engines as profit-seeking corporations. When asked to consider the likelihood of commercial influences on search engine result lists, the teachers I talked to were not aware of these developments, and thus, not concerned.

In fact, high school social studies teacher Ted Rockenbrodt believed search engines' navigation services would improve in time with the increased competition among search engine sites. "I have full confidence in the private sector," he said. "…that as we have more web pages, they're going to have more sophisticated search engines." With better search engines (provided by the private sector), a sound knowledge of advanced "power search" techniques, and good web page evaluation skills, Rockenbrodt believed students would be able to find the sites they were looking for. For him, the fact that the Web was becoming more and more privatized was its biggest asset. He remarked:

> I think there is still going to be plenty of really good stuff out there for us to find. And whether they are prioritized, and whether it is the free enterprise system entering into it, I guess that's just part of it. But I still think we're going to find good stuff...If we [teachers] can't find online documents, then we're not expecting them [students] to. We're probably not seeing what we're missing anyway. I suppose that's a defeatist way of looking about it, but...

In other words, Rockenbrodt believed noncommercial sites would either trickle down through the many commercial sites and personal pages, and if they didn't, it didn't matter—what we don't know can't hurt us.

If Rockenbrodt's assignments are any indication, he embraced the web as not much more than a vehicle for free enterprise. One research assignment he developed, for example, was meant to be a lesson in internet abundance: teaching students how so much information—arcane details—was available online. The assignment was for his Developing Nations class, which he taught to 11th and 12th graders. Students had to pose as tourists/business people and use the web to design an itinerary for a business trip to a South American country. In teams of three, they had to use search engines to locate "facts" about car rental prices, restaurants, hotels, travel, and a company that paralleled their chosen business interest. Students found, for example, that in Brazil, a Ford Explorer rents for $60/day, the Pizza Hut in Rio doesn't serve forks with their pizza, a luxury hotel in downtown Rio includes an American continental breakfast with the room price, and that tourists can ride mountain bikes through the Amazon EcoPark. "Kids love to do this," Rockenbrodt said. "They love to search." Indeed, as I watched them work in pairs in the computer lab, I observed students enjoying themselves as they investigated their developing nations. One conversation I overheard went as follows: "Do we all want to stay in the room together, or have separate rooms?" "Oh, I think separate rooms would be okay." "Oh look, we can reserve a suite of rooms!" Meanwhile, Rockenbrodt urged his students to bolster their itineraries with more and more minute facts. "I don't want you to print off a bunch of crap from the internet and hand it in," he said. "I'm looking for detail. Find all the things, present it nicely, and show me what I need to see." Since Rockenbrodt's students were asked to locate facts that by and large concerned commercial enterprise, they had no problem finding the information for

which they were looking. Car rental agencies, hotels, and restaurants like McDonalds—all would have high-profile web sites. But Rockenbrodt did not provide a framework for understanding the Web as a commercial medium beyond the notion that lots of commercial information was indeed available online.

Rockenbrodt's complete confidence in the internet as a commercial educational medium was an extreme case. Other teachers were more contemplative of the future of the internet as a mass medium and its evolving role in education. Seventh grade science teacher Joe Doherty, for example, initially saw the web as a decentralized medium that would remain essentially democratic, safe from commercial domination, and as such, navigation tools such as search engines would be non-problematic. He argued that all perspectives would eventually trickle down and through the web, and remarked, like Rockenbrodt, that commercial forces would never succeed to effectively distort the information flow—that some countervailing force would always prevent that from happening. However, when Doherty began comparing the internet to television and cable industries, which are dominated by corporate oligopolies, his argument began to change. In acknowledging that there are very few television programs that are critical of corporate and/or media culture, he also acknowledged that a privatized internet may also limit critical discussions about the economic, political and cultural issues that are crucial for democracy. In making these connections, Doherty observed that despite numerous for-profit educational initiatives, "the best educational sources [on the internet] are from educators."

Doherty wasn't the only teacher I talked to who was grappling with the internet as a commercial entity and with commercial search engines as the obvious tools for searching that entity. High school biology teacher Dutch Hurley, who was one of the many who saw the value of students "sifting through garbage" to enhance critical thinking skills, also noticed his students wasting too much time searching for usable web sites in his classroom. For certain kinds of assignments, at least, Hurley was beginning to think that subject directories, carefully prepared by educators, would be more useful to him and his students than search engines.

