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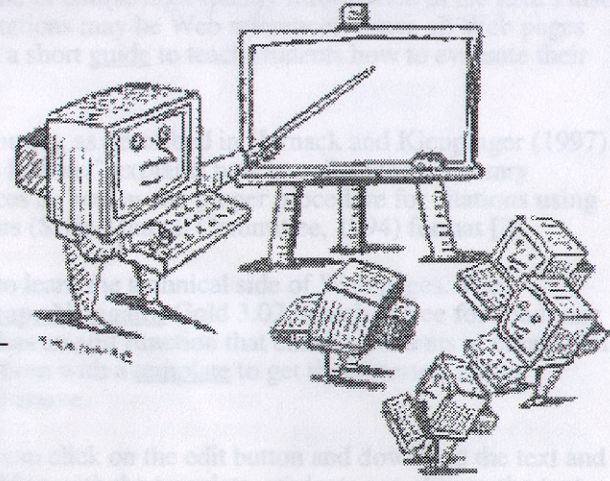
**WEB RESOURCES**

- In Situ

# Home Page Homework Redefining the Term Paper

by A. Malcolm Campbell

(Posted July 24, 1998 - Issue 35)



**Abstract**

*Students and teachers both benefit when homework assignments are "handed in" as Web pages.*

Not too long ago, college students turned in handwritten term papers. Then typewriters became affordable, and typing paper and correction fluid became standard issue. Today, nobody brings a typewriter to college. Instead of flipping through card catalogs, students surf the Web. Like everyone else, undergraduates are addicted to the Web's convenience and wealth of information. It's an invaluable asset for doing homework.

Teachers assign homework for many reasons. It allows students to practice certain skills, requires them to conduct research to study a specific topic in depth, and helps them learn how to organize information and convey it clearly and concisely. Since the Web is probably going to be a permanent fixture of our lives and jobs, it seems appropriate that students should learn how to create their own Web pages, and be allowed to submit them as homework.

**Instead of turning  
in their homework,  
students can publish  
it on the Web.**



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Recently, I began to require my students to submit their homework assignments in the form of Web pages. For each class, the first assignment is relatively simple (for instance, describe a method used by cell biologists) but has a set of minimum standards [1]. This page must have at least one figure, one link to an outside Web site related to the chosen topic, an email link at the bottom of the page, and of course high-quality information in the text. I also specify that no more than half of all citations may be Web references. Since all Web pages are not created equal, I have produced a short [guide](#) to teach students how to evaluate their suitability as citations.

**The first assignment  
is relatively simple  
but has a set of  
minimum standards.**

All references must be in the proper format, as described in Harnack and Kleppinger (1997) [2]. This "reference guide to using the Internet" explains how to collect the necessary information for citations of Web sources as well as the proper procedure for citations using the standard Council of Biology Editors (Style Manual Committee, 1994) format [3].

This first assignment allows students to learn the technical side of Web pages. The campus-wide browser we use is [Netscape Navigator](#) Gold 3.02, which is free for academic institutions. This version of Netscape has an [edit](#) function that enables students to create their own Web pages. Ordinarily, I supply them with a [template](#) to get them started and to illustrate the minimum standards listed above.

While viewing the template, a student can click on the edit button and download the text and figures onto his or her computer. Working with the template, students can change the text, insert new figures, and establish new hyperlinks by pointing and clicking on the options at the top of the Netscape editing window.

Since many students are intimidated by the prospect of producing a Web page, I grade the first assignment very leniently. I want to bolster their confidence, and to encourage them to be creative and to focus on the content of their future pages. They should not become distracted by all the bells and whistles that are so easy to produce. Students who were "computer-phobes" have learned very quickly how to generate substantial Web pages, such as that of [Kelly Westbrook](#).

**It's easy to become  
distracted by all the  
bells and whistles.**

Subsequent assignments are more substantial and more content oriented. I have given a number of different assignments, depending on the course. Students might be asked to review a scientific paper, to search [GenBank](#) for a particular protein or gene, to analyze the same protein from different species (e.g., yeast, flies, and humans) and compare their sequences, or to submit a standard term paper.

Some of these assignments could be submitted just



Some of these assignments could be submitted just as effectively on paper, but others could not. For example, a part of the protein analysis might be to display a 3-D model of the protein, which is easy to do with programs such as [RasMol](#). Students can include color figures that would be very difficult to print and submit on paper. Web citations allow students to provide hyperlinks to their references. Furthermore, they can link to information obtained from their GenBank search, which might augment an assignment on protein analysis (Figure 1).

