

EVALUATION OF EDUCATIONAL WEB SITES

<http://members.fortunecity.com/vqf99>

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GOALS AND OBJECTIVES FOR EDUCATIONAL WEB SITE EVALUATION

Evaluation of educational web sites is a subject area that has not had a lot of published research. With the enormous amount of information and web sites available on the Internet, teachers may feel overwhelmed when it comes to evaluating web sites. There are many general web sites that outline basic standards for evaluating Internet information; however, as teachers, we believe that an educational web site and its information need to be given a specific set of criteria for evaluation.

Criteria are defined as consisting of characterizing marks or traits, standards on which a decision or judgment may be based, identifying indications and/or a basis of discrimination (Encarta Reference, 2001). In using the word *criteria*, we are referring of the standards that help us, as teachers, to determine whether an educational web site is valuable. Thus, the use of the word *criteria* is necessary to accurately judge educational web sites. Our *criteria* will be a concise guideline of identifiers that will enable viewers to critically examine educational web sites.

Teachers need to be meticulous in their evaluation of web sites because they will be passing on web site information to impressionable young minds. Anyone is capable of publishing educational materials on the Internet (Media Awareness Network, 2000). But, there is one resounding difference between educational materials published on the Internet and educational materials found in more traditional sources such as journals and textbooks. Materials found in journals and textbooks have been meticulously scrutinized for credibility and accuracy. But, Internet resources are often not subject to such scrutiny.

Educators also rely on the educational web site to work technically in the classroom. Misinformation and technical difficulties can cause a great deal of distress for not only the students but for the teachers as well. For this reason, ***audience, credibility, accuracy, objectivity, coverage, and currency*** are the major issues educators should focus on when examining the content of educational web sites. ***Aesthetic and visual appeal, navigation, and accessibility*** are the major issues educators should focus on when examining the technical aspects of educational web sites.

Many of the *criteria* outlined in other sites (Kapoun, 1998; Edwards, 1998; Jacobson & Cohen, 1996) can be included when evaluating educational web sites; however, we must look at these *criteria* in a different way. We must screen the *criteria* as educators first and foremost. Our only priority in determining whether the *criteria* fit, is whether they promote education and learning.

We relied a great deal on our own expertise as teachers and on the information provided on the Internet because there has been very little actual research done in the area of educational web site evaluation. According to Trochim, "There is a remarkable absence of studies that examine how websites are conceptualized,

developed, and implemented, or that look at the effects of their use. In the haste to construct the World Wide Web we have simply not had the time to evaluate and reflect on how this technology is being accomplished and the effects it is having on the way we live, perform in our jobs, and interact with our environment” (1996, p.1). Furthermore, because this paper will be a study of online information as an educational resource, we felt that using Internet references was very relevant and necessary. Even though the information provided by this paper could be useful in evaluating any type of web site, its specific purpose will be the evaluation of the *content* and *technical aspects* of online educational resources.

The following definitions and criteria will give you a basic checklist to evaluate educational web sites. We encourage you to use our ideas or modify them to fit your particular needs. The criteria will help you separate the informative, accurate and well-designed educational web sites from the uninformative, inaccurate and poorly designed educational web sites.

For our purposes, the term *technical aspects* will refer to the processes that control a person’s ability to access content. Presenting information appropriately and accurately in an easy to navigate manner is the key to successful information transfer/retrieval over the Internet.

CONTENT

Content refers to “the subject or ideas contained in something written, said, or represented...” (Cambridge University Press, 2001). In the more specific context of education, and this paper, the focus is on content that has implications for learners. The basis of a sound educational web site should be quality content or information. By evaluating web site content using audience, credibility, accuracy, objectivity, coverage, and currency, the information quality should become evident to teachers as well as students.

Audience

There are two major factors, academic level and well-matched information, materials and activities, authors of educational web sites should consider when dealing with audience or the group of users the web site is targeting. The authors should be cognizant that teachers are assigned to teach at a particular grade level. Therefore, the web site they design should clearly state the academic level of its target audience. If the web site plainly states what the targeted grade level is, the teacher will know immediately whether the web site’s content will be useful in the context of his or her classroom.