Jill Whitmore, Hillup's media specialist, took this notion one step further. If Rockenbrodt represented one end of the continuum—utter faith in commercial search engines and glowing praise for the internet as a privatized mass medium—Jill Whitmore represented the other end: She mistrusted the web as a commercial medium and was doing something about it. Whitmore was already combating her students' growing comfort with search engines (at home and school) by teaching her 5th and 6th graders web page evaluation skills, discussing cookies and other privacy issues, advocating web site pre-selection, and promoting noncommercial subject directories like KidsClick to her fellow teachers. KidsClick (www.kidsclick.org) was established by media specialists in New Jersey and was based on the nonprofit premise that "providing an objective information service for children is not compatible with simultaneously targeting them with marketing." A group of K-12 media specialists, rather than staff at Yahoo! or AOL@School, hand-pick KidClick's web selections according to their educational utility and value. Whitmore believed that such efforts were crucial to the web's future as an educational tool; for her, media specialists and teachers, not commercial forces, were the ones who should be responsible for locating web pages and maintaining education-oriented subject gateways.

Whitmore felt so strongly that her students were too reliant on search engines—which in her view were overly commercial and a giant waste of time during internet lab sessions—that she had begun to create a noncommercial subject gateway on her own. One reason was to steer the school's students away from overly commercial sites and towards what she considered high quality, credible sites. Another, and perhaps a more important reason in her view, was to steer

her students towards *existing library resources* in addition to her selection of "quality" web links. Using her knowledge of mark record cataloguing, Whitmore had figured out how to integrate active web site links into Hillup's online library catalogue and was self-sufficiently building her own directory, selecting sites according to the same criteria she used for other library sources. Her evolving online directory allowed students to locate the web sites she selected through the same search terms they would use to find books, thereby merging *all* library resources—books, CD-ROMs, videos, internet sites—into one coherent database.

A main worry for Whitmore was that students, in her experience, increasingly rely on web sites, not books, for all their information. "I really feel with the way the internet is going as a resource that we have an obligation to do this," she said. "The beauty of it is that it's within the library catalogue. What we need to do is broaden kids' scope in terms of looking at the way kids do research." She got the idea from the Follett Software product WebPath Express. WebPath Express is essentially a card catalogue software program with links to a [now defunct] commercial educational subject directory called "Webivor." Whitmore liked the concept behind the WebPath Express software—pre-selected and categorized web links that made up one aspect of a larger library catalogue—but she was not impressed by Webivor's site listings or the price: about $1000 for the initial yearlong subscription in 2001 and $700 for annual renewals. Instead, she merged her own pre-selected web sites into the school's established online database. In doing so, Whitmore was attempting to contain the web within the structure of the library catalogue, where it was beyond commercial control. Whitmore even had plans to make her online library resource the internet portal page for Hillup Elementary, rather than the commercial portal used at the time of the study: Yahooligans!.

Whitmore's cataloguing efforts, which really were in the fledgling stages and not yet utilized by other teachers at Hillup, were nevertheless inspiring. Most of the educators in this study considered the web to be an exciting and already-evolved resource. In their view, it simply kept growing bigger but was not evolv*ing* into a complicated environment that largely benefited commercial interests. Moreover, search engines seemed to work just fine for their purposes. Whitmore (and to a lesser extent, Stroh, Lowell, and LeRouge), addressed the web as a more complicated environment and worked hard to give their students adequate skills in negotiating this environment.

Considering all of these efforts to make sense of the web and integrate web content into school assignments—pre-selection, power searching, web page evaluation, and various (albeit spotty) discussions on internet privacy and profiling—I now turn to these educators' students. How were students determining what information to use for their research, or addressing the web overall? To what extent were the students heeding their teachers' suggestions? What were their teachers up against?

Students: Search and (not) Find

The students I got to know during my school investigation had all been through some form of web page evaluation instruction. The 18 sixth graders in Melanie DeBower's class had received an orientation from the school's very competent media specialist, Jill Whitmore. The 19 eighth graders—eighteen boys and only one girl— in Jack Stroh and Miriam Lowell's Electronic Technology & Learning class had gone through the intense internet unit, although it had been a full month since they had discussed web page evaluation techniques or completed their Boolean tutorial and other domain activities. The 36 11th and 12th graders in Steve LeRouge's two

Comprehension & Perception English classes (18 in both classes) had just been through a lively session on web page critique with LeRouge, discussing Boolean operators and carefully demonstrating how to apply the evaluation criteria to an untrustworthy web page. They had also been introduced to Boolean searching techniques during their freshman orientation at the school library. At the time I observed all these students surfing the web, they were locating information for class research projects. These were smart and friendly students, and I enjoyed talking with them. They taught me a lot about what it's like being a student, working on a research project, and relying on search engines almost exclusively to locate materials online.

