

1 Teaching and Learning the Structure of Information

Chapter Map

Information Literacy: A New Basic Skill

 Zack's Story: The Danger of Ignorance

MAPping the Internet: Meta-Web Information, Author, and Purpose

 Meta-Web Information

 Understanding the Web Address

 E-VENTURE: Invent a Domain Name

 E-VENTURE: Looking Back in Time

 Digital Threads: The Structure of Linked Information

 E-VENTURE: Register.com

 E-VENTURE: Sorting Out Search Engines

 Author

 Purpose: Advocacy and Objectivity

Confusing Technical Mastery With Critical Thinking

 E-VENTURE: Comparing for Understanding

Blocking Versus Access

 The Digital Gutter

Professional Growth Opportunity: Relate and Reflect on Chapter 1

INFORMATION LITERACY: A NEW BASIC SKILL

The impact of the Internet on students is already powerful, and it is growing every day. For many children, including my own, it is the dominant media of choice, replacing television or print. Now that students are choosing to use the Internet as their personal media, we are faced with the consequence of not teaching our children to decode the content. The growing persuasiveness of the Internet will lead to more and more students potentially being manipulated by the media. Too many young people believe that if they see it on the Internet, it must be true.

The Internet is a free and open global forum where anyone can express any version of the truth. It represents the most dangerous of information environments. As the Internet opens new worlds of access to art and music and research, it can be distracting and very seductive. Unfortunately, there are people and organizations that hope our schools do not teach students how to validate or evaluate the information they encounter on the Web. Understanding the grammar of the Internet, just as we do with print media, is the first step in helping students to be more astute and careful about how they interpret information on the World Wide Web. If you do not know the rules, it is impossible to win the game.

Zack's Story

Of all the stories I have collected about technology and learning, it was Zack's experience of finding a Web site published at Northwestern University that inspired me to write this book. That Web site, describing the Holocaust as an historic myth, is no longer available at the original address. In fact, when you type in the address, a screen from Northwestern appears that says the site is no longer available. The message is only accurate in part. The site is no longer available at the original address, but it is available if you know how to research the history of a Web site with a special tool called the *Wayback Machine*. In this revised edition of *Empowering Students With Technology*, I offer you the original, powerful story of how Zack came to believe the myth to be true and how you can find a site that is no longer available at its original address.

The Danger of Ignorance

A fourteen-year-old named Zack was asked what he was learning in school by his retired neighbor.

Zack answered, "I'm working on a history paper about how the Holocaust never happened."

The neighbor was incredulous. "Zack, where did you hear that the Holocaust didn't happen?"

“I found it on the Internet in my high school library. Concentration camps were really clinics to help the Jews fight typhus carried by lice. . . .”

Later that day, the neighbor called the school superintendent and demanded that the Internet be shut down.

This real experience of a student named Zack is a prime example of the way in which young minds can be manipulated if they are not educated in the necessary skills of validation and evaluation of Internet information.

How could a high school sophomore be fooled into thinking that death camps were really medical clinics? Zack was fooled because the Web site he relied on for his information belonged to a professor at Northwestern University, Arthur Butz. Professor Butz does not deny the existence of the camps. Instead, he explains the existence of the camps as an attempt by the German government to fight typhus carried by lice. He does not deny the shaving and the showers; the canisters of the gas, Zyklon; and the crematoria and the death. He calmly and simply explains these details as necessary actions for the eradication of pervasive lice. It is a persuasive document, and it has the domain name of “nwu.edu,” which is Northwestern University.

Resources to Develop Critical Thinking Skills

- American Library Association
<http://www.ala.org/>
- Mid-Continent Research for Education and Learning
www.mcrel.org/

Think about this from the perspective of a fourteen-year-old who is untrained in thinking critically about information. He is researching the Holocaust, and by searching for the name of one of the chemicals used in the gas chambers, Zyklon, he finds a Web page of a professor at Northwestern University. His teacher told him to find a unique topic, and this certainly fits the bill. He has never heard these ideas before. The page is simple and clear. It is written in a calm, logical tone. From Zack’s perspective, it is a valid source from a tenured professor at a top university. It has a 1990s publication date, and it is on the Internet. It must be “true.” After all, Zack found his research from a Web page at <http://pubweb.acns.nwu.edu/~abutz/index.html>, titled Home Web Page of Arthur R. Butz.