The web site should contain content and activities that match the academic level of the web site’s target audience. According to the Ed’s Oasis web site, if “the reading level is too high or too low, or the activities are either too complex or too

simple” then the web site is not as strong as it should be (1997, p.2). For example, if a web site’s objective is to deliver content on plant growth to Grade 3 students, yet contains advanced information applicable to post-secondary Botany students, it is not conveying pertinent information at the level required by the elementary students. In this case, the author would have not taken the audience into consideration when creating content for the web site.

Furthermore, the author of the web site should take into consideration, when determining the target audience and the content it delivers, the theory of Multiple Intelligences. This theory, according to Gardiner (1983, 1986), as stated in Psychology of Learning for Instruction by Driscoll, postulates “cognitive development proceeds independently in at least seven relatively autonomous domains, or modules--language, music, logical-mathematical reasoning, spatial processing, bodily-kinesthetic activity, interpersonal knowledge, and intrapersonal knowledge. These make up the sum of one’s intelligence.” (2000, p.291). In planning for instruction, teachers recognize that students learn in different ways. Similarly, a good educational web site should also recognize that students learn in different ways. Lazear’s (1999) web site gives ideas for lesson plans that cater to the different learning styles of students. According to the Oregon Public Education Network (1997-2001), a sound educational web site “effectively integrates at least three intelligences”(p.3). For instance, a dynamic web site designed for the Grade 8 audience may include text, sound (music and/or speech), and graphics, all of which enhance the learning experience.

Credibility

The credibility, or the believability or trustworthiness, of an educational web site must always be carefully scrutinized and analyzed before considering the page beneficial and useful for educational purposes. There are many factors to be considered when evaluating the credibility of a web site. A major factor is whether a person has the appropriate credentials to author an educational web site. For example, Kathy Schrock has an entire page on her site devoted to noting her credentials (Schrock, 1995). Although personal opinion may enter into ‘credibility’, we believe that following an objective set of standards will alleviate this dilemma. There are specific pieces of information, like a stated name, email address and credentials an author should include on the web site to increase that individual’s credibility and give the user confidence in the site.

The name of the author should definitely be stated on an educational web site. This is important to educators because the author is then able to defend or promote his or her opinions and information. As well, it gives the author copyright over the information found on the site. Without a stated name on the site, it is difficult to give anyone credit for the information. A stated name, particularly if it is well recognized, will give the user the opportunity to look for other published research articles and/or educational web sites done by the same author. Generally, if the author has had work published, then the information has already

been somewhat evaluated by an editor. This enables the user to accept, more readily, the information that is on the web site from that particular author. (Media Awareness Network , 2000). If there is this other information available by the same author, possibly on the web site itself, the author gains credibility with the user.

The author should also include an email address or phone number especially if they wish to have users leave comments or questions regarding the site. This shows that the author is willing to defend his or her particular web site to users. When teachers are satisfied with the author's explanations or answers to questions, particularly with regards to educational issues, they generally pass on this information to others. Educators are notorious for sharing educational material and information with each other. If many teachers, having used their own theoretical and practical expertise, find the web site's information credible, then the web site's author will gain more credibility and thus, more credibility with the user.

The educational credentials or expertise of the author should also be stated on the site (Jacobson & Cohen, 1996). If the author has post secondary and/or post-graduate education or degrees related to the area he or she is covering on the web site, the user would likely feel a certain amount of confidence in the information. The author would then gain credibility because the user would feel relatively secure in knowing that the author has expertise in the subject area. If the user found a site involving curriculum development, then the author of that site would gain credibility if he or she has an education degree or a master's degree. As well, for many teachers, it is extremely important that the individuals who develop curriculum are currently working in the teaching field. For instance, TCF, or The Curriculum Foundation web site (The Curriculum Foundation) states, "practicing classroom teachers are the best source of practical learning materials to meet the needs of Ontario's new curriculum." The Curriculum Foundation will only accept curriculum materials that are developed by practicing classroom teachers. We know that what works theoretically does not necessarily work practically in the classroom. Therefore, for the teacher viewing the web site, the author will gain more credibility, related to the content of the web site; if the individual also posts the school name and the grade he or she is working in. Teachers are more likely to use the information they find on an educational web site if the author has the theoretical and practical credentials.

Education and the use of the Internet in classrooms is an extremely sensitive issue. We have established that educators must be meticulous when it comes to evaluating the credibility of an educational web site's author and information. One factor we still need to consider is whether the designer or web master in charge of maintaining and designing the site is credible. Although a credible author should be constantly revising and editing the informational content in the web site, the transfer of these revisions may not happen as quickly or accurately with an incompetent web master. Therefore, a contact name or email address for

the designer or web master should also be included in case there are any questions regarding their part in the construction and maintenance of the web site.