All the students I observed were searching for factual online information during numerous lab research sessions. Only a few (in LeRouge's advanced-level English classes) were using other library resources (e.g., magazine databases, books) beyond the web for their projects, and all agreed that they typically use the web alone for nearly all of their school-related research projects. Every student was using a commercial search engine. Professing to be extremely comfortable typing in key words and sorting through search results, these students—even the sixth graders—were gathering information on a great variety of topics. The sixth graders searched for sites on wetland environmentalism and voting; the eighth graders searched for sites on science related themes such as tectonic plates, volcanoes and galaxies, literature-related themes such as Edgar Allan Poe and Hans Christian Andersen, and other topics such as basketball history; and the high school students searched for sites on an even wider range of topics, including the Holocaust, UFOs, aviation, violence in sports, Ritalin, music censorship, the Ebola virus, Ecstacy, the 1920s, communism, and waste management. For the purposes of their projects (and in the context of the web page evaluation unit in which these projects were assigned), they had to use information that they felt was reliable and authentic. With the exception of the sixth graders, they also had to document their sources for their final project.

Students' favorite search engines were Yahoo!, AltaVista, and Excite! (these were especially popular among the sixth graders), Lycos, Search.com, Dogpile, Google, Ask Jeeves, Sherlock, and Goto (now called Overture). Rationales for picking a particular search engine varied depending upon a students' internet experience level. For example, less experienced users tended to settle upon Yahoo! because they sensed it was the most popular and therefore the best ("I see it on TV a lot. My cousin uses it. My mom uses it. So I'm just going to use it"). One student liked Lycos because he was taken by the company's high profile television advertising ("It first got me in by the dog [in the ad]. I have to admit I like the dog. And I went into it"). Other students picked the search engine they felt seemed the most "professional" (Lycos was described this way numerous times) or picked one that, like Search.com, had an easy-to-type name. The most experienced user in this study—a junior high student—routinely progressed through a range of search engines and gateways: he began with AltaVista because he felt it gave him the broadest scope and offered the most accessible web site summaries; then he turned to Yahoo! (the search engine, not the directory) because he felt it was a little more focused. Finally, he turned to an encyclopedia web site like Britannica.com or Encarta.com, to narrow his search even further.

This student was the only one who ever discussed using an educational subject gateway (although I never did see him use one). As I discovered, the common notion among students was that subject gateways were for babies—they were coddled environments that in no way represented "the whole web." Students clearly thought they would miss out on important information if they did not use search engines. They also didn't like them because they seemed to require more work. On a few occasions, students came across such sites (e.g., Britannica.com

and The Lightspan Network) on their search engine result lists and linked to them quite accidentally; they immediately resented having to re-type their key word or deep-linking through a variety of subject headings. Ironically, these tools often supplied students with exactly the type of factual and simplified information that they were looking for, but as this was not directly evident, they quickly gave up and returned to the back-and-forth comfort of their search engine lists.

Both the junior high and high school students overwhelmingly spoke to the ease and convenience of search engine research. "Oh, I think it's a lot easier than having to go and find books and look through the books," one high school student, Ron, told me. "The way you can skim it on the computer, it doesn't take as long to find it. All you have to do is type in a few words and there it is. You've got people (sic) there." Not leaving one's seat had definite appeal in the hunt for factual information. Although a few high school students used the online magazine data bases that the school library subscribed to, where they could find current articles on a range of topics, they were clearly more impressed with the immediacy, scope and currency of search engine result lists, even if a search often produced an overwhelming number of hits. "I'm looking up basketball so I just type in 'basketball' and I search for it," Jeremy, a junior high student, told me as he searched his topic on AltaVista and instantly reaped nearly four million hits.

The length of these lists never seemed to matter to students because they believed that the most relevant sites appeared at the top of the list. While some students carefully read web site summaries before linking to a particular site and skipped around a search engine list, most systematically began at the top of the list and went down, disregarding some links that seemed obviously irrelevant, but opening up many of the web page links as they came to them. Many students had their own benchmark stopping point in which they would desert a result list and try a new search term or combination of terms. Students rarely went beyond the first three pages of a search engine list. "I usually just view the first page," Ty, a high school student, said. "I don't go on. If it says you can go to the next ten sites, I just stay with the first page." Another student, Lamont told me, "[I stop] if I don't see anything on the first page. They get less relevant as you keep on going farther, so I'll just go one or two pages." In general, the students I talked to had faith that the search engines they used would give them good results within the first few pages of a search engine list, if not the best, most thorough, and most current information of any available library resource. "I usually trust all of them [search engines]," Jeremy said. "I don't usually NOT trust anything. I don't usually come up with anything that is bad [i.e., pornographic, not trustworthy] or anything."

