COMPUTERS IN TEACHING

Using the World Wide Web to Teach Everyday Applications of Social Psychology

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The potential benefits of the World Wide Web (Web) in teaching college courses in psychology stem from the wealth of information available to instructors and students, the ease of access to that information, and the hypermedia richness of Web documents. In this article, I describe the introduction of the Web into an advanced course in social psychology using activities that entailed collaboration and knowledge sharing, direct experience with information in various formats, and manipulation of information into new forms. The activities included Web Assignments associated with assigned readings, a Social Psychology and Humor project, a Social Psychology in the News project, and the development of a Web Tutorial on a social psychological topic. I discuss both the strengths and weaknesses of using the Web in this context.

The World Wide Web (Web) is an exciting new tool for teaching college courses in psychology. The potential benefits of the Web stem from the wealth of information it makes available to instructors and students, the ease of access to that information, and the "hypermedia" richness of Web documents. However, instructors must take care in evaluating educational claims for the Web. Proponents of many technological innovations, including those who promote educational uses of the Web, often do not consider the possible practical difficulties and pitfalls of implementation, and they make recommendations without adequate assessment of the impact of new technologies. Indeed, some recent reports indicate that negative outcomes may occur if teachers do not pay careful attention to designing student experiences in web-oriented courses (Locatis & Weisberg, 1997; Rothenberg, 1997). In this article, I describe my experiences in introducing the Web into an advanced course in social psychology, and I attempt to evaluate the strengths and weaknesses of using the Web in this context.

Course Background and Context

Social psychology is a popular undergraduate topic at most institutions, and it is often a core element in the psychology curriculum. My department's course offerings are typical in this content area and consist of an introductory survey course, an advanced course that builds on the introductory content, and a collection of courses that focus on specific topics. Enrollments in the introductory course are typically 60 to 70 students, usually with multiple sections in a given term. Enrollments in the advanced and topically focused courses are smaller, ranging from 10 to 30 students. Given the experimental nature of the Advanced Social Psychology (ASP) course described here, the size of the class was at the low end of the range (10 students). However, there is nothing inherent in the principles employed that would prevent their use with larger classes.

The exact content and emphasis in the ASP course are left to the instructor and vary from term to term. For example, one offering of the course might emphasize cognitive approaches to social phenomena. Another might stress group interaction. A third might focus on cross-cultural comparisons. In the section of ASP I describe, the emphasis was on translating theoretical principles and empirical research findings into useful analytic tools for understanding everyday social events from a social psychological perspective. Although the applicability of social psychology to problems of living in a social world might seem obvious, my observation is that students often do not connect their academic or classroom knowledge to extracurricular life experiences (see also Duch, 1996; Wilson, 1994). My motivation was to explore ways of getting them to do so.

The common pedagogical approach in the ASP course is to emphasize reading and discussion of original source material, often accompanied by short reaction or analysis papers. Other typical elements include one or two topical presentations to the class, a major term paper that involves analysis and synthesis of literature research on a topic of the student's choosing, and two or three essay examinations.

Amplifying and Transforming Effects of Instructional Technology

In planning changes to the ASP course, it became immediately apparent that there were a number of ways to incorporate the Web, each with alternative implementations that seemed to have different possible effects on the structure and focus of the course. In discussing these changes, it is useful to consider two broad categories of potential impact that technological innovations can have (Kiesler, 1997). First, technology can *amplify* certain capabilities, functions, or processes that are already in place. For example, using the Web as an electronic bulletin board to post the course syllabus, reading assignments, copies of old exams, and other materials makes information more easily available to students than conventional means (handouts or library reserve materials).