The author should take into consideration any and all queries about the web site's content. This helps the author stay in touch with the needs of the user and to make any changes to the content that may be required. For instance, E-School News Online (2000) contains a direct e-mail link (k12-talkback@eschoolnews.org) that allows the users to ask questions and provide suggestions for updating the content. By inviting the comments and suggestions of others, the author is indicating that he is interested in maintaining the most credible and up-to-date content possible. If the author takes these comments into account, the site will contain relevant information that will presumably improve the popularity and credibility of the site. This topic will also be covered when 'currency' is addressed.

Accuracy

Accuracy, as it pertains to content, has two definitions. Accurate content means that the information conforms to a certain standard or truth. Secondly, accurate content should be grammatically and typographically free from errors.

To determine whether the content is accurate, the web site should state the educational background of the author. The author's name, credentials, and contact information should be listed on the web site (Kapoun, 1998). Most educated authors will be more than happy to field questions about their web site's content. If the author doesn't include his or her credentials as well as contact information, the user should make sure to find other sources of information to back up the author's claims. Also, the user should look for other articles written by the author. The author's position or place of work will also tell a great deal about the accuracy of the author's work. Affiliation with a known and respected government organization or educational institution is a good indicator that the author's content is accurate.

On a cautionary note, the lack of accurate information can be masked by the "print" of an expert designer or Webmaster. This can be compared to the movie industry. Many recent movies, containing little or no storyline, have been grossing large amounts of dollars at the box offices. The reason for this is many movie directors have a vast array of audio, video, and special effects technology at their disposal. This enables them to incorporate amazing video and audio effects into their movies. The special audio and video effects provide enough distraction to keep the viewer from concentrating fully on the actual storyline of the movie. Similarly, with the available web design technology, it is simple to design web sites that divert the user completely away from the content of the web site. According to Ed's Oasis (1997), an educational web site needs improvement if the "high-tech features on a site distract from the site's purpose." (p.5). That is why it is extremely important to distinguish between the author of

the content and the individual responsible for designing and maintaining the web site. The main focus of any educational web site evaluation should always be the accuracy of the information regardless of how well a web site may be designed.

Also important in analyzing site accuracy is the purpose for which the web site was created. If the information is accurate, it should match the web site's stated purpose. The web site should clearly state what its intended purpose is. For example, a teacher, who is looking for background information on Grade 9 mathematics textbooks, may come across a web site that purports to provide an impartial review on mathematics texts. However, if the web site ultimately directs the teacher towards one particular brand of mathematics textbook, then it is not fulfilling its intended purpose of an impartial review. In this case, the purpose of the site has been influenced by the bias of the author. This means that the accuracy of the information presented on the web site should be questioned. The information gathered from this source could be compared to other sources and a choice could be made based on this final comparison (Brandt, 1997).

The majority of books and journal, magazine, and newspaper articles have been filtered or reviewed by editors, peers, or critics, unlike the information found on the Internet. This means that not only could Internet information be inaccurate, it also means that the information could have grammatical and typographical errors. The majority of authors concerned with providing accurate information will use correct grammar and will check their work for spelling and typographical errors. According to Harris (1997), "whether the errors come from carelessness or ignorance, neither puts the information or the writer in a favorable light" (p.5). A teacher would not want his or her students to read any kind of information that is grammatically incorrect and contains numerous spelling errors. Similarly, an educational web site's content should conform to the same high standards. In concise terms, accurate content should be free from grammatical and typographical errors.

Objectivity

The curricula teachers are required to use in their classrooms are supposed to be objective or without a particular commercial, political, gender or racial bias. Schrock (1999) states, in an article she wrote, "Biased sites contain words that try to persuade rather than inform. Some of these words include overgeneralizations and simplifications and may also contain games, giveaways, contests, or celebrity endorsements intended to persuade" (p.4). Therefore, if an educational web site is to be used in a classroom, the content should also be without a particular commercial, political, gender or racial bias. If there is a bias on the web site then it should be clearly stated by the author. This allows the teacher to dismiss all or parts of the information on the web site or, in the least, allows the teacher to address the bias in a classroom discussion.