Interestingly, students did not try to "power search" with Boolean operators. When I asked them what they did when they got a list of over 50,000 search engine results (which was typical), I would get answers like "if there's a ton [of hits], I try to narrow it down by using 'ands' and 'ors' and all that kind of stuff," or "you kind of put quotation marks around the thing you mainly want, and that should cut it down," indicating that they did indeed remember certain elements of Boolean terminology they learned in class. However, after many sessions observing these students using search engines, I saw no evidence of them ever using their advanced power searching skills. Most often they typed in one word related to their research topic, like "basketball" or "volcanoes" and reaped hits often numbering in the millions. One girl researching stars and galaxies on Yahoo! typed in "stars" and yielded about 23 million hits, including web pages for Star Trek, Star Wars, and male porn stars. She may have remembered

power searching techniques, but in practice she didn't use them, and instead resorted back to her more familiar habit of typing in a singular search term and instantly getting thousands of results.

Web page Evaluation: Why Bother?

I also didn't see any effort to evaluate the web pages they visited and used for their projects. By just talking to students, it seemed that some of the web page evaluation guidelines had penetrated some of their thinking. I asked both junior high and high school students, for example, what they defined as a good web site for their research, and a number of high school students echoed LeRouge in prioritizing objectivity: "I think a good web page is like, how they explain both sides of the conflict, like for or against or whatever. And then they'll have like facts about it and stuff," Ted, a 12th grader, said. Similarly, Dina, an 11th grader, identified sites that were "not all gunked up by opinions and that kind of stuff." Other high school students cited author credibility as their high standard for a "good" web page. "If it's quoted by like, people that you know, that are like reliable sources," Lamont said, "then I'll actually use it." Jess also noted the importance of contact information on a web site, and whether or not an author was a known name rather than just some individual. For these students, truth and credibility seemed important to them when they spoke to me. But when I inquired a little further: "do you actually go out of your way to determine a site reliable?" they said they did not—unless they were required to do so in class.

Furthermore, some students were applying their own method for determining author credibility that had nothing to do with Stroh, Lowell, or LeRouge's teachings. "If it's got information on it, I'll go for it, as long as two pages match up," Matt, an eighth grader, said. "I like to see if two pages match up. Like if I have one page with this information and another page with this information, if both of them have basically the same information." Two other students, one in junior high and one in high school, also said basically the same thing in completely separate interviews: "You know it's true if more than one guy agrees, or if more than one person agrees on it." It thus became evident throughout my observations that while teachers had rather painstakingly laid out particular strategies for searching the web and evaluating web content, their students were more interested in shortcuts. Moreover, the evaluative shortcuts used most often were ones that were even less connected to their teachers' lessons: speed and flashy design.

The Need for Speed

The drive to find web content (no matter what kind) as fast as possible was prevalent in all grades. As I observed sixth grade students use search engines to locate images and facts for a unit on Wetlands in Melanie DeBower's class, I found their approach to web material, which they were busily importing into a Hyperstudio stack, was akin to cutting out words and pictures from a magazine and gluing them onto posterboard. Student pairs moved quickly through the web, locating pictures of herons and alligators, or sentences relating to the wetland environment they were investigating, and slapping them onto a hypercard. Speed was such an issue that some students, thinking they could find a page faster than their partners, often grabbed the computer mouse from one another. These students' single-minded mission to locate applicable photos and text had a consequence. They did not make distinctions about the kind of pages they were on, be it the Environmental Protection Agency site or a commercial tour guide site for the Everglades.

Students treated the web as a stockpile of information at their complete disposal, and the faster they could find the information to complete their assignment, the better.

This emphasis on speed continued in the junior high and high school grades; students were too much in a rush to care about the site evaluation criteria they learned. For eighth grader Kevin, a good site was one that had "the information that you want and that you need." For eighth grader Bryan, "If it's got information on it, I'll go to it." Once again, their task—finding photos and short descriptive sentences quickly—allowed them to treat the web as a neutral space and web page data as information for their taking, regardless of where it came from and regardless of what context it was framed in. As such, web page domains were irrelevant to these students; web sites were merely a huge collection of words, facts and pictures that needed to be located (as quickly as possible) and assembled for academic purposes. "I just kind of go where the information is," Liz, who was searching factual information on aviation, told me, even though she had sat through LeRouge's class period on web page evaluation and had completed an assignment on web page credibility. "I don't really care where it comes from."

In their quest for speed, students simply assigned credibility to web sites that were the best organized and easiest to move around. "I don't like the [web pages] where you have to keep clicking and clicking to get to it," Dina, an 11th grader, told me as she searched for online information on 1920s culture (indeed, students' distaste for deep linking explained exactly why they had such disdain for subject gateways). A well-organized site was more "professional," and was thus more credible. As eighth grader Jeremy told me, "if it's not well-organized, I usually get out if it." Even a well-organized site was intolerable, though, if the information was too nuanced or required too much reading. "Some other sites I've looked at kinda beat around the bush before it gets to the main point," a high school student wrote in her web page evaluation critique. "This site tells me info right from the start."