The answers to the tough questions inherent in accessing the Internet lie in the ability and willingness of adults to teach students practical and

usable methods for exploring the Internet, making meaning, and gaining a proper perspective on what they encounter there. With today's information explosion, it is essential that we teach our students to understand a range of strategies to cross-reference and to understand who controls the information they find. Too often, students use a search engine without the knowledge of how to question the information they find.

MAPPING THE INTERNET: META-WEB INFORMATION, AUTHOR, AND PURPOSE

While Zack did learn the technical skill of accessing the Internet with a search engine at school, he was not taught the critical thinking skills of understanding the structure of the information or how to cross-reference the source. His lack of knowledge of how to think critically about information made him a victim. Teaching students to use the Internet is much more complex than simply teaching them how to use a search engine to surf the Web. We need a comprehensive plan that teaches students how to access information and how to make meaning of what they access. One plan is MAPping—where students “map” the information they access on the Internet by examining

- **M**eta-web information
- **A**uthors
- **P**urpose

See Figure 1.1 for a brief summary of MAPping.

Meta-Web Information

It is a strongly held belief that teaching young children the structure of print information is essential: title of a book, author, table of contents, sentences, paragraphs, and index. With print, once you know the rules of the organization of information, you are more literate, and you are in a better position to interpret the information. There are rules, or grammar, that we can teach students so that they are in a better position to understand the context of the information on the Internet as well. It is impossible to use the rules of baseball to play a game of basketball and win. Similarly, if you take the grammar, or rules, of print to the Internet, you will not win. What we need to do is reveal the structure of information on the Internet to students. When we teach young people to read books, we teach them the grammar of print. This is also the logical starting point of teaching students to be literate with the Internet. There is an Internet grammar that necessitates that students know the Internet's equivalent to, among other things, footnotes, indexes, and bibliographies. And once

it is understood, the medium becomes a much safer and more creative environment for both finding answers and publishing information.

The grammar of the Internet is contained in its meta-web information. *Meta* means *about*. Therefore, *meta-web information* refers to the workings and protocol of the Internet. By examining the meta-web information, students like Zack can put what they find on the Web into perspective. There are three parts to understanding meta-web information: web addresses, links, and search engines.

Figure 1.1 MAPping the Internet

Information on the Internet can be evaluated by mapping the following:

- Meta-web information—the structure of information on the Internet, including URLs, links, and search engines
- Author—anyone can post information on the Internet; credentials, such as professor or doctor, should not be accepted without evaluation
- Purpose—most sites sell products or services, advocate ideas, entertain, and/or present information

