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ABSTRACT

Due to easy accessibility to the Internet and prevalence of programs for designing World Wide Web sites, a special education teacher may now create a Web site with little cost or trouble. Special education teachers may want to consider creating a Web site to inform parents and caregivers about classroom activities, invite participation in special projects, send and receive e-mail, or link to school or other sites. The Web site acts as a powerful communication tool for students and caregivers, and it expands the classroom into the larger community. This paper gives specific guidelines for steps in designing and publishing a Web site: planning; defining the purpose of the site; achieving clarity through use of fonts and color; being consistent within school or district guidelines; structuring an easy-to-navigate format; finding and using graphics; and getting help with creating the site. A checklist of 15 points to remember is included. An appendix lists 25 Web sites (some annotated) that provide free graphics, search engines, information on HTML (hypertext markup language), and software. (SAS)

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## THE WHOLE WORLD: JUST DOWN THE ROAD

### Introduction

A feeling of isolation, real or imagined, among special education teachers and students in rural areas may be needless today. Communication devices such as cellular telephones and pagers are common and have revolutionized the way in which we stay in contact with one another. Only a few years ago, the use of either of these devices was limited to metropolitan areas. Today, only very remote areas are "out of range" for these communication tools. Access to commercial television even in isolated areas has now been made easy and inexpensive with the proliferation of 18" satellite dish receivers.

Once restricted to only a few individuals, the Internet is now realistically accessible with little trouble and at reasonable cost. It has been said that the Internet, particularly the World Wide Web (WWW), is the most revolutionary advancement in communication since the invention of the printing press. Information disseminated through the Internet has become commonplace to the point that commercial advertisements, both print media and television, routinely provide web addresses.

That a global community exists is not highly debatable. For example, using electronic mail it is as easy to correspond with someone on the opposite side of the globe as it is with someone in the same city. Files containing text, pictures, and sound are easily and quickly sent via e-mail.

Not too long ago it was a tedious and complex task to design WWW pages. A number of inexpensive and easy to use programs for creating WWW sites such as Adobe PageMill, Claris HomePage, and Microsoft FrontPage are now available. A number of WWW sites offer free graphics for noncommercial use and inexpensive digital cameras (less than \$300) provide a way to incorporate high quality photos into a WWW "page."

A special education classroom teacher may now create a WWW site without a great deal of expense or time. The functionality of such a site is almost limitless. The class's "home page" could inform parents and other caregivers about what's going on in the classroom, invite participation in special projects, or request communication via e-mail. Links to other sites within the school or the district could be included.

A WWW site has the potential for the special education teacher to: 1) act as a powerful communication tool for students' caregivers, and 2) expand the classroom into the larger community. This manuscript focuses on the development of a home page, a WWW site, for a classroom; it will address both the creation and maintenance of the site. It will also include a variety of economical sources for the necessary software.

## Planning

This is a crucial part of the web site. Not only will the lack of proper planning be evident later on, it will also take more time to construct the site. Attempting to make a web site without detailed and careful planning is much like taking a cross-country trip without a destination in mind.

Particularly with a first attempt, it is important to keep it simple! If it can be said in four words, don't use forty. Details such as graphics, sound, and backgrounds will be discussed later but a brief word regarding these is in order here. Just because you can do it, doesn't mean you should. Too many sites were constructed with a singular purpose in mind: demonstrating as many "bells and whistles" as possible. A simple, straightforward approach is always better, assuming that communication of information is the primary purpose of the web site.

The "storyboard" approach is the singularly most useful device in planning a web site. We recommend the use of 5" x 8" index cards for this purpose. Thus, each card can represent a screen, complete with graphics, text, background, navigation aids, etc. Annotations regarding text size and type, colors, sketches of photographs and graphics and the like can be made easily.

### Purpose

Insofar as the classroom teacher is concerned, most likely the purpose of the site will be communication of information to caregivers, students, and others. The information will probably be related to the individual classroom with possible links to the school's site and other relevant sites. You might want to include information relative to what's now being studied, in each curricular area. Along with this information you could include suggestions that caregivers might use to reinforce what you're doing in the classroom. Upcoming activities such as field trips, units of study, PTA/PTSO meetings, and class projects are appropriate as well.

Additionally, a web site is an excellent means of soliciting input via e-mail. E-mail is more convenient than telephone calls. Virtually everyone with internet access will have access to e-mail. E-mail can be done at any time; the intended recipient need not be at any particular place when the message is sent. Perhaps more importantly, you can choose when to read your e-mail. And, you have a permanent record of messages received (and sent if you so choose) until you delete them. In the final analysis, communication via e-mail is efficient and convenient for the sender and the recipient.