When creating an educational web site, authors should consider their goals before the site is built. The author should state the goals, objectives as well as

the motives for the site. Educators must consider objectives and goals with every lesson they teach; therefore, they must also take into account the goals and objectives of an educational web site. Hypothetically, if a web site claims to be based on approved curriculum, yet its goals and objectives do not coincide with the curriculum's goals and objectives, the teacher should question the motives of the web site. Likely, a bias will be present on the web site. Authors of educational web sites should have content that complements as well as incorporates goals and objectives found in curriculum guides. Although provincial curriculums across Canada may have slight variations, there are many objectives and goals in each curriculum that are universal. For instance, a learning objective for grade five, in both the Alberta and Saskatchewan mathematics curriculum, is that students demonstrate an ability to measure and use appropriate measurement techniques and to apply measurement to real life (Saskatchewan Education, 1992; Alberta Curriculum, 2001). Therefore, any mathematics educational web site should state a similar learning goal for its grade five user in order to be objective and credible.

The author of an educational web site may have his or her own opinions with regards to certain subjects, such as how to teach phonics. This does not necessarily mean that the information, because it is a personal opinion, should be discounted. According to Kapoun (1998) "sound opinions based upon logic, research and study, and experience are very valuable. However, to be an alert reader, one needs to know where fact ends and opinions begin"(p.2). If the educational web site is based upon personal opinion, the author should make it known to the reader. Knowing that the information is based upon personal opinion, the teacher can then determine whether the author has enough logic, research, and experience to provide these opinions. Overall, the web site's content should contain a neutral or positive tone; there should be no evidence of hate or disrespect towards one particular person or group (Ed's Oasis, 1997). Teachers need to be alert readers, on behalf of their students, to properly evaluate the objectivity of an educational web site's content.

Furthermore, the objectivity of the web site's content could be compromised because of a conflict of interest if the author is affiliated with a particular organization, institution, or association. Large educational web sites often have affiliations with other organizations or companies. With the involvement of large educational organizations or companies, the user can expect to find certain amounts of advertisement for the organization and the use of its materials. However, if the advertising does not co-mingle with the information, then it is possible for advertising to be present without affecting the web site's objectivity. For instance, under the teacher's section of the DiscoverySchool.com home page, there is a link to J. L. Hammet Co. Teachers Store. This store is one of the largest independent school suppliers in the United States. The link to the teacher's store site is unobtrusive and Discovery.com does not state anywhere that these supplies from this store are the best nor the most economical choices.

This still allows the teacher to critically evaluate the web site's information and its links without being inundated by advertisers.

A practical hint in analyzing a web site's objectivity is to look at the web address or URL (uniform resource locator) of the web site. The URL/domain can tell a user about the organization that published the web site. The organizational source of the website will reflect of its content type (Landsberger, 2000). Commercial web sites in North America often include '.com'. Web sites including '.ca' are often the property of Canadian commercial businesses. Many commercial sites that include '.com' or '.ca' have been developed for the purpose of selling or promoting a product or product line. Obviously, teachers need to be very careful when using these web sites because a bias is likely present. When using information from a '.com' or '.ca' web site, it would be prudent to find other sources of verifiable information because the scope of their information will only go as far as promoting their own product. Web sites published by non-profit organizations often include '.org'. Web sites maintained by the American government include '.gov'. Many educational institutions in North America will include '.edu'. The accuracy and validity of web sites published by established educational institutions have been closely scrutinized which means the information will likely be objective. Similarly, web sites published by government organizations will be analyzed for accuracy. However, when a web site is published by a non-profit organization, a bias may be present which compromises the impartiality of the information. With any type of research, corroborating your information through comparison with other sources is essential.

Coverage

Coverage, as it involves making information available in an appropriate manner as well as the accuracy of the research and development of the subject involved, is very important when it comes to educational web site development.

The scope of information presented on an educational web site is a factor when analyzing coverage. According to Jacobsen & Cohen (1996), the evaluator will want to "determine if [the] content covers a specific time period or aspect of the topic, or strives to be comprehensive." (p.1). A good educational web site should state, rather than imply, the scope of information it will provide. There are classroom situations when a teacher will want specific information on a topic and other times when a teacher will want comprehensive coverage on a topic. This will be dependant upon the students' grade level, academic level, and the amount of time available. Regardless of the amount of coverage the teacher wants, educational web sites should still include links to other sources of information. As always, educators need to evaluate every link on an educational web site. Not only must these links be credible, objective, and accurate regarding informational content, but they should also be complementary to the site itself.