Students looked for "short and sweet" information—the more succinct the information, the speedier it was to read and assess. Their favorite sites, accordingly, had all the information they needed laid out on the first (home) page. Corporate press releases often satisfied this need, as did short academic articles often connected to university course syllabi. The students I observed habitually steered away from web pages with "too much information," and constantly turned to pages with the most user-friendly, simplified content for their research projects. For Nick, a web page with an extended paragraph already had too much information and was not worth reading. In this vein, students demanded a lot of pictures to supplement the "short and sweet" information they were looking for. A good page, then, was also one with lots of pictures.

Although high school students curdled at personal pages and web sites created by the K-12 community ("that's a kindergarten page!"), the junior high students constantly relied on these sites for their information, even when Stroh and Lowell advised them not to. As eighth grader Jeremy remarked, "I always like [personal pages] almost better because, I don't know, I feel like I get more information." Personal and school-related pages were helpful to him because they offered the most direct information with the least amount of deep-linking and minimal commercial distractions. They are usually compact, don't take long to load up, and often have a clear purpose, devoted to a single topic. "There was this home page I was at yesterday," Ashley, an eighth-grader, commented while surfing. "It was some girl's home page, and it told all about stars…it was kind of cool….it was a nice page." Ashley ended up using the page for her final project. In fact, most of the eighth graders had located personal or K-12 pages and used them as credible sources for their final web page design project. The junior high students' reliance on personal pages was the only significant difference between the grade levels in evaluating sites.

The Love of Design

A second shortcut students tended to use to determine a web site's credibility was the site's design—especially how appealing, fun and cool the site looked. A professional-looking design, as mentioned above, made the web page seem more credible, but students were also drawn to "flashy art" and pictures, which they often felt was a positive feature of any web site. For example, Jeremy, an eighth grader, found two web pages that contained the exact same information: one version was in plain text format and the other version was designed with a thick white font against a wood-paneling-type background. "See, I would probably like this site better just because of the [wood panel] background," he told me, clearly impressed by the page. Jeremy ended up using this page—created by the Kansas Heritage Center for Family and Local History—for his research. The logic was apparently this: If a web page author had put a little more time into the choice of a background, then he or she put more time in providing legitimate information.

When students ventured a critique of web sites (as came up a few times in the eighth grader's Domain Search Activity papers), they most often based their critique on the site's design, not the information on the page. In observing the nonprofit Internet Public Library web site (created and sponsored by the University of Michigan's School of Information) and its extensive and comprehensive newspaper database for his "Domain Search Activity" paper (a site his teachers, Stroh and Lowell, required him to visit), eighth grader Mark complained that the site was too boring to be worthwhile. "I have no pictures or anything interesting to look at," he said. "They don't even have a neat background." Correspondingly, Mark described a K-12 school site on mummies as incredibly appealing, but it was the site's design, not its validity or coverage, that appealed to him. In his paper for the project, he wrote:

> I like how this page is set up. They have a lot of buttons to pick from and they are neat little pictures. They also have a little info about what time period they cyber mummy was baried [sic]. They also have some kind of hieroglyphic things at the bottom. They also have a little sun thing in the background that looks really cool.

Carla, an 11th grader who was doing research on tattoos, also defined a quality site in terms of the way it was set up, saying "Like when you first look at it, if it attracts me, if it's colorful to look at…if it's not, I move on." For many students, appealing graphic components often included games or shopping opportunities. They commented on the ability to buy things—on a museum page, for example—as being a positive element of the page. "It's cool because you can win skateboards and other cool skateboarding stuff," one eighth grade student wrote for a Domain Search Activity description. "You can buy new boards and shoes…the pictures in the gallery are cool too. In all, it's a really good site."

Hating Web Ads: Being Caught in the Mousetrap

Many students found online advertising "fun" and "catchy." Others, like their teachers, felt impervious to it. "It doesn't bother me" and "it's everywhere" were typical responses. Three sixth graders I observed seemed fully capable of ignoring a banner ad for the AT&T WorldNet Service that featured an animated red car dropping into the banner screen over and over again. But then again, maybe it just depended on the ad. "Hey!" the middle boy called out to his friends

on either side of him as a new ad appeared on the screen, "I can get a newsletter sent to my home. Look up here!"