A final thought about the purpose of the site. The site will essentially be a representation of you, your classroom, the school, and the school district. Thus, it must be correct in every detail. The site can and will be viewed by persons far outside of the immediate school community. Judgments, right or wrong, will be made by individuals from within and without. The smallest inaccuracy (such as a misspelled word) will bring negative attention and criticism. In addition to your own proofing and critical review, you should have others view it before it is "published." A poorly done site is unquestionably far worse than none at all. Many districts and schools will require prior approval by an administrator or a committee before the publication of a site to avoid potential embarrassment. Free speech is an issue separate from issues associated with sub-units of an organization being representative of the larger unit.

## Clarity

"White space" is one of the most useful strategies for achieving clarity. As with the print medium, white space serves to frame or emphasize text, graphics, or other elements. The tendency to fill each centimeter of space with something" is to be avoided at all costs. Using white space as a design technique does not mean that color or other backgrounds cannot be used. "Open" space might be more descriptive of the process.

Fonts used can add to the clarity of the site. Many advocate the use of a plain straightforward "sans serif" font such as Helvetica or Arial. These fonts are easier to read and they facilitate, rather than impede, communication. This is particularly important since it has been estimated that people read screen text approximately 40% slower than print on a page. The use of all capital letters to emphasize a word is an acceptable technique if it is kept to a minimum. You should not use all caps for an entire paragraph as it is more difficult to read. Although the browser used by the individual can control the relative size of the fonts on the screen, care should be given to using a font which is large enough. On the printed page, a font smaller than 12 points is somewhat difficult to read, especially if single spacing is used. Generally, screen fonts should be no smaller than 14 points.

We are all used to reading black text on a white page and this is acceptable with web pages. The "default" color of the background in HTML is gray. Black text on a gray background can, however, be difficult to read, particularly if the font is a small one. Using a textured background or a color background can make a web page more interesting or attractive as long as one thing is kept in mind: the contrast between the background and the foreground (text) must be good. One last recommendation is that white text on a black background be avoided, or at least used judiciously.

## Consistency

If not required to use a theme (format or metaphor) by a school or a district, you should try to achieve consistency throughout the web site. This can be done by using a particular color scheme throughout the site. Another device which has been used with a great deal of success is employing graphics which have a particular theme such as "school." Such a theme would use graphics which suggest "school" such as a pencil, apple, school bus, etc. Backgrounds, navigation buttons, and dividing bars would all be related to the same theme. It is not mandatory, however, that you use a theme or metaphor as long as consistency is somehow achieved.

Navigation is an element of web site that is often poorly done even by professional designers. Each site will have a "home" (main) page with "hyperlinks" to other pages within that site or beyond. Each page within the web site should have clear and consistent ways to navigate. At the top and/or bottom of each page in the site there should be a "button" on which the user can click to go back to the home page. Navigation buttons (icon, graphic, photograph, word) should be used consistently throughout the site. Placement of the buttons should also be consistent throughout the site. One should not have to guess how to navigate or be caught in a page without an easy way to go forward or backward.

A final caution regarding the use of "frames." Older versions of the popular web browsers don't recognize these, but newer versions do. A frame is a graphic device which has choices in one place (typically a column or side-bar) that, when clicked, reveals a different "page" in another area of the screen.

Use frames if they suit your purpose and you can do them well, but be careful of overly complex and confusing frames.

### Format

Even beginners should avoid the temptation to construct a site that consists of one large document. What might typically fit on an 8.5" x 11" piece of paper will require a great deal of "mousework" from the viewer. Pages requiring a lot of scrolling to view the content, particularly textual material, can truly be a test of an individual's interest, if not dogged determination. If, for some reason, you want to create a lengthy page at least have the courtesy to provide hyperlinks within the text so that the user doesn't have to do a lot of scrolling.

The main page should be one that will quickly get the attention of the (potential) viewer. The first thing the viewer sees should instill a desire to find what else is in store. You must ensure that the main page does not take a great deal of time to download. It has been estimated that interest is lost and a person moves on if a page takes longer than twenty seconds to download. Plain text will download quickly but is highly unlikely to gain attention. Graphics, including textured backgrounds, will cause a page to download v-e-r-y slowly. Obviously, this is a function of the size of individual graphics and the number of graphics on a page. It is possible to add sound to a page (typically WAV files) but this is another effect that slows down the loading of the page. Sound can add an interesting dimension to a page but you have to assess the trade-off in terms of time. The user must also have the hardware and software necessary to actually play the sound.