The links to other complementary web sites need to be cited properly, as well as any other information on the web site that may have been derived from another source. Web sites that knowingly disregard copyright laws should not be linked to or recommended by educational web sites (ALSC Great Websites Committee, 1997). As supported by all schools across North America, teachers need to ensure that the information viewed by their students abides by the copyright laws. Furthermore, if the author has cited their sources properly, then “students can consult these sources to find additional information about the topic and compare the author’s content with other works” (Schrock, 1999). Not only do properly cited sources allow students to check the credibility and accuracy of the information, but they also allow the students to access a larger information base that will increase the overall coverage of the material.

Currency

It is important that the author of an educational web site maintains the currency of the content. Teachers want to be able to provide the most current and accurate information possible to their students. As web sites can be quickly and economically updated in comparison to textbooks or other print resources, they can be the best source of current information. According to the Oregon Public Education Network (1997-2000), the information is current if it “tells you when it was first published, including the year; tells you when it was last updated and how often it will be; [and] tells you what was last updated” (p.2). For instance, a grade three teacher, in delivering a unit of study on weather, would want to use a web site like Environment Canada’s (2001) WeatherOffice because it contains the most current weather information. The currency of the information is clearly indicated by the time and date listed on the web site.

TECHNICAL ASPECTS

The term ‘technical aspects’ will refer to the processes that control a person’s ability to access content. Presenting information in a visually appealing, accessible, and easy-to-navigate manner is the key to successful information transfer/retrieval over the Internet.

Aesthetic or Visual Appeal

One of the main characteristics of an educational web site is aesthetic or visual appeal. A visually appealing web site is one that “uses colors and graphics to enhance the impact of the information” (Ed’s Oasis, 1997). In other words, the graphics and the colors used in an educational web site should make it easier for the user to understand the content. As well, the right combination of text and graphics will encourage users to stay in the site or to explore the site more thoroughly. The inclusion of graphics and colors may be necessary in web sites designed for use by younger students. To hold the students’ focus on the web

site's content, the graphics should be kept current. Younger Students may not be able to read; therefore, graphical representation of the content may be needed to supplement or replace the textual content in order to accommodate learning and understanding. But, using a lot of graphics in a web site will increase the web site's overall file size. In turn, this will increase the time it takes for the user to download the web site. Typically, well-designed graphics will enhance a website. But, if a web site takes a long time to load into the browser because of the file size of the graphics, then the user will be more likely to cancel the web site download.

Navigation

It is important to evaluate the navigation of an educational web site. Navigation refers to the ease in which the user can move around within the website. If a teacher finds it difficult to navigate within a web site, he or she will likely become frustrated and leave the web site. Well-designed educational web sites contain a home page or main page that acts as a starting point from which the user can base his search. The home page should contain some form of direct link to all of the other sections of the web site. If this direct link is in the form of a table of contents, an index, a site map, a pull-down menu, or a specifically designed and easy to identify set of buttons, it is a characteristic of a strong web site (Ed's Oasis, 1997). As well, to expedite the return of the user to the home page, each of the individual sections should contain a direct link back to the home page.

Navigation within an educational web site can be considered user-friendly if "the useful content is no more than 3 clicks away from the main page"(Oregon Public Education Network, 1997-2001). If the useful content is more than three clicks away, then the likelihood of distraction and disinterest increases dramatically. For example, if a teacher was having the students look for a specific topic, yet the students have to click on twenty buttons before they get to the relevant content, the navigation is inefficient and the students will lose interest. As teachers, the main objective in evaluating web sites has to be relevant content; therefore, we should be able to access the relevant content quickly and efficiently.

Ensuring that all links are still currently active and that the links take the user to valid and appropriate content is another essential component of navigation. If the content and the intended audience of a web site have been clearly defined, one must be sure that all linked web sites contain similar content and serve a similar audience. Subject similarity in the linked web sites will serve two purposes. First, it will provide other sources of content to the user that is similar to that of the original web site. Second, the linked web site information will serve to corroborate the content of the original web site.