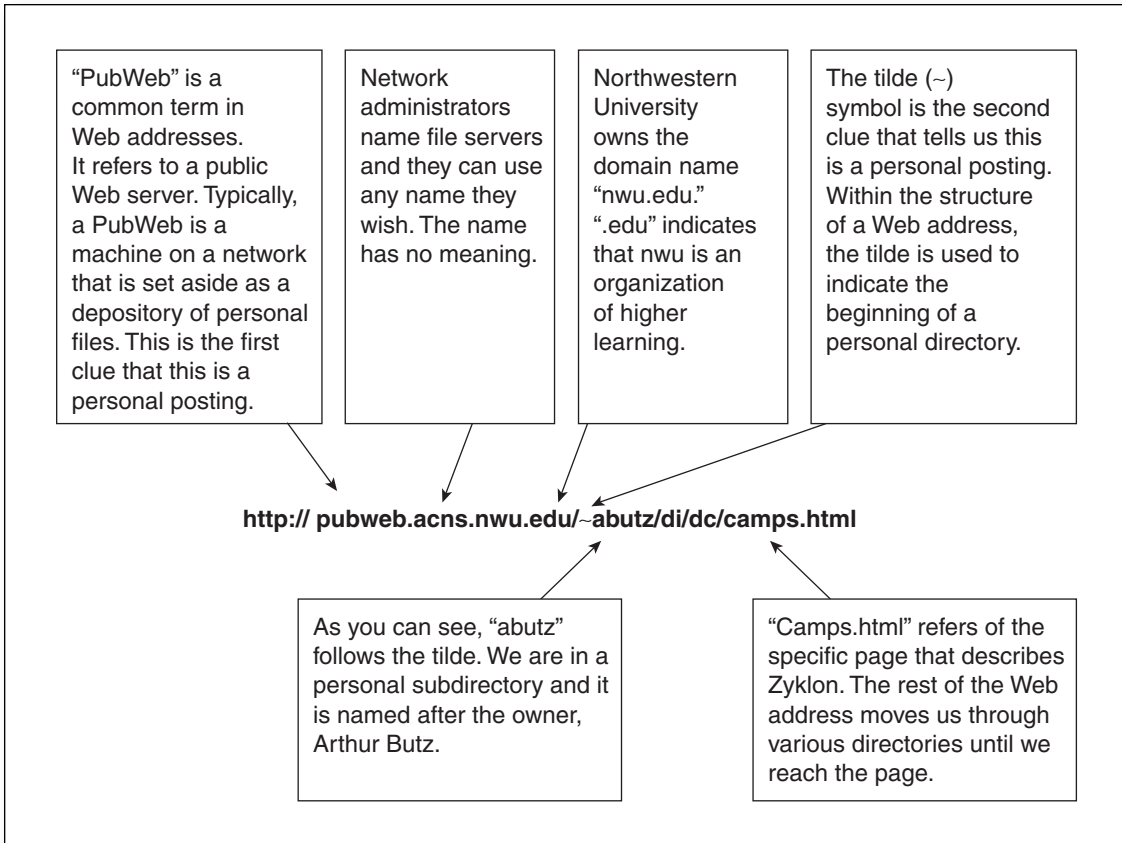
Understanding the Web Address

Basic Internet grammar begins with understanding the structure of the URL (universal resource locator), or address, of a Web page. Students need to be able to read the meaning of a Web address. Figure 1.2 dissects the Web address of the page that describes the use of Zyklon.

Can you read the structure of this Web address to decipher whether the professor's document is an official position of the university or a personal posting? There are two clues in the Web address that tell us that this page is *not* an official university document, but rather a posting in a personal directory. Every Web address, or URL, contains a home directory that includes the domain name of the organization. In this case, the first clue is embedded in the home directory "http://pubweb.acns.nwu.edu." *PubWeb* is a common term in Web addresses. It refers to a public Web server. Typically, a PubWeb is a machine on a network that is set aside as a depository of personal files. This should have been the first indicator to Zack that the posting he read was not an official university document.

The rest of the home directory tells us that the name of the PubWeb is "acns." Network administrators name file servers, and they can use any name they wish. The name ACNS has no grammatical meaning. What does have meaning is the "nwu.edu." Northwestern University owns the domain name nwu.edu. The *.edu* indicates that *nwu* is an organization of higher

Figure 1.2 Anatomy of a Web Address



learning. If the domain name had ended with *.com*, it would not be a university; instead, it would be a commercial venture. Every year, the university must pay a fee to continue to reserve this name as a unique address on the Internet.

After the end of the home directory, the *.edu*, we see a forward slash (/) and then the tilde symbol (~) followed by "abutz." The tilde symbol is the second clue that tells us this is a personal posting. Within the structure of a Web address, the tilde followed by a name is used to indicate the beginning of a personal directory. Since "abutz" follows the tilde, we are in a personal subdirectory named after the owner, Arthur Butz. Then there are more forward slashes, and we move through two additional subdirectories, "/di" and "/dc." Finally, we are at the last bit of the address, "/camps.html." This refers to the specific page that describes Zyklon. The rest of the Web address moves us through various directories until we reach the page that describes the medical clinics. Unlike street addresses, Internet addresses begin with general information and end with the specific. There are no page numbers. It is the information that follows the last slash (camps.html) that is the reference to a specific page.

If Zack had been taught to read the general structure of URLs, he would see the “/~abutz” as an automatic giveaway that this is a personal Web site. Instead of misjudging the source as an official document published and endorsed by Northwestern University, Zack would know that it was equivalent to a bulletin board posted outside an office and did not have the gravitas of an official university document. In fact, at the time, and until July 2006, it was Northwestern’s policy to allow any professor to use the network as an open forum to express ideas as long as they were not expressed as an official position of the university. It was in July 2006 when university officials made the decision to terminate all PubWeb accounts. No indication was made that this was due, in any part, to Professor Butz’s site.

If it were not for the Wayback Machine, the closing of this Web site could quickly end our story about Zack. After all, the site is gone, so nobody will get their hands on it again. The Wayback Machine, found at <http://www.archive.org>, is a fantastic example of why students must be careful about what information they post online. A lot of the information on the Web never really dies. For example, what a student posts now in high school could be the information that will keep him from getting his dream job in the future because more and more employers are doing Web-based background checks on potential employees. Let’s examine this a bit more closely.