Once the page is loaded into the viewer's computer it should be simple to move to other areas of the site. As previously discussed, even if the site consists of one large page, hyperlinks to other parts of the page should be provided. The ideal site, however, will have a main page from which the viewer may choose to go to other areas of the site or elsewhere. Never assume that everyone will wish to view every aspect of your site.

### Graphics

A strength of the WWW is the display of graphics (e.g., cartoons, drawings, photographs). The graphic must be relevant to content of the site or the purpose involved. For example, it makes sense to use a graphic of a right-pointing arrow to provide a hyperlink to a next page. But, using a small graphic of the Mona Lisa as a navigation icon might be less logical. The use of graphics without relevance or purpose may be counterproductive.

Graphics can come from a number of sources. A photograph can be taken with a digital camera and imported directly into the authoring software. Quality digital cameras have become reasonably priced. You can now buy a digital camera for \$300 or less. Photographs taken with such a camera and manipulated with software such as Adobe PhotoShop LE are perfectly acceptable for using in a web site. Photographs can also be scanned and scanners are available for around the same price as the digital cameras. Generally speaking, digital cameras are not as good at taking action shots as are relatively inexpensive 35 mm cameras with fast film. There is no excuse for including a poor quality photograph in a web site.

There are numerous web sites with free graphics for web page construction. A list of some of the sites is in the appendix. Guidelines for use of the graphics are included at each site. Some require nothing as long as the use is non-commercial. Others want a link back to the site. Many require that credit be given to the author as the copyright holder. A few ask for an e-

mail message containing the URL of the site using the graphic(s). There are also a number of relatively inexpensive CD-ROM's with hundreds or thousands of fonts, clip-art, web graphics, and photographs. Most are relatively inexpensive and require no royalty fees for use. However, given the quantity and quality of free graphics available on the web it is difficult to justify the cost of these sources, especially for the beginner.

Scanners were previously mentioned in the discussion of acquisition of photographs. Other graphics can be scanned, but great care must be taken in this regard. Scanning a drawing of Winnie the Pooh and using it in your web site without permission would be a clear copyright violation. Unless you have secured the necessary permission or you are absolutely certain about the legitimacy of a graphic don't use it. Your school media specialist may be an excellent resource person for questions in this regard.

A relatively new special effect on the web is the use of the animated GIF (a particular format for a graphic). The latest web browsers will display these as moving graphics while the older ones will display them as static images. The motion of the animated GIF can be an effective attention-getting device. Overdone, however, it becomes annoying to the viewer and counterproductive to the message. One animated GIF per page is probably sufficient and some would even recommend against this. Animated GIF's are usually larger and take longer to download than non-animated GIF's.

### Color

Watching a black and white movie or television is something few of us do routinely. Color brings a new dimension to what we view. Nicely illustrated children's books are inherently more interesting than black print on a white page. Color, on the other hand, can be distracting and can interfere with communication. Contrast was mentioned earlier in the context of clarity. Complementary colors have the highest contrast (e.g., Red/Green, Yellow/Violet, Blue Orange). Be judicious in your use of color.

### Additional Notes

There aren't many mandatory items for a web site but there are three reasonable expectations. First, the person(s) responsible for the site should be indicated. The "webmaster's" e-mail address (or a person to whom comments or inquires should be directed) should be on the index (main) page. You should also include the date of last revision of the site.

Don't publish a web site until it's complete. Although every web site is a work in progress, it is irritating to go to a site only to see an "under construction" sign. Wait until you're ready for visitors before you publish the site. You may, nonetheless, indicate that the site, or a particular portion of it, changes frequently. This approach will encourage people to check back for updates.

If you have hyperlinks on your site, make sure they work! It's frustrating to click on a link only to learn that it no longer exists. Check your links periodically to see if they still work. Sites often move locations and you owe your visitors the courtesy of providing accurate and current links.

### Help is Everywhere

In addition to numerous books on HTML and web site design, the web itself is a great place to begin. You may want to look at other school sites just to get an idea of what people are doing. But, don't let some of the flashier sites intimidate you. One of the quickest ways to find education specific sites is

to use a search engine such as HotBot (www.hotbot.com) or Yahoo (www.yahoo.com) and search for "schools" (elementary, middle, or high). You'll be amazed at what you'll find. (A list of search engines is in the appendix.)

The next step might be going to one of the web sites devoted to HTML and web issues. A recommended first visit is to a division of Yahoo. Go to the main page (www.yahoo.com), select Computers and Internet, then WWW, and finally HTML@. You'll have more information than you'll ever be able to use.