However, technological innovations may also *transform* the way people function and interact, thus producing fundamental changes in their roles and relationships. In educational settings transformation may occur when computer-based learning technologies alter the traditional roles of student and teacher by shifting the focus from instructor-centered to student-centered activities (Collins, 1991; Locatis & Weisberg, 1997; Menges, 1994; Reinhardt, 1995). For example, in a traditional classroom setting the instructor controls the flow of information though lectures, selection of assigned readings, or other means. In a computer-mediated learning environment students are more likely to confront information directly, through activities involving electronic databases and interactive courseware. The role of the student in these activities shifts from recipient–consumer to producer–participant. Students "transform information from one medium to another, and they create new knowledge as a result of their interactions with teachers and other students" (Menges, 1994, p. 183). The role of the instructor is changed from controller of information to guide or coach—one who facilitates or assists students in sampling and interpreting material.

Amplifying Components in the ASP Course

I used the Web in ways that had both amplifying and transforming effects. Amplification followed from using the Web as a course organizational tool. I created a class website (http://miavx1.muohio.edu/~shermarc/p324.htmlx) that served as a repository of relevant course information that students could consult at any time. The site included the course syllabus and schedule, team assignments for various projects, exam questions, project instructions, and the class roster with e-mail addresses. It also included information that was unique to the Web aspect of the course, such as a collection of Web tools (links to search engines, online news sources, and several compendia of Internet resources relevant to psychology). Also unique were links relevant to the topics of the offline assigned readings. For example, links to the campaign pages of the 1996 presidential candidates and to political analyses of campaign developments accompanied the assigned reading on attitudes and persuasion (Petty, 1995).

There were two noteworthy aspects of using the Web in these ways. First, the centralization and electronic format of course information made it easy for students to access materials at any time and from many locations both on and off campus. Although the traditional method of placing materials on library reserve centralizes information, availability is restricted in time and place. Second, it was easy to add new information or to change existing material, and I could do both at any time and from a variety of locations. The medium gave me greater flexibility as an instructor because I did not have to distribute materials or make announcements during class meetings. For example, even though the class met on Tuesdays and Thursdays, I frequently posted information at other times, announcing during a preceding class meeting that I was going to do so. An unintended effect of these changes was that important course events frequently took place outside of the designated meeting time. Given students' tendency to isolate classroom experiences from other aspects of their lives, I regard the occurrence of class activities outside the regular meeting times as a positive move toward reducing that isolation.

Tranformational Components in the ASP Course

Beyond using the Web as an organizational tool, several features of my experimental introduction of the Web into the ASP course had more transformational effects and are therefore perhaps more interesting from a pedagogical point of view. These features involved Web activities that entailed, to varying degrees, collaboration and knowledge sharing, direct experience with information in various formats, and manipulation of information into new forms. The activities included Web Assignments associated with assigned readings, a Social Psychology and Humor project, a Social Psychology in the News project, and the development of a Web Tutorial on a social psychological topic.

Web Assignments

The Web Assignments directed students to explore Internet links relevant to social psychological principles contained in the assigned readings and then to answer online questionnaires about their experiences and observations. The starting point for each exploration was the collection of links for each reading assignment that I provided on the course website, and each questionnaire asked students to assess how the links illustrated specific principles. For example, in considering the topic of attitudes and persuasion, I asked students to compare the campaign web pages of then-Presidential candidates Dole and Clinton and evaluate the relative effectiveness of the pages in terms of persuasion principles discussed in the assigned readings. Another part of the same assignment directed students to the websites of political parties in other countries and asked them to interpret platform similarities and differences relative to current U.S. political campaign issues. The same assignment also included a more open-ended component in which I directed students to explore links that were not in the existing collection and to locate a website that they believed illustrated a particular persuasion principle. They specified the location of the site on their questionnaire and described their reasons for selecting it.

I compiled the questionnaire responses for each assignment and posted them on the course website. In the following class meeting, I gave a verbal summary of the responses and occasionally asked a student to amplify or clarify a response that I regarded as particularly interesting or insightful. Posting questionnaire responses to the Web allowed students to share their observations with each other and gave the assignments a social importance they would not have otherwise had—students knew that their observations would be public and would potentially impact the thinking of other students. Thus, although students worked on the Web independently, the assignment contained an implicit collaborative component.