Go to <http://www.archive.org>, and in the center of the page, you will see a box titled *Wayback Machine*. In that box, type the web address of Professor Butz’s site: <http://pubweb.acns.nwu.edu/~abutz/index.html>. You will be taken to a page with several dates listed. These are dates when the Web archived this site. Select a date, and you will see what his complete Web site looked like on that date. Try this with your school’s Web site. As you move back in the listed dates, you may see several different versions of the school Web site. While this is a helpful tool, it’s also fun to look at the progression of a site over time.

The following **E-VENTURE** challenges students to invent a domain name for an organization or company. For any of the **E-VENTURES** offered throughout this book, students should be encouraged to reflect upon the lesson and their experiences in cyberspace by maintaining an electronic or hard-copy journal. They should make an entry each time they go online and an entry each time a lesson they have previously experienced comes in handy in the future.

E-VENTURE: Invent a Domain Name

Purpose: to help students understand the meaning and significance of a domain name

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Investigation I

Ask each student to think of a domain name that best advertises them to the world. Ask why they've chosen their particular name.

Have students research whether or not their domain names are available. Have them go to www.register.com or a similar site. They should search .net and .gov derivations of their domain name.

Discuss how a domain name affects a user's perception of what might be found on that site.

E-VENTURE: Looking Back in Time

Purpose: to help students understand that information on the Web can live on even after a Web site has closed

Investigation II

Research the history of a site at www.archive.org.

Provide students with your school's Web address and ask them to find the site with the Wayback Machine. Teach your students how to type a Web address into the Wayback Machine in order to research the history of a Web site. Explain that they would still find the history of the Web site even if the site no longer existed.

Discuss the importance of being careful about building content on a Web site. People who have research skills may be able to find content that was once on a Web site for years into the future. Also, mention that being able to track the history of a Web site that is still currently available can be a very useful activity for tracking how a Web site has developed over many years and how content has been altered and updated.

Digital Threads: The Structure of Linked Information

Knowledge of Web addresses can also be used to try to validate information by discovering the pattern of links that point to any Web page. These links do not appear on the Web site itself. They are the shadow threads that emanate from other Web sites from across the Internet. Because the Internet is an open forum, it is possible that a Web author does not even know who has linked in. In fact, when I visit schools, I often ask if teachers and administrators are aware of how many sites around

the world are linked into the school or district. They most often answer, “I do not know.” Ignorance is not bliss. The Web is filled with millions of connections between Web sites that have never notified the linked site. Links are constantly being generated and broken. Wouldn’t you want to know if and why there were links coming in to your Web site from around the world? How is the information on your Web site being used? What is the context of the judgment that other people are making about your site? Who are the people who have chosen your site as a source? What are their motives? Are they using their site to distort the context of the information on your site? Questions like these are critical to understanding the impact of any Web site within the structure of all linked information.

Links are the digital threads that connect Web sites to one another and that make the World Wide Web a true web. One of the strengths (some would say weaknesses) of the Internet is that anyone has the ability to add a link from his or her Web site to another. It is important to teach students that there is no link police force. Within seconds, essentially anyone with a little bit of technical knowledge can create a link to point or connect to someone else’s Web site. Once you understand the structure of links, you can cross-reference sources on the Internet and gain perspective about the value of a source.

Connecting the Dots: Domain Names

com: commercial or profit organization
org: nonprofit
net: network
gov: government agency
k12: schools

For example, if you looked at my site, www.novemberlearning.com, you would find only wonderful things to read about me and my work. If you really wanted to gain perspective about the importance of my work, you would want to find out who is linked to my site. In this way, you can learn how various organizations, from schools to universities to companies, reference my work within the context of their own site. Building a pattern of links coming into a site does not tell you if any given information is right or wrong, but it does allow you to gain perspective. If you have a Web site, you may want to do a link search on your own site.

20 • Empowering Students With Technology

The first time I realized the potential abuse of power found in placing links on a page was when a colleague, a physics teacher, related an experience she had with some of her top physics students. Her students were researching comets and had found what they thought was a legitimate astrophysics site. On the home page, there were links to NASA and the Harvard Observatory. At that time, neither my colleague nor I understood that a link does not indicate a legitimate relationship or official endorsement of the site. As my colleague walked past two of her students who were exploring a comet Web site, she asked them to print the page so that she could read it later. To her horror, she discovered that it had little to do with astrophysics. While the Hale Bop Comet was the central theme, the focus of the message was not about science. The site was maintained by the cult who believed in the Hale Bop Comet as the signal of the end of the world. The cult members had used the links in an attempt to provide instant legitimacy to their site to make it more popular—a strategy that worked with some of her students. There are two critical pattern questions students should learn to ask about links:

