emphasis.

In speaking, we can create emphasis by speaking slower, or louder, or with particular stress. Similarly, print media use different types sizes and sometimes even different colors to catch our eyes. A speech or publication that constantly varies is just as frustrating as a talk given in a monotone. To make emphasis possible, a presentation should be based on a limited set of fonts, type sizes, and colors that are chosen most of the time. The basic format should be repeated so often that the eye is no longer aware of it. Then a different font or color will have a real impact on the viewer when emphasis is required.

One of the most common mistakes for new users of presentation software is poor font selection. When slides were widely used, it was common to talk about the 6x6x6 rule. That is, no more than six words in a line; no more than six lines on a frame; and the text should be legible from six feet away. This still works on the computer. Do not clutter up the screen with every word in the lecture. Remember that what is perfectly legible on the computer screen may be difficult or impossible to read when projected into a large classroom. This is particularly important in classes that include students with vision problems.

Unfortunately, there are no firm general rules for selecting fonts. Room size and projector brightness can make large differences. It is important to use a font with strong descenders and ascenders (the vertical and horizontal lines). The advice not to use serif fonts, that is, the fonts with the extra decorations at the end of some vertical and horizontal lines, has a sound basis, but it is not just because of the extra decorations.

Many serif fonts, like Times Roman, have thin vertical lines. This makes them hard to read in a large classroom, with a poor projector, or in a lighted room. Despite this problem, Times Roman is a standard selection in many presentation packages. A heavier font, like Bookman Old Style (serif), Ariel (sans serif), or Helvetica (sans serif) will often give better readability. One way to give a font extra weight, is to use the boldface version. In general, avoid font sizes smaller than 24 point. If a smaller font is needed to include everything, it may mean that there is too much on the frame.

To produce a readable presentation, the other main requirement is a good color scheme. The important factor here is obtaining a strong contrast between the background color and the text color. Deep, strong background colors, like dark blue, dark green, or dark red, are typical choices, because the text will stand out sharply. White or yellow are good text color choices in these cases. Many other combinations are possible, and sometimes even suggested by the presentation software, but there are few combinations that match these for readability.

Sales presentations are commonly done with a dark blue or green background because these colors are considered to put the viewer in a receptive frame of mind. Bright red, the color of blood, is considered to be very aggressive, and so is rarely used by salespeople. On the other hand, an eight a.m. class will need all the energy possible, so bright red may be a good choice.

Be sure to avoid the color combinations that are difficult to read. Bright red text on dark blue background is usually a poor choice, since the human eye has difficulty focusing on these colors at the same time. Pastel backgrounds were once a common choice, because the available projectors were not very bright. There is little reason to use a pastel background today, particularly since it is hard to find a strongly contrasting color for the text. Another factor that decreases readability is to place the text over a picture or diagram. This may be done for a title section, but if the text is important, it is essential to make sure that the text stands out strongly against whatever background is provided by the image.

Never lose track of the fact that the primary consideration when selecting colors and fonts is readability. No matter how pretty the presentation may be, if the audience cannot read the text, the resulting lecture is a waste of time.

A Simple Strategy for Creating Web-based, Interactive, Multiple- Choice, Practice Examinations.

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INTRODUCTION

This article describes a simple, text-based HTML technique for creating multiple-choice Web ex aminations that allow students to review course materials interactively. Clicking on any of the answers to each examination question reveals whether that answer is right or wrong. The technique is particularly useful in converting class examinations into Web-

based practice examinations.(1)

(1) Examples of examinations created through this approach are available at www.miami.edu/chm/chm201a2 (organic) and www.miami.edu/chm/chm101h (nonmajors). Look for File Examinations on the home page. These should be available through 15 December 1998.

The principal advantage of this strategy is simplicity. It requires only the ability to write HTML coding, or access to a fully featured Web page-creation program. Except for graphic, audio, or other binary files that might be included within the examination- or response-files, all files are text (ASCII) based. Other than competence with HTML, no programming skills are required.(2)

(2) Among many books available for introductions to and compendia of HTML coding, I have found Laura Lemay's HTML books especially useful, e.g. "Teach Yourself Web Publishing With HTML 4 In A Week", 4th Edition, Laura Lemay, Sams.net Publishing, 1997. See also http://www.ncsa.uiuc.edu/General/Internet/WWW/HTMLPrimerAll.html

In practice, an HTML-coded file is created for the multiple- choice examination and is placed in a server directory along with a set of five HTML files (for 5-choice questions) that respond to wrong answers and a set of HTML files, one for each question in the examination, that respond to right answers.

In order of increasing complexity, the following illustrate 1) a typical wrong-response file, 2) a typical right-response file, and 3) a typical question taken from a quiz-file.

WRONG-RESPONSE FILE

Sorry, but that is the wrong answer. Please use your browser to move back to the quiz and try again.