Social Psychology and Humor

Many instructors, including myself, frequently attempt to illustrate principles and concepts by showing cartoons drawn

by professional artists. This technique can provide an interesting and entertaining introduction to a topic and can also serve as a convenient and memorable reference for subsequent discussions. I find, however, that cartoons that seem humorous to me do not necessarily produce the same reaction among undergraduates. To counter this problem, I randomly assigned students to teams and gave them the task of selecting a cartoon that they found humorous and relevant to social psychological principles, leading a class discussion of the cartoon, and producing a written analysis of the cartoon that I then published on the course website. The relevance of a selected cartoon could be in terms of how it illustrated some concept, theory, or line of inquiry or in terms of how certain concepts or principles were useful in understanding the emotional or intellectual impact of the cartoon.

Team members met at least three times outside class to complete their assignment. The first meeting was organizational, focusing on possible topics and sources of cartoons. At the second meeting students shared and discussed the cartoons they found, made a final selection, and planned their class presentation. I linked the cartoon to the course website, along with the team's suggestions to the rest of the class regarding ways to prepare for the upcoming discussion. At the final meeting the team produced their written analysis, which often included insights contributed by other class members during the general discussion.

Social Psychology in the News

A second team project involved selecting a current news event and analyzing it from a social psychological perspective. I again assigned students to teams randomly, with the constraint that the teams did not have students who were previously teammates on the humor project. As with the humor project, the team members met outside of class to evaluate possible topics, led an in-class discussion of their selection, and produced a written analysis that I posted on the course website. Prior to the class discussion, I posted the team's preliminary analysis of the topic for others in the class to examine. I exploited the availability of online news sources and other reference material in this project by encouraging the teams to include hypertext links in their preliminary and final analyses to give them depth and substance. This activity brought students into direct contact with information sources and provided opportunities for collaboratively evaluating and transforming the information they encountered. Deciding on which links to include and how to incorporate the links into the narrative required team members to think carefully about how their topic related to other events and concepts and required them to evaluate the usefulness and appropriateness of information sources on the Internet.

Another positive aspect of the Web component of the news project was that nonteam members who examined the preliminary analyses seemed motivated and informed by them and consequently contributed actively and effectively to the class discussions. For example, one team's analysis of the TWA Flight 800 crash of 1996 included links to personal backgrounds of the victims and to online causal theories that illustrated various aspects of counterfactual thinking and biased processing. Class members who examined these links saw an intimate connection between an emotion-charged event and specific social psychological principles that helped them understand the intensity of emotional reactions and the distortions in the ways observers and participants interpreted the event.

Development of Web Tutorials

By far the most challenging and rewarding aspect of incorporating the Web into the ASP course was the web tutorial project. I gave teams of students the task of developing a web-oriented tutorial on a social psychological topic of their choosing. Members of each team were not teammates for the other projects. The tutorial project was an ongoing activity for most of the semester and students completed it in stages, with each team providing progress reports for the rest of the class and receiving interim reactions and suggestions from other class members. I published the final versions of the tutorials on the course website with students identified as the authors.

My motivation for developing the tutorial project came from the fact that when I was planning the course I could find few examples of web tutorials in social psychology, whereas demonstrations and tutorials were available for other psychological topics, such as visual and auditory perception, learning and memory, and biopsychology.[1] It seemed to me that having students create social psychological tutorials would have a dual benefit of adding to the range of Internet resources in psychology and simultaneously challenging class members to apply their knowledge of social psychological principles in a way that would provide a positive educational experience for others.