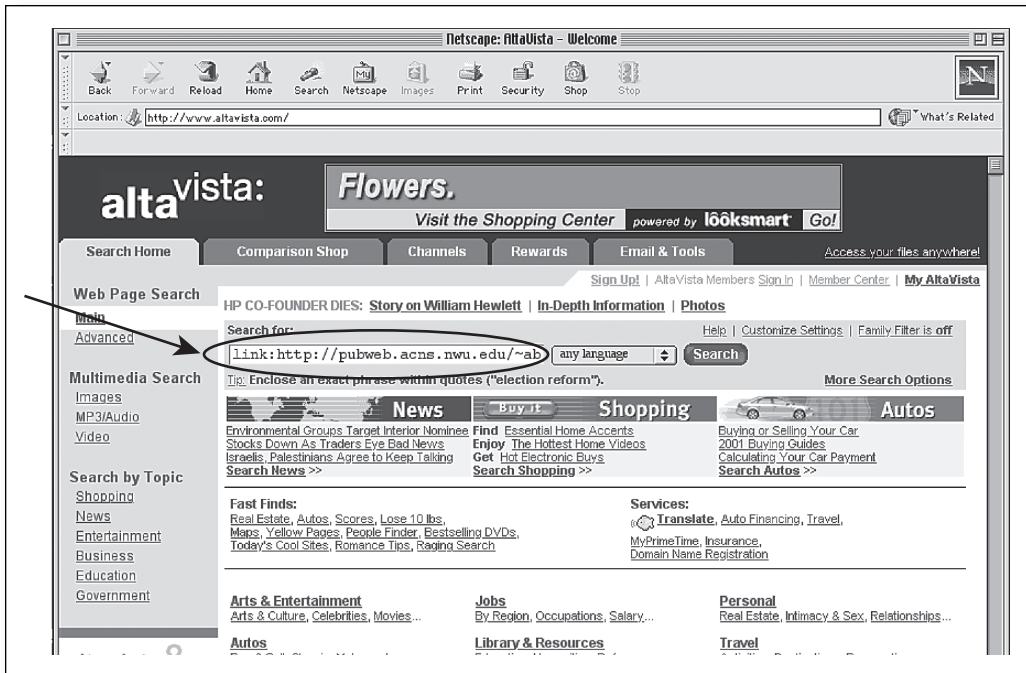
- What can we learn from the pattern of links embedded in a Web site?
- What can we learn from the pattern of links pointing to a Web site from outside of the site?

Internet Sleuth: The Link Command

Finding the links embedded in a site is relatively easy. Using a mouse, drag the cursor across a link on the page. This action reveals the Web address at the left bottom corner of the screen.

Let's go back to Professor Butz's site that we found using the Wayback Machine. If we examine the link provided to us, we will see an address something like [http://web.archive.org/web/20030418061633/**http://pubweb.acns.nwu.edu/~abutz/index.html**](http://web.archive.org/web/20030418061633/http://pubweb.acns.nwu.edu/~abutz/index.html). The first part of this address is the site's archived address, while the second part, the part I have in bold, is what the address of the site was on Northwestern's Web server.

Following the second part of the URLs as we move our cursor over each link will show us something very important. Most of the links on Professor Butz's site are internal links. Each link points to information on another page of his site. This trend continues as you click links and dig deeper into Professor Butz's site. You can quickly determine this by noticing that each link contains “/~abutz/.” He is often the sole source for his own work. This pattern of internal links should raise a red flag.

Figure 1.3 Example of Using the Link Command**Figure 1.4** Steps for Using the Link Command

1. Copy the Web address of the source. Highlight the Web address by clicking in the location bar at the top of the Web browser, and then pull the edit menu down and release on the copy command. The Web address is now copied into the computer's memory.
2. Type www.altavista.com into the location bar and hit the return key. Now you are connected to Alta Vista. (Other search engines can also be used.)
3. Click in the empty rectangular search box and type the word *link*: Do not forget the colon.
4. After the colon, paste the stored Web address by pulling down the edit menu and releasing on paste.
5. Click the search button.
6. Take a look at the listed results. You have created a list of sites that are linked into the original Web address.

Scanning the link addresses on a page is similar to reading footnotes. If every footnote of an article were by the author, would that raise a cautionary red flag for the potential of author bias? If every link on a Web

22 • Empowering Students With Technology

page is a reference to another Web page by the same author, students should begin to question the potential of bias.

