Publishing a Web Site: Issues and Considerations

An exciting and challenging project for teachers and students that places them in the center of computer and information technology.

By Joseph A. Scarcella and Matthew J. Modica

THE World Wide Web connects millions of educators and business persons; commercial, educational, and government agencies; and thousands of other networks that together make up the Internet. Initially designed to disseminate information during national emergencies (Eager, 1994; America On-line [AOL], 1997), today the Internet distributes interactive multimedia platforms (photography, text, sound, video, and graphics) by private, public, government, education, and other servers to users across the world (AOL, 1997; Wiggins, 1995).

Offering its users many features, the Internet gives people seeking information the ability to communicate with other users through electronic mail (e-mail), Internet relay chat, file transfer protocol, Telnet, Listserv, newsgroups, the Web, Gopher, Wide Area Information Service, and more (Scarcella & MacPherson, 1996). Simply put, these factors show why so many people use the web and want to create a web site.

According to Hill (1996), using web sites to teach communication systems offers many benefits to teachers and learners, including using the site as an in-class tool to demonstrate experiments or activities; developing an Internet reference list housing source information for students and professionals in one's field of study; and communicating. For instance, students may communicate their ideas, opinions, and knowledge on the Internet with peers and teachers in authentic learning environments. This article aims to help technology educators understand more clearly the important issues in and considerations for developing web sites as well as their own and students' skills. This article, when used as a communications aid for class assignments, introduces students to design considerations as they develop a web site.

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Educational prerequisites. Before they may develop a web site, students must be computer literate, know how to use application software, and understand computer hardware. Such a class project requires combining theory and practice. Take care to ensure that you have enough time, knowledge, and stamina to complete the task. The time it takes to design a fully functional web site varies from one week to one month, depending on your time constraints and the size of the site. The amount of time needed also depends on your technical knowledge of the software and hardware used to create a web site.

Publishing on the web. To access the Internet, you will need the following basic equipment: a multimedia-equipped computer, software, modem (at least 14,400 baud per second [BPS]), online service account, telephone or direct connection, and imagination (Scarcella & MacPherson, 1996; Wiggins, 1995). Most computers include Internet communication tools, and online services provide them to their accounts.

To view information on the web, you must have a browser (e.g., *Netscape Navigator*, Microsoft's *Internet Explorer*, etc.). You'll need a word processor to open and create the source code of the Hypertext Mark-up Language (HTML) documents that form the basis of web pages (Scarcella & MacPherson, 1996; Wiggins, 1995). Some programs on the market—such as Adobe *Pagemill*, *Netscape Communicator*, and Microsoft *Frontpage*—make it easier to create HTML documents (Hill, 1996) and beat writing code in a word-processing program.

However, although these products make easier setting up a web site, creating unique and interesting web sites, as well as troubleshooting why an aspect of the page does not work as it should, requires an understanding of HTML programming. One helpful guide that you may download for free via the web is NCSA's *Beginner's Guide to HTML* (http://www.ncsa.uiuc.edu/General/Internet/WWW/HTMLPrimer.html), created at the University of Illinois, Urbana-Champaign.

Additionally, in order to publish a site on the web, you will need a File Transfer Protocol (FTP) program, which uploads and downloads HTML files to (send) and from (receive) your web service provider. Common FTP tools include *Fetch* for Macintosh and *Wind Sock-FTP* for PCs.

Design basics and conception execution. Authoring a web site, much like authoring a term paper, may be assigned as a whole class project, small group project, individual project, or some combination of the above. First, establish a theme. View your site as personal—viewers easily perceive individuality and character. Therefore, understand that your site will make a statement. After creating a theme, ask yourself what your purpose, objective, or goal is, and who your audience is (e.g., education, business, entertainment, sports, politics, etc.) (Burger, 1993; Hofstetter, 1995).

After answering these questions, explore the web for existing sites that relate to your goals and audience. Looking at examples will help you determine the type of site you would like to create. Look at the page with the browser and look at its source code (Hill, 1995). The HTML web site programming language gives the web browser, such as *Netscape*, directions to carry out certain functions, much as such computer programming languages as BASIC do. Looking at the source code of a web page shows how that page was created. Read your browser's instructions to see exactly how to access a web site's source code.

Furthermore, consider such questions as the following: How will you measure the success of your site? For instance, will you place a counter on your site to

track the number of visits? What criteria will you use to determine the message you will deliver? How will your site motivate viewers? How will it pursue and excite its audience?