Other students, all eighth graders, admitted to clicking on certain ads if they seemed interesting. Some clicked on ads quite by accident. Kevin, an eighth grader, for example, had told me ads were not distracting to him, but repeatedly found himself on commercial sites thick with advertising messages and shopping appeals, all of which slowed down his hunt for useful information. Kevin often clicked quickly without reading the link tag, and frequently opened up ads (pop-up screens and entire Web pages) by accident. On one occasion he was caught in an advertising loop after he accidentally opened the pop up ad for "BuyBuddy.com—register to WIN!!" on a magazine site called Ecoworld (www.ecoworld.com). Kevin had been "mousetrapped," and needed my help to get out of it. Likewise, Ashley became immersed in GeoCities, a web page building service owned by Yahoo! (geocities.yahoo.com), which she had actually clicked on from a commercial science information site on Jupiter (planetscapes.com).

Consequently, even if they were successful at ignoring the bulk of the advertising, many students got caught by it, and often complained at the nuisance of closing box after box of advertising in order to finally access the desired web page—another indicator of their passion for speed. As these two high school students observed:

> A lot of times like an ad will come up and you'll click out of it, and then like you say you'll click on something else on that page, but then if you have like the backbone, then [the ad] will come up again. And that gets annoying. Like sometimes if they pop up, like eight or nine will pop up, and if you click out of those, more will pop up, so…And they do get annoying, but…
>
> --Wes, 18

> Oh, I'm always clicking commercials OFF. They are so annoying. And they come up every single time you click on a different page, like, if I just click here, a commercial will come up. And I hate the ones that just pop up, and I can't get rid of them. So they're very annoying…I hate the ones that, the pornographic sites that come up…you're searching for a topic and that stuff comes up and "I don't want to see that," that's gross.
>
> --Danielle, 17

If students were resigned to the presence of online ads, they also had to proactively take the time to click off online advertisements, a process that regularly impeded their fact-finding efforts. As one eighth grade student, Ed, summarized, "I try to stay away from them, cause when you're doing work, you look at that and it might be interesting, and then you don't go back."

Loving Web Ads: Shocking the Monkey and Climbing the Banana Tree

I talked to a significant number of students at both the junior high and high school level who were drawn to games and contests and freely disclosed to such web sites their contact information, as well as various consumer and lifestyle preferences, without a second thought. Lamont (11th grade), regularly played contests if they took two minutes or less to play; Bryan (8th grade) acknowledged "they pull you in because it's fun. I like doing fun stuff like that";

Jeremy (8th grade) filled out contests to win magazines, and Mandy (high school) had given her email address out so many times she had become inundated by spam:

> Mandy: Mostly it's like the gross porn crap, that if you click on it they are like…[sarcastic] that's okay. But like magazines, *Alloy,* I get like something from them all the time and I don't know why. And I get, I get spammed on one of my emails, it's like the "tree loot" thing.

> BF: The tree loot thing?

> Mandy: Yeah. It was on a banner and it said "hit the monkey and win $20."

Tree Loot, as I would learn, was one of the most popular game-advertisements on the internet at the time I conducted this study. The company responsible for Tree Loot, Virtumondo, places banner ads all over the internet inviting users to "Shock the Monkey and WIN" as the company's mascot, a geeky-looking cartoon monkey, bounces back and forth across the screen. Users who click on the ad are then introduced to the Tree Loot game, where they click on a tree and try to uncover "banana bucks"—up to $25,000 if they're willing to put in the time; banana bucks in $20 increments. Banana bucks can be redeemed for real prizes (e.g., digital watches, stuffed monkeys) as long as visitors fill out a long survey that identifies their address, educational background, income, hobbies, and 70 other "interest variables."

As I found from observing and videotaping students doing online research for their school projects, the Tree Loot banner ad was one of the most prevalent ones I saw on their screens. The Tree Loot web site (www.virtumundo.com) earned a spot on the "top 50 most visited Web sites" list provided by Media Metrix in 2000, and happened to be advertised (sometimes more than once) during four of the 21 student searches I observed, reaching a fifth of my student participants. Indeed, most of the students I talked to about Shock the Monkey/Tree Loot had heard of it. Bryan was researching Hans Christian Andersen when he came across the Tree Loot game:

> Bryan: Oh, I LOVE this stuff! (He clicks on ad…and it says "you won $20!"). What it is, is, if you shock the monkey you get $20, you just have to punch the monkey, and catch the monkey, and kill the Pikachu, and stuff like that.

> BF: Really? What's it for?

> Bryan: It's for, I think it's for Bananatree, let me check (types in Bananatree…) I LOVE going to these. I've got, they still owe me like a lot of money!

> BF: So what is Bananatree.com?

> Bryan: It's like a site where you get to go and you have to guess where money is, and they have like thousands of dollars but you can only go on their site and spend it, and you can get $20 off or something. It's cost like $2 banana bucks or something, and you can't get one thing twice. Oh man, is that how you spell banana?