Each page on the site should be clearly labeled. Having a bold title at the top of the page or for each new section will enable the user to find the desired content more efficiently. Educational web sites often contain content designed for specific

users such as students, teachers and/or parents. When this is the case, these sections must be clearly delineated. For instance, on the DiscoverySchool.com web site, there are specific sections with relevant information for students, for teachers, and for parents (DiscoverySchool.com, 2000). If this delineation between sections is not obvious, the user may look at the wrong information, which can cause confusion. When a user feels confused and frustrated, the individual will often leave the web site. Based on Edward's (1998) work, "if you don't find the site easy to use, it's unlikely that your users will! ...Users are likely to visit a site again only if they enjoy using it" (p.3).

Accessibility

Educational web sites should be accessible or useable on all computer systems in the school setting. Certain web media require particular software or programs, like Flash Player or Java applets, in order to operate on a user's computer. Furthermore, this media may require a certain level of computer processing power. These factors may pose a problem for the educator, particularly when school division economics come into play. If a school division cannot afford to buy the necessary computer hardware and software needed to properly display the web media, obviously, the teachers' and students' accessibility will be limited. Web sites that contain media requiring software such as Flash Player should state this requirement clearly. In an instance such as this, the web site should provide an alternative to display its content. Tillman (1996) states, "It is very important that you do not turn off your target audience because your pages have software requirements that are beyond the capabilities of the viewer or their browsers." (p.14). The option for a frames page or text only page gives the user the opportunity to choose which type of site their computer can support. Furthermore, the text option will provide visually impaired users to utilize screen reader software to extract the content of the web site (Schrock, 1999).

Another factor to consider when evaluating an educational website is the speed at which the web site can be downloaded or accessed. Educational web sites containing many photographs or graphics as well as web sites containing frames pages may have a large file size. A well-designed web site will inform the user that the download time will be longer than would normally be expected (The Oregon Public Education Network, 1997-2001). Large file size will increase the time required to load the web site for viewing. If the user has access to a dedicated high-speed Internet connection, the file size is typically of little concern. But, educators are often faced with a situation where the bandwidth of the Internet connection, or the capacity of the Internet connection to transfer electronic data, is shared amongst many computers on a school-wide network. In order to access web sites of large file size, students will be forced to wait a long time. Ultimately, this creates a situation where students' learning will be compromised because of long periods of inactivity and time constraints. As teachers, we don't want students to become frustrated with technology because of poor accessibility.

Not only are time constraints a concern to teachers, economic constraints are also a concern. There are educational web sites that are developed by businesses. We have already discussed how commercialism can affect the objectivity of the web site's content. However, commercialism can also affect the accessibility of the web site's content. There is a fee-for-service required to access profit-driven web sites. A good educational web site should not be profit-driven because our education systems are not profit-driven. Therefore, teachers should not use fee-for-service web sites in a classroom setting. Students, in a classroom setting, should not be required to pay a fee or provide personal information, such as a name and an e-mail address, to access an educational web site (Schrock, 1999; ALSC Great Web Sites Committee, 1997). On the other hand, some fee-for-service web sites can be extremely useful for teachers looking to increase their individual resource base and parents who want supplemental educational resources for their children at home. A good example of an educational web site that would be useful in this context is Fraboom. The Fraboom web site, for a fee, will provide teachers with specific lesson plans based on curricular objectives and parents with specific activities base on those same objectives. However, these particular fee-for-service web sites still need to be evaluated to ensure that they deliver quality information and service for the fee they charge (Rettig, 1996).

CONCLUSION

In summary, we have separated our criteria into two main components, content and technical aspects. Both areas are the foundation for the nine criteria we chose to aid teachers in evaluating educational web sites for personal resource use as well as classroom use. The nine criteria should help educators distinguish between the informative, accurate, and well designed educational web site and the uninformative, inaccurate, and poorly designed educational web site. Table 1 categorizes and clarifies the nine criteria.

Table 1

NINE CRITERIA FOR EVALUATING EDUCATIONAL WEB SITES	
1. AUDIENCE	<ul style="list-style-type: none"> ✓ Clearly states the academic level of target audience. ✓ Contains content and activities that match the academic level of the web site's target audience. ✓ Recognizes that students learn in different ways.
2. CREDIBILITY	<ul style="list-style-type: none"> ✓ Author has appropriate credentials to author the content of the web site. ✓ Author's name, email/contact info, or address/phone number is provided. ✓ The educational credentials or expertise of the author is stated on web site. ✓ The web master/web designer is credible and provides contact information.