Integrating ideas. Before doing any computer work, a web site author needs to create thumbnail sketches and a storyboard (Burger, 1995). A thumbnail sketch is a drawing done very quickly to lay out the general areas where you will locate graphic elements on your site. A storyboard consists of many thumbnail sketches placed in the order in which they will be seen. By developing a storyboard to display and express ideas, authors better visualize their work's organization. Consider taping the storyboard on the wall or lying it on a table or floor to help you visualize and direct the authoring.

To help solidify your ideas when developing a storyboard, gather photographs, graphics, sound, and video, and compose the text you will use (Hofstetter, 1995). Clip-art packages have copyright-free images, sounds, and videos preformatted for the web. You may also use anything recorded by yourself or designated as copyright free.

After completing the initial storyboard, electronically digitize all original resources into the computer. Whenever possible, use copyright-free images and sounds that you find on the web. These elements, already in the correct digitized form, need no additional work to prepare them for the web. When you need images, sounds, or video that you cannot find on the web, digitize that information using a scanner, microphone, or video camera. Procedures for digitizing information vary; read the instructions specific to your equipment. Generally, images for the web should have a resolution of 72 dpi and appear in GIF or JPEG format, while sound should appear in WAV or AIFF format. Videos typically take one of three different formats: MPEG, AVI, or Quicktime. Whatever the element, always try to minimize the file size of each. This is not always possible, especially when working with video; however, images should have as small a file size as possible, for reasons discussed below.

Once you place these elements, start creating web sites using the media integration tools available—hardware, software, and peripheral equipment (e.g., computer, scanner, authoring software, etc.). While digitizing and creating the pages that will make up the entire site, always consider design characteristics.

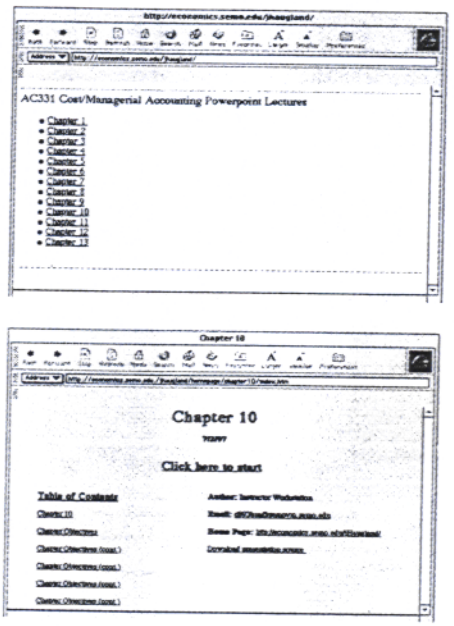

Fig. 1—Web pages with no unifying graphics

Characteristics of design. As with any media presentation, a web site should have a uniform appearance, in which text always appears in one location on the screen, and every screen of the site displays the same key elements. Figure 1 depicts a site that lacks a uniform appearance. The two screens look

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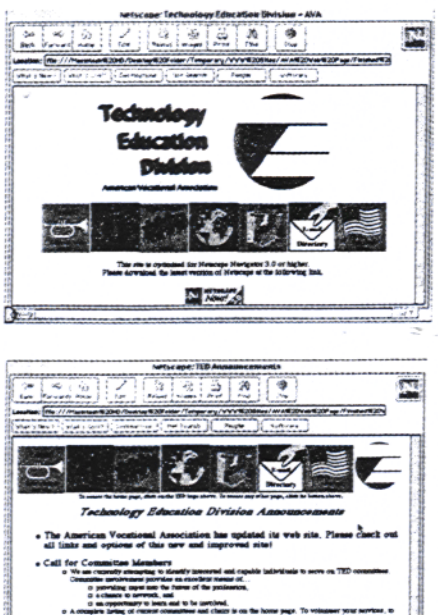

Fig. 2—Web site with a uniform appearance

like two different sites, unrelated except by content. Figure 2 depicts a site with a uniform appearance, conveying a feeling of proportion, rhythm, balance, and unity (Burger, 1993; Johnson, 1992). The two screens repeat key elements (menu bar, logo style) on each page. Users like to know that they are still at the same site and have not jumped to a site different from where they logged onto.

In addition to these considerations, a web site should be unique, with an aim to communicate ideas clearly and effectively. A unique site attracts visitors who not only read the information presented but also act on the discovery of that information. Uniqueness and creativity can also transform an ordinarily dull subject into something interesting and different.