In the final analysis, a web site for a classroom is an effective communication tool today. As such, a commitment must be made to maintaining the site so that it is an accurate and positive representation of you and your classroom. Although the editors mentioned previously will make the task much easier than it was only a year or so ago, it still takes time to keep a site current. If the site is updated no more than once or twice a year it will be ineffective. Once the initial site is published the site maintenance should require much less time. You don't have to redo everything but a sense of currency must be there. It has been estimated that a "web year" for commercial sites is now down to a mere six months. Thus, if it's older than six months it's woefully outdated. And, this time frame is shrinking rapidly. So, if it's worth doing, it's worth doing right, and the time invested will pay huge dividends.

#### Points to Remember

1. Plan the site carefully, and keep it simple; overly complex sites are Confusing and unnecessary.
2. The content of the site should focus on the students, their work and classroom, and the school.
3. The use of white space, choice of fonts, and contrast can contribute to clarity, and may serve to frame important elements.
4. The use of a theme, consistency, color, and icons selection may all contribute to the site.
5. The site should be easy to navigate from one place to another.
6. Avoid "one large document," and try to get the viewers attention quickly.
7. Graphics should be relevant to the content of the site.
8. Be judicious in your use of color.
9. Be sure to identify the webmaster and the webmaster's e-mail address.
10. Include the date of the most recent revisions to the website.
11. Make sure the website is ready/complete before going on-line.
12. If you provide hyperlinks to other sites, be sure to check them periodically to insure that they are still working sites.
13. When you need it, get help.
14. Keep the site current and up to date.
15. Be sure to spell check and proofread everything.

## APPENDIX

### Free Web Graphics

beseen.com/beseen/free/webgfx.html - brought to you by Being Seen.

futuresystems.com/zeldazone/ze04000.htm - Zelda's free graphics: LeechWare!

www.hylegrove.com/custom.htm - Kristens Icons & Images.

www.webwisedesigns.com/library.html - Web~Wise Designs.

www.ami.net/users/familyofartists/graphics.html - free web graphics from Christopher Scott.

www.robinsfyi.com/graphics.htm - numerous links to other sites related to web construction and graphics.

homel.swipnet.se/~w-12094/ - Brimsan's free web graphics.

http://www.geocities.com/SoHo/7554/downloads/graphics/ - Free web graphics by JandaWeb.

mccannas.com/index.html - Laurie McCanna's Free Art Web Site offers Photoshop and Corel tips, and samples from her book, Creating Great Web Graphics.

www.abstract.simplenet.com/backgr.htm - backgrounds and other GIF's.

### Search Engines

AltaVista - www.altavista.com

Excite - www.excite.com

HotBot - www.hotbot.com

InfoSeek - www.infoseek.com

Lycos - www.lycos.com

Metacrawler - www.metacrawler.com

Starting Point - www.stpt.com

WebCrawler - www.webcrawler.com

Yahoo - www.yahoo.com

www.searchenginewatch.com/facts.htm - Search Engine Facts & Fun - This section of Search Engine Watch provides background about search engines, tips on how to use them better, some history, and even a game to test your knowledge.

### Sites Related to HTML Editors

AOL Press - www.aolpress.com - This free distribution is AOL's gift to the Web community. The creators of AOLpress are driven by a desire to simplify Web publishing. AOLpress was designed both to make WWW authoring more accessible to beginners and to save valuable time and effort for professional Web publishers.



Adobe PageMill 2.0 - [www.adobe.com/prodindex/pagemill/overview.html](http://www.adobe.com/prodindex/pagemill/overview.html) - Both Mac and Win95 versions. Windows version is fully functional, but will time-out 15 days after installation. The Mac version does not save files. Windows version includes Adobe PhotoShop LE; Mac version includes Adobe SiteMill.

Claris HomePage Student Guide - [www.claris.com/k12/solutions/clarispage/](http://www.claris.com/k12/solutions/clarispage/) - A step-by-step guide for creating a home page with Claris HomePage. Beta version of version 3.0 can be downloaded from:  
[www3.claris.com/products/claris/clarispage/chpbeta\\_hdr.html](http://www3.claris.com/products/claris/clarispage/chpbeta_hdr.html)

Microsoft FrontPage - [www.microsoft.com/FrontPage/productinfo/default.htm](http://www.microsoft.com/FrontPage/productinfo/default.htm)

TUCOWS - [www.tucows.com](http://www.tucows.com) - This is a huge collection of software, both freeware, shareware, and demonstration, and includes numerous HTML editors and accessories for both the Mac and PC platforms.



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