Finding the links pointing into a site requires knowledge of the structure of Web addresses and a search engine that provides the link command. While this search is more complex, it can provide a more revealing perspective than internal links. See Figure 1.3 and Figure 1.4 on page 21 for an example of using the link command and for the step-by-step process for using the link command.

Hints on Using the Link Command

Sometimes a link command will yield few or no related Web sites. In this case, truncate or shorten the Web address and use the more general section of the Web address for the cross-referencing.

By erasing the specific reference to one page (remember, this is the end of a Web address) and using the link command with a truncated Web address, you can search for any document that begins with the address of the personal directory.

Instead of searching for links that are directed at a specific page on the Web, truncating creates many more possible connections. In the example we are using, erase the specific reference to the document and the two subdirectories: "di/dc/camps.html."

Now copy the truncated version: <http://pubweb.acns.nwu.edu/~abutz> and use the link command at AltaVista to conduct another search for linked sites.

To begin his cross-referencing, Zack needs to know how to find all of the Web sites connected to the source at Northwestern. Who has taken the effort to link to Professor Butz? What does the pattern of these links reveal? The search engine AltaVista provides a free research service that gives a map of the links coming into any Web site. (Many other search engines, such as Google and Yahoo, can also reveal links related to a site.) Zack can use the link command to cross-reference Butz's page.

The list Zack could have created from the link command contains a wide range of Web sites for organizations such as university libraries and individuals, including me, who have chosen to create a link that points to <http://pubweb.acns.nwu.edu/~abutz/di/dc/camps.html>. Finding these links will not give Zack a definitive answer about the value of the information, but it will reveal how Butz's site fits into other sites. Zack will discover sites such as the White Nationalist Links at <http://www.crusader.net/resources/links.html>. Butz is on the same page as links to the Online Fascist Resource Page, Knights of Michigan KKK, White Power Central, and Texas Aryan Nationalist Skinheads. Sites that reveal that Professor Butz's views are not widely held include The Baltimore County Library. Arthur Butz is listed as a revisionist on their extensive Hate

Directory. My site can also be found with the link command because I have an article called “The Web: Teaching Zack to Think,” which has a link to Arthur Butz as part of my efforts to explain why students need to be taught to think critically. In fact, the following is an e-mail I received from a student in Ohio who was directed to my site by his teacher and discovered the links within the context of my article.

Dear Sir:

I'm a high school student. Like Zack, I am doing a research paper about the Holocaust. Again, like Zack, I searched the Web. I came across an article about Zyklon B by Arthur R. Butz. It had the information I needed for the paper. That was last week. Just yesterday, my teacher showed me the article of yours, “The Web: Teaching Zack to Think.” Now, I am questioning the credibility of Prof. Butz. I am now trying to find more information elsewhere. . . . Thank you again.

A High School Senior

In my two different searches, I found 58 sites linked to Butz’s complete Web address for his most popular document, “A Short Introduction to the Study of Holocaust Revisionism,” and 245 linked to the truncated link, the main page of his personal Web site. It is important for Zack to understand the structure of Web addresses if he is to become disciplined with his research strategies. When I used the link command, I found a teacher’s Web site. This teacher challenges her students to look at four different Web sites, including those of Arthur Butz and the United States Holocaust Memorial Museum (<http://www.ushmm.org/museum/exhibit/online/phistories/>). This teacher is purposely introducing her students to Arthur Butz within the context of different points of view to see if her students can discriminate between versions of the truth. Juxtaposing different versions of the truth and challenging students to think critically can be a powerful teaching strategy.

E-VENTURE: Register.com

Purpose: to help students see how URLs are registered and who owns their favorite Web sites

Investigation

Led by the teacher, the class brainstorms 8 to 10 Web sites that they have visited and enjoyed either at home or at school. (Sites inappropriate to class

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investigation because of a violent or otherwise unacceptable nature should not be used in this activity.)

1. The teacher writes each usable URL on a separate card.
2. The teacher forms the class into teams of three or four.
3. Each team draws a card.
4. Each team visits the site on the card, prints out its home page, and writes a brief description of the site that includes the following:
 - The site's author(s)
 - The site's apparent purpose
5. Using www.register.com, students research which company owns the URL.
6. Each team pastes the home page in the middle of a large piece of poster board with its URL written clearly above the printout. The company who owns the URL should be written below.

Presentation

Each team gives an oral presentation to the class using their visual, which explains which company owns their URL, why the company would have an interest in the Web site, and what those connections tell us about the site.