That's the entire text for the wrong-response file. Except for HTML emphasis on the word "wrong" it contains nothing fancy. It seems desirable to keep the wrong-responses low key. The student now uses the browser's own capabilities to return to the the same location on the previous page, the examination page, and try the question again. There is no return-to-test link in the wrong- response file to carry the student back to the test question just attempted. The browser itself performs this function. This method of operation allows one set of five wrong-response files to be used for the entire examination.

The wrong-response files are named no1.htm through no5.htm. Alternatively they might be no_a.htm through no_e.htm, or some other variation. The file no1.htm is linked to each *wrong* choice *a)* in every question within the examination; file no2.htm is linked to each *wrong* choice *b)* in every examination question, etc. For *right* choices *a)*, *b)*, etc., there is a set of right-response files.

RIGHT-RESPONSE FILE

Yes! That is the <blink>RIGHT</blink> answer. Now move to the next question.

Here HTML coding is used for font color, font size, and to produce blinking of the word "right". Effects can easily move up or down the scale, depending on the complexity desired for right- response files, HTML competence, and/or the sophistication of a Web page-creation program.

The coding <a href="quiz.htm#03"> carries the student back to the examination, which is in a file named quiz.htm, and to the next question. This implies that the right-response file shown above must be the file for the right answer to question #2, and is used *only* for that particular answer of that particular question. Thus each right-response file must contain a <a href="quiz.htm#nn"> where #nn refers to the next question in the examination. (The right-response file for the final question carries the student to links that permit return to question #1 for repeating the examination or back to the home page, as described below.)

Each right-response statement is the sole occupant of a unique html file, named no01.htm, no02.htm, etc., or an appropriate variation. Notice that for the first five questions, the wrong- and right-response HTML files are distinguished from each other by a single digit (1, 2, etc.) for the wrong- and two digits (01 02, etc.) for the right-response. All additional questions continue to use two-digit right-response files, no06.htm, no07.htm, etc.

QUIZ FILE

Questions

06. The energy of the sun comes from:

```
<ul>
<li><a href="no06.htm">a)</a> fusion of H nuclei to
form He nuclei
<li><a href="no2.htm">b)</a> fission of He nuclei to
form H nuclei
<li><a href="no3.htm">c)</a> fission of U-238 nuclei
<li><a href="no4.htm">d)</a> fission of U-235 nuclei
<li><a href="no5.htm">e)</a> fusion of deuterium and
tritium nuclei
</ul>
```

The question starts with an HTML name. In this question, Question 06, the <a name="06"> is the target of the right- response file for question #05. This is what brings the browser back to question 06 of the quiz.htm file when the student clicks at the return-to-quiz link of the right-response file for Question 05.

The five choices are coded as an unnumbered list. Response *a)*, the correct response in this case, is coded to take the student to the right-response file for this question, no06.htm; all others are coded for one of the five wrong-response files.

A typical quiz footer:

```
<hr>
<a name="51">= THE END =</a><br> You now have
the choice of:
<ul>
<li>returning to <a href="quiz.htm#01">Question #01</
a> to repeat the quiz, or
<li>returning to the <a href="../101hfile.htm">file exami-
nation menu</a><br>
</ul>
</body>
</html>
```

Following a hard rule <hr>, a section named "51" (for a 50- question examination) gives students the options of returning to Question 01 of the examination or returning to a menu of file examinations. This footer must be coded <a name="[nn+1]"> where nn is the number of the last question on the examination.

Every quiz file is named quiz.htm. Multiple quizzes are distinguished from each other by the names of their storage directories.

Link colors:

Placing the code <body link="#228B22" vlink="#228B22"> early in the quiz file prevents the browser from changing the colors of the links as they are clicked. Thus good choices made by the first student to take the quiz don't reveal the right answers to subsequent students (using the same computer) through color changes in links.

OTHER CONSIDERATIONS

The simplicity of HTML coding requires that every examination file, together with all its right- and wrong-response files, be placed in a unique directory on a server. The entire set of both right- and wrong-response files must be placed in every directory containing a quiz. This approach is demanding of server space, but that is a cost of its simplicity.

As with any other html document, graphics such as .gif or .jpg files can be inserted into the right- and wrong-response and quiz files. For rapid downloading via modems, I avoid graphic and other binary files except where graphics are integral parts of the questions.

Although beyond the scope of this discussion, the use of word- processor macros facilitates immensely the conversion of classroom examinations into these HTML quizzes Anyone interested in copies of the macros I have written for use with my DOS-based, WordPerfect 5.1+ word processor may contact me. With these or other macros, the only time-consuming activity, other than proofreading, is identifying correct answers and entering the appropriate right-answer code by hand.

Finally, the HTML coding described here is effective with the currently available Netscape Communicator. While other browsers, or later versions of this browser, may require (or benefit from) different coding, the strategy described here should be generally and consistently useful.

Searching for Images on the World Wide Web
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An important part of the success of presentation software is the use of appropriate images to reinforce and clarify the lecture. Many commercial textbooks now include CD-ROMs that provide images that may be used for lectures, but these are not