Furthermore, a web site should inform, illustrate, and explore ideas that promote a common cause or theme throughout its entirety. Creativity, originality, and, of course, content interest visitors in what your site has to say. *Wired, New Media, Pre, Syllabus, Multimedia Solutions, Adobe, Internet,* and many other magazines offer excellent do's and don'ts on designing web sites. But for now, consider the following useful tips when integrating characteristics of design:

Keep It Simple: A web site should interest viewers and not overwhelm them. What image do you want your web site to convey? Will you encourage visitors to use the site as a resource center or as recreation? Is it insightful and manageable? How well does it tell the story and deliver the facts?

Also consider user friendliness. For example, how long does it take to download your site? Web sites should load quickly—visitors are unwilling to wait. Assuming that most individuals have a 14,400 BPS modem, the time it takes for one kilobyte (kb) to download equals one second. So, a site with just one 120 kb photograph will take two minutes to download. Of course, some viewers have faster connections, but you need to take into account that some visitors accessing your site have fewer capabilities. Consequently, even though web authors want dramatic features on their site, they need to realize the Internet's limitations (e.g., modem speed). What attracts visitors to a site also drives them away (Burger, 1993).

Know Software Limitations: To reduce their technical constraints when designing a web site, web authors should be technically proficient with the software they use. To help rectify such a problem,

- find a software program that has authoring capabilities with a Graphic User Interface (GUI is an icon-driven program much like Microsoft *Office*); and

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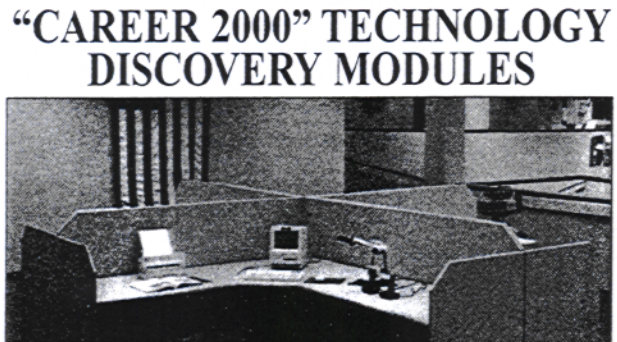

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● find a software program that you feel comfortable using.

Learning new software is laborious. Burger (1993) and Hofstetter (1995) suggest using software that you may learn quickly and adapt to fit your needs. Although these programs make setting up a site easy, you should still know some HTML coding in order to have greater control when troubleshooting and enhancing your site—especially when using such languages as Java or Pearl.

Uploading and Maintenance: Once you complete creating your web site, you must upload and house it on the Internet. Consult with your Internet Service Providers on the techniques involved in uploading and downloading files to and from your account. You may maintain web page projects throughout the school year or dismantle them at the end of the project or semester, depending on the content and usefulness of the site or aim of the assignment. Since anyone who has access to the Internet may view the sites students create, students should use caution in their choice of text and images.

Product visualization methods. When assigning a web-site creation project, consider the following tips:

First, require students to submit a proposal outlining their ideas for a web page or assign them specific pages and web-site projects to establish. Proposals must list the purpose and object of the site and identify who the audience is. Consider group collaboration on how to achieve the steps toward developing the site and how to present their answers to the problem.

Second, generate ideas for solving the problem by choosing the way to present information (e.g., text, graphics, pictures, video, etc.).

Third, after students author an HTML document, have them send it to the service provider. When the web site is viewable on the web, validate the reliability of the site by testing all links, graphics, pictures, video, etc., to see whether they work correctly (Burger, 1993; Johnson, 1992). You may also have students promote the site through various search engines or professional memberships related to or interested in the topic.

Fourth, assess the feedback given on the site and make the appropriate alterations or adjustments.

Fifth, assess the project as it transpires. Remember, before assessing the project, research the topic and its related literature on the Internet to see what has already been reported on the subject. A web site should constantly evolve, due to information and techniques added, changed, and communicated (Wiggins, 1995).

Similar to many hobbies, making a web site generates feelings of accomplishment. However, designing a web site poses challenges. If your first few attempts fail, keep tinkering. Success in web authoring requires a desire to learn, time, and the imagination to explore. Not surprisingly, the Internet and web sites found there expand daily. Keep exploring web-site authoring options, and consider referencing some of the many outstanding publications readily available.

Most of all, have fun! TD

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