One of the most challenging aspects of the tutorial project for me was providing students with enough structure and guidance to keep them focused and on track, while still maintaining the student-oriented nature of the project. A decision that I had to make early in the project, for example, was how much of the technical features of producing web documents students would have to learn. My assessment was that the focus of the project should be on the content of the topic, not on computer programming skills. Most students in the class had little prior experience with creating web documents, and although the language for producing web materials is not complex, learning it would have detracted from the substantive focus of the course. My solution was to act as the students' technical consultant—the teams provided me with the content and layout of their project, instructed me how they wished it to appear in web form, and I applied the necessary technical manipulations to produce the final result. This arrangement was certainly a transformation of the usual student and instructor roles in the sense that students directed my activities rather than the other way around. It also provided students experience with a common type of collabora-

[1]The following are examples of collections of tutorials and demonstrations in psychology: http://server.bmod.athabascau.ca/html/aupr/demos.htm; http://psych.hanover.edu/Krantz/tutor.html; http://psych.hanover.edu/APS/exponnet.html. Collections that contain material pertaining more to personality and social psychology include the following: http://sticky. usu.edu/~psycho101/cyb_social.html; http://www.wesleyan. edu:80/psyc/psyc260/; http://Miavx1.MUOhio.edu/~psy2cwis/webinfo. html.

tive work arrangement in which conceptualization and production are separate yet interdependent roles.

A second challenge was how to give the student teams structural parameters for the tutorial when there were no examples to show them. My solution was somewhat arbitrary and based only on my intuitive grasp of pedagogical theory, although it seemed to provide reasonable guidance for the students. The minimal requirements for the tutorial included an opening document with hypertext links to three subtopic pages. The opening document and each subtopic page were two to three manuscript pages long. Students wrote this material based on their research of the topic. The tutorial included a minimum of five references to original source material and at least four links to "external" Web sites, with the links distributed across at least two of the tutorial pages. Finally, the opening page and each subtopic page contained at least one graphical element (picture, diagram, chart, etc.) that students chose to illustrate, amplify, or clarify the text.

Evaluation

The amplifying and transforming aspects of using the Web had both positive and negative impacts on the course. On the negative side, the amount of time I spent in preparation for the ASP class was greater than for other courses. In part this increased time was due to the technological demands of the web components, particularly in preparing and maintaining web documents. In addition, some of the increase in time demand involved interacting with students outside of class as part of the "guide" and "coach" instructor role that the various individual and team projects entailed. Of course, it is likely that additional interaction would also occur with nonweb-oriented innovations that are student centered in other ways, and one could argue that additional time spent interacting with students outside of class is beneficial to both students and the instructor.

Another shortcoming of the Web orientation of the course was a tendency for the technology to overshadow content. As one student commented on the course evaluation, "I think that there might have been a little too much emphasis on using the Internet at the expense of information about social psychology." Another student gave a specific example of this problem when evaluating the educational benefit of the web tutorial project: "We spent more time looking for URLs [uniform resource locators—Web addresses] than learning about the concepts." These comments converge on my own assessment that at times I felt there was too much focus on procedure relative to substance. I note also that these comments provide retrospective support for my decision to serve as students' technical consultant for producing web documents, rather than having them learn the coding language to produce their own, because that would have devoted even more class time to technical matters.

These shortcomings may stem from the newness of the technology for most of the students, as revealed by a survey of the class taken during the first week of the semester. Forty-four percent of the class members indicated they had never used the Web in a college course, and another 33% reported using it in just one other course. Learning the basics of using web software and techniques for searching the Internet required going over computer procedures during class time and this necessarily reduced time available for discussing substantive topics related to social psychology. However, student familiarity with the Web is likely to grow quickly over the next few years, and the amount of technical instruction required will diminish. If so, future offerings of the course may avoid the problem of overemphasis of technology relative to substantive content.