BF: Yes.

Bryan: Well I want to get here…they said I won $20 bucks, how do I get there? That's agitating!

BF: So it's banana money, it's not real money?

Bryan: Yeah, it's just….

BF: And then what do you do with the money?

Bryan: You go onto the internet and, Oh, there it is…Tree Loot! This is *Tree Loot*, duh! Oh, man, now they're doing the one man shock, they did this last week. How you do this, you go on and you get money. Here's how it starts, let me show you (clicks on the tree). You have that, and there's this huge tree, and if you guess where the monkeys are, and then…they put that there just to fool you (some symbol on the tree)….And you put in your name and you have to sign up and everything.

BF: So you put in your name and your email and everything?

Bryan: Yeah, and then they send you stuff, and my email is so…My email can only be accessed at home, and it is SO LONG.

BF: So what kind of things do they send you?

Bryan: They send you like, "we've got a new thing this week and…you know…"

BF: Do you have a sense that they've passed your email on to other companies?

Bryan: Sometimes I do, but if I ever get anything from somebody I basically don't know, I've learned from basic preferences not to open it. So….I've opened stuff I don't want.

BF: Have you actually ever won anything online?

Bryan: Yeah, but they never emailed me about it.

BF: Oh really?

Bryan: Yeah, I won a gift certificate for Blockbuster.

BF: Oh no!

Bryan: Yeah, I know, it was for a couple of free movies, and I wouldn't have to buy them, and video games, and I like video games, I like to play video games.

BF: You won a video game? So how often to you go on this Tree Loot?

Bryan: If I have any extra time I always go on here, it's just fun.

BF: How did you find it in the first place, just from the advertisements on top?

Bryan: Like they give you a shot at punching a monkey if you go to their sponsors. They do stuff like that. If you punch the monkey you can put $75 in your pocket.

BF: So they have ads all over the place then.

Bryan: Yeah, then they get you into it, and you just click…you just keep it…See then, it says "hey friend, welcome back." Did I win anything? No!

BF: So what do you think about all this stuff on the screen that's beyond the information that you're trying to look for? Do you tend to click on stuff that moves just because it's fun, or you're curious?

Bryan: Sometimes, if it looks fun I probably would. I'm not one to click on something like that (he points to a "Casino" banner ad).

BF: So that looks kind of dumb.

Bryan: Yeah, kinda! This looks fun but still I can't do it because I'm not exactly the rightful age to be on that site. I've been there before and you have to be 18 and a credit card holder.

BF: Have you ever bought anything online?

Bryan: I have coaxed my mother to help me so I can get something else in return but she keeps saying no because you always need a credit card. (Bryan continues to play the Tree Loot game).

Bryan: I know I've got $5 in here somewhere…

BF: So you can keep coming back and trying?

Bryan: Yeah, you can try the whole day, and they just give you tips and you win money, and see, I'll show you, it'll give you a list of stuff and then it'll say "we're going to email you tomorrow about it…" That's basically it. That's how they pull you in like this!

Of course, Bryan was avidly playing Tree Loot as he talked to me. Perhaps because of my questions and his zeal to explain the game to me, Bryan may not have played at such length during class time—the other three students I observed actually ignored the invitation to Shock the Monkey as they conducted their online research. Clearly, however, the ad and the game were enticing for Bryan, who played games like Tree Loot and Kill the Pikachu regularly. Interestingly, Bryan seemed to be quite aware that playing games and entering contests led to email spam and that various strategies existed to "pull you in." Even so, he was clearly taken by

the promise of real prizes, and played games whenever he had the chance. He was not bothered by "long" email lists with lots of spam: perhaps it made him feel important. When it came to researching Hans Christian Andersen or playing Tree Loot, one thing is for sure: Bryan was much more focused when he was playing games.

Searching on the Commercial Highway

The advertisements and gaming opportunities were certainly distracting to students, but many were capable of ignoring them. Bryan was an extreme case. However, perhaps the most disconcerting was the kind of sites students selected on their search result lists. As I have established, students searching often generated lists with thousands and even millions of search engine results. They didn't tend to use Boolean operators to narrow down the list and they had faith that the most relevant search engine results appeared at the very top of the list—on the first or second page. In their view, there was little point in narrowing down the list if the most relevant sites appeared at the top anyway. What wasn't obvious to them was that for most of their searches, multiple links led to the same sites, bulking up the first few pages with a remarkable amount of redundancy. For example, Wes (11th grade), who was conducting research on Ebola, found that most of the relevant-sounding pages he opened led to the same set of out-of-date documents published by the World Health Organization. Jess was having a similar experience in his research on the Nuremburg trials. "It's all like the same thing," he said. "Like it's a different person who put it on the web, but it's like the same articles, like it's written by the same guy and they just copied it." These remarks were made only after I began asking students about link redundancies. Most of the time, I saw lots of repetition and no significant reaction among students.