<ul style="list-style-type: none"> ✓ Author responds to queries about the web site's content.
<p>3. ACCURACY</p> <ul style="list-style-type: none"> ✓ Web site should state the educational background of the author. ✓ Web site should distinguish between the author of the content and the designer of the web site because lack of accurate information can be masked by the 'print' of an expert web designer or web master. ✓ The web site's information clearly matches the web site's intended purpose. ✓ Web site is free from grammatical and typographical errors.
<p>4. OBJECTIVITY</p> <ul style="list-style-type: none"> ✓ Content is free from commercial, political, gender, or racial bias. ✓ The web site's stated curricular goals, objectives, and motives should match its content. ✓ If the content is based upon personal opinion, the author should make it known to the reader. ✓ The content contains a neutral or positive tone. ✓ Affiliations with other educational organizations/companies are stated. ✓ Check the web site address or URL/domain to locate the organizational source of the web site.
<p>5. COVERAGE</p> <ul style="list-style-type: none"> ✓ The scope of information is stated. ✓ Evaluated links complement the web site's content. ✓ The information is cited properly to allow access to a larger information base.
<p>6. CURRENCY</p> <ul style="list-style-type: none"> ✓ Web site clearly indicates the publishing date as well as when the content was last updated.
<p>7. AESTHETIC OR VISUAL APPEAL</p> <ul style="list-style-type: none"> ✓ The use of graphics and colors enhance the web site's information. ✓ There is a balance of text and graphics corresponding to the ability of the audience.
<p>8. NAVIGATION</p> <ul style="list-style-type: none"> ✓ Home page contains direct links to all other parts of the web site. ✓ Useful content is no more than 3 clicks away from home page. ✓ All links are kept current and active and the links take user to valid and appropriate content. ✓ Each page or section on the web site is clearly labeled.
<p>9. ACCESSIBILITY</p> <ul style="list-style-type: none"> ✓ Any special software requirements to view web site's content is stated clearly. ✓ Web site has text-only option to accommodate visually impaired users. ✓ Web site loading time is minimal/web designer informs the user of length of download time. ✓ Access to content should be free – user should not have to pay a fee or provide personal information (name, e-mail address) to gain access to educational content.

Since the inception of the Internet as we know it, a great deal of time and effort has been spent in the authoring and the design of web sites. Internet access is becoming easier as the cost of Internet-ready computer systems and Internet service provision becomes affordable to more people throughout the world. With the ease in which people are able to publish content on the Internet, the number

of web sites available to users have been growing at an exponential rate. But, not a lot of work has been done in the area of website evaluation. Content that is published in more traditional formats, such as books, magazines, and newspapers, is subject to strong filtering systems with set rules before being considered publishable. But, there are no widely accepted formal rules that oversee the authoring and design of web sites on the Internet. With this lack of control, web site authors and web designers have been left with free reign to do as they wish when it comes to the content and the technical aspects of web site production.

This free reign over the content and technical aspects of web sites is of great concern to educators who wish to allow students to use the Internet as an educational resource. Most students in elementary and high school have not developed the analytical skills needed to decide whether content found on a web site is acceptable for use in the educational setting. Likewise, many parents and teachers may have these analytical skills but are unable to fully utilize them without some form of guidance or direction. The evaluation criteria outlined in this paper have been compiled keeping the needs of the students, teachers, and school systems in mind. Because of the diverse nature of every teacher's classroom and grade level, these criteria may not be the ultimate solution. However, we certainly feel strongly that meticulous evaluation of educational web sites is important and that our criteria are a very good starting point for the majority of teachers. After all, educators share the same goal and that is to bring knowledge to our students in the most efficient, informative and motivational way possible.

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Appendix A

Chat session regarding the following assignment:

1. Please visit the following web site: <http://servercc.oakton.edu/wittman/find/eval.htm>

Browse down the page to the section called “5 criteria for evaluating Web pages” (you may want to print this list to avoid flipping between windows). Now, visit the following educational web site <http://www2.magma.com/~dsleeth/kids/lessons/lesson1.htm> See how many of the criterion are met by the site.

<http://www2.magma.com/~dsleeth/kids/lessons/lesson1.htm>

2. Keep the following questions in mind for the chat:
 1. Are each of the bulleted questions/interpretations under the correct criteria/heading. For example, the second bullet under “Criteria #3: Objectivity” asks “ How detailed is the information?”. Could this question also be included under “Criteria #1: Accuracy of Web Documents”?
 2. What parameters should be used in identifying a “qualified” author of an educational web page? What prior knowledge/experience base should the author of an educational web site have?
 3. Are there any major/minor components missing from this set of criteria? If so, under which criteria should that component be included?