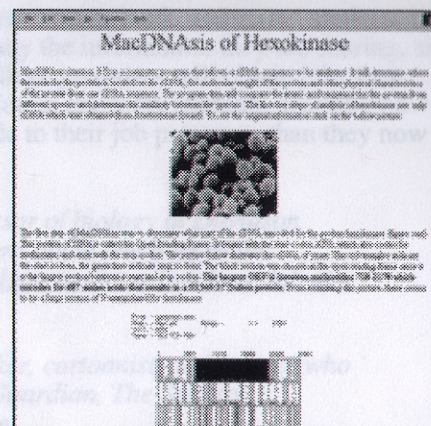


Figure 1

Some of my colleagues have expressed concern that Web term papers are too easy for students at other institutions to plagiarize. To combat this potential problem, we restrict access to [term papers](#) to on-campus use only.

Asking students to submit homework online provides many benefits for my teaching. When students cite Web information as a reference, it is easier for me to verify the citation than on paper homework, since the student must establish hyperlinks as part of the assignment. Since I often require students to find additional Web sites that are related to their assignment, I can investigate their suggested sites, which saves me a lot of time trying to find good online teaching resources.

**Homework  
hyperlinks  
make teachers  
more effective.**

Students often want to see what a "good" assignment looks like, and it is easy for me to archive selected home pages to serve as good examples that other students can access at their convenience. Since many of our students are very smart and highly motivated, they have produced outstanding Web pages that I have adapted for my classes, such as the [fluorescence activated cell sorter diagram page](#) of Matt Ellis. As part of another Web page, one student presented information about the use of monoclonal antibodies, and in the process she found a Cornell University Medical College QuickTime movie that showed how individual binding sites on a bivalent antibody will continue to bind and release epitopes. This movie made it easy for me to explain the differences between affinity and avidity. At the end of each semester, I ask permission to keep electronic copies of the best Web sites, which I can develop further for later use.

Student evaluations of my courses reveal a strong consensus that the Web, when used judiciously, is an effective means of communication between teacher and student. "Doing a home page had nothing to do with the content of the class," one student wrote in a recent evaluation, "but was a valuable lesson that I will use for many years. . . . If not this class, then which one?"

**Students want  
this skill – "If  
not this class,  
then which one?"**



Home page homework achieves the same goals as paper homework, and more: students can provide more information, they learn more than merely the information they are sharing, and teachers find more Web sites for the future. Most college graduates will obtain jobs that require them to work on a computer. Wherever the future takes my students, learning how to work on the Web will prove to be even more valuable to their job prospects than they now realize.

*A. Malcolm Campbell is an assistant professor of biology at Davidson College. He has made numerous presentations about teaching as an "alternative" career option, and has written How to Get a Teaching Job at a Primarily Undergraduate Institution .*

*Andrzej Krauze is an illustrator, poster maker, cartoonist, and painter who illustrates regularly for HMS Beagle, The Guardian, The Sunday Telegraph, Bookseller, and New Statesman.*

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### *Endlinks*

A Beginner's Guide to HTML -a classic and very thorough introduction to HTML, the basic language of Web documents. Maintained by the National Center for Supercomputing Applications (NCSA).

Online! A Reference Guide to Using Internet Sources - the Web site for the 1998 edition of Andrew Harnack and Gene Kleppinger's book has links to all of the URLs in the book and four online chapters, including Using CBE Style to Cite and Document Sources.

Yale Style Manual - an online style guide for Web pages, covering many aspects of page design. From Yale University's Center for Advanced Instructional Media.

Web Page Resources - a part of the Professional Web Design site, this page has links to buttons, backgrounds, images, and other resources. Also see the basic tutorial So, You Want to Make a Web Page!.

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*Tell us what you think.*



**Feedback**

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### Abstract

Students and teachers both benefit when homework assignments are submitted on the Web.

For students, the Web is a handy, portable, handwritten term paper. Then typewriters became obsolete, and carbon paper and correction fluid became standard issue. Today, notebook computers are standard issue at colleges. Instead of flipping through card catalogs, students can find what they need on the Web. Undergraduates are addicted to the Web's convenience and speed of information. It's a valuable asset for doing homework.

Teachers assign homework to help students learn. It allows students to practice without class, to review concepts, to research, to study a specific topic in depth, and to learn how to use the Web as a research information and learning resource. Since the Web is probably going to be a permanent feature of our lives and jobs, it seems appropriate that students should learn how to create their own Web pages, and be allowed to submit them as homework.

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