Variation

Using www.register.com, students may see how many variations of their URL exist. Then they can invent a new one.

Students may do further research about the company from their team's search. Students may research the company to see what other Web sites they own.

Questioning the credibility of sources that have every appearance of being credible will become an increasingly important skill. While anyone can publish information on the Web, the ability to instantly create a list of linked sites provides an information map that can give additional perspective to the original source. Once Zack understands the structure of the Web and how to map links, he can use this knowledge to question the validity of what initially appeared to be a very credible source.

Search Engines

Zack found Butz's page using a search engine and by entering "Zyklon" in his search. If Zack ran a search for "Arthur Butz," he might

come across a page like the one at <http://www.stormfront.org/forum/showthread.php?t=92404>, where Professor Butz is referred to as a “prominent historian” and his views are praised by members of the community at stormfront.org, a Web site dedicated to white supremacy. Coincidentally, the Stormfront group also owns martinlutherking.org, a site that claims to teach the “truth” about Martin Luther King, Jr.

Zack did not realize that search engine results also require evaluation. Search engines search databases of several different Internet directories to give the user results that are not always sorted the same way. For example, the search engine Google, at <http://www.google.com>, reports their results by overall popularity, while Answers.com’s results pull from reference materials and Ask.com’s results are ranked by experts in a particular field. Other search engines may list results by the number of times keywords appear in sites. With this in mind, just because a certain site is listed first does not mean it is the best or that it provides accurate information.

Zack did not know anything about Butz, but he could have researched his background. By using the search engine Ask.com, Zach would quickly see the swirling debate around this professor’s work and would be able to make a better decision about using his material for scholarly purposes. The following **E-VENTURE** allows students to see the different ways search engines report search results.

E-VENTURE: Sorting Out Search Engines

Purpose: to guide students to see that the order of a search engine’s results does not necessarily equate with the site’s importance or accuracy

Investigation

1. Divide the class into four groups and assign each group to use a different search engine, such as Ask.com, Answers.com, AltaVista.com, or Google.com.
2. Choose a class research topic—a current news event, historical event, popular culture, or content area fact.

Presentation

Ask each group to report what they found to be the top five Web sites for each search for their one search engine.

Discuss how important it is to question how search results are ranked and how they are presented.

Search Engines

- <http://www.Altavista.com>
- <http://www.Answers.com>
- <http://www.Infoseek.com>
- <http://www.Yahoo.com>
- <http://www.Ask.com>
- <http://www.Noodletools.com>
- <http://www.Google.com>
- <http://www.Hotbot.com>

Author

The second step in the MAPping process of validation involves the site's author. We all know that it is easy to fool people. Many people, especially children, will believe someone if he or she sounds authoritative. When I have talked to adults about Butz's Web site, they never fail to point out that, "Butz is a professor, sure, but he's an engineering professor, so he really does not have credibility as an historian. What really qualifies him to speak as an expert on the Holocaust?" Unfortunately too many students see *professor* and take what he says as official. Since anyone can publish information on the Internet, it is very important to investigate an author's credentials.

Purpose: Advocacy and Objectivity

The third step in the MAPping process is evaluating the site's purpose. When viewing a Web site, students need to learn the difference between advocacy and objectivity. During class discussions, we can teach students to ask fundamental questions about any site. We should always try to ascertain a Web site's purpose. Students should ask what the site is trying to do and why the site was created. Most Web sites are designed to sell services and products, to present information, to advocate ideas, or to entertain. Many sites do several of these at once.

A Web site's purpose is always clear. Look at Butz's site. His purpose is surely advocacy, although he comes across as an objective information provider—especially in the closing sentence of his article where he explains that thoughtful people should be skeptical of the death camp concept. Would that ring any warning bells for a fourteen-year-old? Are ninth-graders taught how to distinguish between objectivity and advocacy? Make sure that students understand the purpose of a Web site and that the purpose may not be entirely obvious.

CONFUSING TECHNICAL MASTERY WITH CRITICAL THINKING

Zack was fully equipped with all the technical expertise necessary to access the Internet, but his school failed to provide him with the tools to make sense of the information. The Internet is a place where you can find proof of essentially any belief system that you can imagine. It is a powerful and potentially manipulative environment.