Appendix B

Chat Session regarding questions above

New session has begun in EDCMM802_January_9.
Time: Tue Jan 9 20:55:23 2001

*Dialogue not available online

Appendix C

Follow up questions:

- 1) How important is it to make an educational web site accessible to the visually or hearing impaired? How could a site accommodate this?
- 2) Look at the web site <http://www.eduplace.com> Using what you have seen on this page, fill out the criteria on the evaluation web site :
<http://www.classroom.com/edsoasis/2guide3.html>
- 3) Do the criteria on this site cover criteria needed on an educational web site?
- 4) Is there anything that you feel is missing from this set of criteria?
- 5) How do you feel about having TWO general criteria for evaluating educational web sites? One being Content (accuracy, credibility, objectivity) and the other being Technical Aspects (currency, coverage)?
- 6) Should Educational web sites be completely free from advertising? Why? or Why not?

Response Synthesis:

1. How important is it to make an educational web site accessible to the visually or hearing impaired? How could a site accommodate this?

- Ed sites should be accessible to anyone wishing to educate themselves
- It is important to consider your audience before creating an Ed site
- Web Sites are visual therefore may accommodate hearing impaired learners
- Hearing and visually impaired individuals often have hardware to compensate for any sites lacking tech which they require to use the page
- Sound rolling over text to aid visually impaired
- Survey the impaired before creating a site
- Develop your site for the audience intended
- Have a feed back section on the site for those needing changes for their disabilities to comment

2. Look at the web site <http://www.eduplace.com>
Using what you have seen on this page, fill out the criteria on the evaluation web site:
<http://www.classroom.com/edsoasis/2guide3.html>

- Excellent site for evaluation
- Both sites are created by commercial companies rather than non-profit institutions
- The site was hard to follow to use the criteria for this evaluation

3. Do the criteria on this site cover criteria needed on an educational web site?

- Criteria considered the function of the site and adjusted the points accordingly
- Categories were well detailed and provided enough info to understand what you were evaluating
- Ed sites should not give away all the answers (possibly have login areas for teachers)
- Criteria is similar to what already exists in evaluating education in general
- Evaluation is adequate if computers are used to continue to educate with books and a computer is a tool for such
- Somewhat obvious as to what most would expect to find on an ed web site
- Criteria is focused both on the content as well as how it is presented

4. Is there anything that you feel is missing from this set of criteria?

- Be wary of hidden agendas from advertisers is the credibility section
- Keep full intent of page in mind while using it
- Separate sections for teachers and students

5. How do you feel about having TWO general criteria for evaluating educational web sites? One being Content (accuracy, credibility, objectivity) and the other are Technical Aspects (currency, coverage)?

- Would 2 criteria be useful for feedback
- Depends on who is evaluating and the purpose of the evaluation
- There has to be clear and well detailed specific criteria under each general criteria
- Content describes currency and coverage
- Technical aspects are those which some educators do not want to consider
- Consider multimedia aspect of content
- Content could cover all 5 criteria
- Technical aspects are more functionality of the site
- There is a lot of interplay between purpose, content and audience and the way the page appears
- Some aspects may be better for others and worse for another group (can you ever win?)
- Currency and coverage can be part of content when considering the content of the information
- Technical aspects are separate from content and involve currency and coverage involving navigation, multimedia etc

6. Should Educational web sites be completely free from advertising? Why? Or Why not?

- If site is created by a school or gov't there should not be advertising
- Can't expect companies to have ad-free sites
- Discuss ads with students
- More \$\$\$ often means more access to information

- Ed sites created on free web space often do not need ads to support the site
- Ed companies can have ads to promote their company but should not use banners to create revenue from their site
- Personal preference or policy?
- Recognize the fact that some sites require \$\$\$ to fund the site
- Do not have obtrusive advertising to distract the user
- Is there anyone willing to host the information for free?
- Nothing for free when it comes to educational sellers
- Evaluate sites before deciding on one you like
- Knowing where the \$\$\$ comes from often enlightens the user as to where the bias is coming from
- Student components could be free from advertising causing less distraction
- There should be safe places to learn without having outside influence to buy something