Despite the limitations, I believe that the overall impact of incorporating the Web into the course was positive. My assessment is based on my own observations as well as the comments of students collected as part of the course evaluation and student responses to a questionnaire administered at the beginning of the semester and again at the end. Students seemed particularly motivated by the facts that their work was available for others to examine and that their projects might assist other students to learn about social psychology. For example, regarding the web tutorial project one student commented: "I felt I gained the most from this project because it can help others to learn." Other students focused on the accountability and authorship aspect of the web projects: "I think it's really cool to see my name on the Web—to know that my work exists there" and "by posting our answers to things on the Web, I found myself checking my answers because I knew the potential existed for others to see them."

These quotes illustrate that students perceived that the Web activities had changed the nature of their role from passive and private receivers of information to active and identifiable producers of material with potential impact on the educational experiences of other people. This awareness of the "transforming" quality of technology (Kiesler, 1997) may allow students to evaluate other technological innovations and educational experiences more critically.

There was also evidence that the web activities helped students develop skills in applying social psychological principles to everyday life experiences. A student whose web tutorial focused on persuasion principles in advertising commented: "I found this to be a positive experience because every time I see an advertisement I start to analyze it." To varying degrees the other projects also heightened students' awareness of links between social psychological concepts and everyday events. For example, several students emphasized the positive contribution of the news analysis project: "I learned about a lot of psychological principles behind many events taking place around the world." "I found it very educational in learning how to evaluate everyday things in a social psychological perspective." "The news analysis was very positive. The election year made it especially interesting" and "this was helpful in applying social psychology to everyday occurrences."

A final bit of relevant evidence comes from student responses to a question about the quality of their experiences in working with computers. Students expressed how positive or negative it was for them generally to work with computers on a scale ranging from 1 (*very negative*) to 6 (*very positive*). Although fairly positive at the beginning of the term ($M = 4.3$, $SD = 1.6$), the average sentiment was even more so at the end of the course ($M = 5.0$, $SD = .9$). An examination of the individual responses revealed that none of the students changed in the negative direction, and 50% changed one or more points in the positive direction. It is perhaps worth emphasizing that the question was quite general and not

explicitly restricted to the ASP course. Thus, the encouraging implication is that students may be willing to extend their positive experience with computer technology to other situations. As one student put it,

> On the first day of class I was scared after hearing about the extensive computer use, but now I realize how much better off I am with the knowledge. ... I know more about the Web than I ever thought I would. ... I think it will help a great deal in the future.

In summary, the experimental introduction of web components into the ASP course seems to have had three major outcomes. First, the web components engendered an overall positive response from students, as evidenced by their comments and questionnaire ratings. Second, the transforming aspects of the web activities were successful in heightening student motivation and involvement in the course. Third, the web projects were effective in achieving the course goal of increasing students' application of social psychological principles to everyday life experiences. Anyone contemplating similar kinds of activities should note the two primary shortcomings of using the Web in this context—increased demands on instructor time and an emphasis on procedural matters at the expense of substantive content. However, in this case these shortcomings were far outweighed by the positive aspects of using the Web as an educational tool.

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Notes

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2. Portions of this work were presented to the 27th Annual Meeting of the Society for Computers in Psychology, November 20, 1997, in Philadelphia.
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Forming and Testing Implicit Personality Theories in Cyberspace

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In this article, I describe an exercise for Social, Personality, and Introductory Psychology classes. In this exercise, students form implicit personality theories (IPTs) based on information provided by social psychologists on their internet home pages. As part of the exercise, students also compose a personal home page and describe the IPTs that are likely to emerge from the information they present. Students reported that the exercise was enjoyable and enhanced their understanding of the influence of IPTs on impression formation.

Through its rising popularity, the Internet is leading to a notable change in the nature of human interactions. In 1995, the number of people using the Internet was between 20 and 40 million, with the number of users growing rapidly (Lewis, 1995). Indeed, International Data Corporation (1996), a provider of market research, predicted that the total number of Internet users by the end of the decade will reach 163 million. The growing interest in the Internet is understandable: It offers instant and engaging access to information, resources, data-