Many young people can be deluded by a false sense of confidence when they think they know what they are doing. Students and adults alike too often mistake technical mastery with critical thinking. Increasingly, students will become victims of the expansive dark side of the Internet unless we teach the critical thinking skills necessary to make meaning out of the overwhelming and potentially manipulative amount of information that is now available and growing every day. Interesting Internet sites that focus on developing critical thinking skills include the American Library Association at <http://www.ala.org> and the Mid-Continent Regional Educational Laboratory at www.mcrel.org/. The following **E-VENTURE** is a way for students to apply critical thinking to material they encounter on the Internet.

E-VENTURE: Comparing for Understanding

Purpose: to compare two or three Web sites to determine their reliability, usability, and validity

Investigation

In advance of a class meeting, the teacher investigates two or three Web sites on the same topic or theme related to the content and curriculum under study. For example, a search of global warming sites might yield the following sites among thousands of others:

- EPA Global Warming Site
<http://www.epa.gov/climatechange>
- Global Warming International Center
<http://www.globalwarming.net>
- Global Warming Information Page
<http://www.globalwarming.org>

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In class, explain to students what can be understood about the sites just by reading parts of their respective URLs.

Ask the class to brainstorm evaluation criteria. Web sites dealing with the topic of evaluation can be visited prior to discussion. Consider some of the resources listed at <http://library.usm.maine.edu/research/researchguides/webeval.php>.

Presentation

Each student group ranks the usefulness of each site according to the criteria they established and reports their findings back to the class.

Variation

The students may make this one of many entries in their individual ongoing electronic bibliographies on any number of topics.

The final bibliography can be evaluated by classmates, students from other classes or schools, or visitors to a Web site on which it may be posted.

BLOCKING VERSUS ACCESS

None of these various research techniques provide a definitive answer about Arthur Butz, but they do provide many points of view. With a thoughtful teacher leading the discussion and requiring students to learn to question credibility, we can better prepare students to enter a world where they will have access to essentially any version of the truth. In the end, Zack's high school arranged for him to have an interview with a Jewish woman who lived in Europe during World War II. It is always a good idea to look beyond the Internet for sources of authentic information.

We should all be concerned about student access. The Internet can be a dangerous and manipulative environment. Policymakers and school leaders are perplexed by the challenge of balancing blocking and access. Are we protecting students too much by blocking? Are we exposing them too much by giving them personal responsibility for appropriate behavior while they are on the network? Both positions can be based on a naïve understanding of what students need to know.

I think it is safe to assume that in the future, our current elementary students will have twenty-four-hours-a-day, seven-days-a-week access to the Internet from a small, very fast, inexpensive "toy" they carry in their

pocket. I cannot assume that we will be able to block the Internet as children access it from the playground. Blocking students from the Internet in school can be a short-term victory—a classic case of winning the battle and losing the war. Filtering without teaching students critical thinking skills is too often the swiftest and politically expedient thing to do.

Web Safety Sites

- Federal Bureau of Investigation
<http://www.fbi.gov/fbikids.htm>
- Wired Safety
<http://www.wiredsafety.org>
- Safe Kids
<http://www.safekids.com>

The Digital Gutter

Today, too many policies are being instituted that attempt to solve the problem of inappropriate access by filtering. I have often found Arthur Butz's Web site on the networks of many schools that use these filters. Filtering can give students and teachers a false sense of security and safety. While teachers may be able to protect children in school, what happens to students when they leave school to go home at night or to a friend's house or the town library? Who is protecting them when they are not in school? Are parents taking the responsibility for teaching their children about ethical use?

During a videoconference at Stanford University, I had the opportunity to ask a survivor of three Holocaust concentration camps what he would advise educators to do. I asked him, "Should we purposely introduce our students to this kind of version of the truth?" He did not hesitate with his response: "Hitler would have prevented any such dialogue. We must teach our students how to discriminate between evidence and interpretation."

Children tend to be very trusting and naïve about the messages and underlying structures that have every potential of manipulating them. In addition to concerns about safety, policies should be based on knowledge about how to use the Internet, its structure, and how to deconstruct its layers. We must teach students to understand the rules of the game, or they will surely lose.

PROFESSIONAL GROWTH OPPORTUNITY

Relate and Reflect on Chapter 1

The following questions are intended to further promote discussion about learning in planning boards, department meetings, school board meetings, and inservice preparation. They do not require any technological skill or expertise to answer. Space is provided after each question so that you may begin to answer them here. Remember that there is no right or wrong answer.

- Can we define what it means to be information literate?

- Can we teach our students to have the skills essential to information literacy?

- Can we truly prepare students to be effective users of the most powerful medium?