Another thing that wasn't obvious to students doing online research was that most of the sites at the front end of their search result lists linked to commercial services—the result of search engines' increasingly aggressive pay-for placement and paid inclusion strategies. Of course, different topics influenced the number of commercial hits students got at the top of search engine lists, and students searched the web under a wide range of topics. If they were investigating Waste Management or Communism, for example, they received fewer commercial hits than Basketball History or Tattoos. All the same, students were inundated by commerce sites. Of course, there are numerous commercial sites—e.g., HowStuffWorks, the Discovery Network, [one more example]—that do offer tremendous topical information. The ones that inundated students' online research, however, wasted their time. Alex, who was searching for volcanoes, waded through web sites on hotels, movies, volcano tours and science superstores (he had typed in "volcanoes"). Mick, who was investigating Edgar Allan Poe on the search engine Dogpile, had to read through 16 link summaries to commercial sites (e.g., Papers for Edgar Allan Poe for sale!; Find Edgar Allan Poe Items on ebay, Edgar Allan Poe Books at Barnes and Noble) before he came to a page that gave relevant historical information about the author. Kevin, who was searching for information on ocean life, was lost in a maze of shopping pages. Instead of carefully reading the summaries beneath the Web sites, Kevin clicked on "Great Ocean Decorations," which led him to "Nautical Seasons: Enter Our Store," which led him to "Barnacle Kove—We ship to your door," and then another shopping site. At one point Kevin said with resignation, "Every site you go to almost is trying to sell you something." Will (11th grade) was searching for Ebola and came across site after site by the same author, Dr. Len Horowitz, from Tufts, marketing his books on the topic. Similarly, Seb (eighth grade) was doing research on the

Rock Cycle and came to a site with pictures of rocks and minerals aligned on a grid. "This is a fossil site," he said, reading on. "I thought I just could get some pictures. But it's…just selling stuff. I thought it had more information on it." When I asked him if a lot of the sites he visited were trying to sell stuff, Seb echoed Kevin, saying "Everybody is trying to sell you something."

In addition to clicking on the many commercial sites within a given search result list, students regularly clicked on the "sponsored links" featured in all search engine result pages. The three or four "sponsored links" before the actual search results begin has become a standard element of commercial search engines. They are paying sites and further add to the commercialism on the Web, while crowding out educational and nonprofit sites, which likely aren't paying for placement. Most search engines strategically don't distinguish between the sponsored links at the top of the list and the rest of the search engine results. However, at the time this study was conducted, the search engine AltaVista subtly differentiated its sponsored links from the rest of the search results by color—green for sponsored, blue for search results. Despite the distinction, I observed students trying out the sponsored links, believing that any site listed at the top of a search engine list was worthwhile. Even those who fully recognized that these links were sponsored selected them regularly. For example, as eighth grader Jeremy searched on AltaVista, for example, we had the following conversation:

Jeremy: These green ones are sponsored ones.

BF: So these are sponsored listings, and they come first?

Jeremy: Yeah.

BF: So you don't really go to those?

Jeremy: Well I try them out, but usually they're not very good.

BF: Really?

Jeremy: Yeah.

By 2001 AltaVista used an even more deceptive strategy to separate the sponsored links from the other search results. The company replaced both the blue and green colors with light gray, and left a fine line—three indistinguishable dots—between sponsored and non-sponsored sites. If students were already taken in by sponsored links clearly designated by a different color, they would likely be taken in even more by sponsored links with barely any distinction at all.

As I watched students conduct their online research during class time, I observed many futile and frustrating searches for information. Even though the students I interviewed remained committed to doing online research—nearly every student I talked to relied almost completely on the Web for their research information—a small number admitted that libraries and magazine databases were serving them better, at least for the subject they were currently investigating. For these students, the Web was no library, or information highway, with all the information they needed at their fingertips. As Nick, who was doing research on sports violence and was completely dissatisfied with his searching experience, summarized:

> I don't know, it reads just like an advertisement for things. It's hard to find information for you to really use. That you know is true….It just looks like one big advertisement to me. I try to spend as little time as possible on it.

From Nick's point of view, the Web was a commercial highway complete with billboards, strip malls, information potholes, and the same big chain stores over and over again.
Even so, most students did not experience Nick's frustration: they were more comfortable wading through ads, shopping pages, and redundant sites than they were wading through more comprehensive texts on particular topics. They were sure they were using the most comprehensive information resource available, and were pleased they didn't even have to get up from their chairs.