Redesigning Web Design

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Dr. Mosley began her career at I.B.M. in conjunction with database management systems and statistical programming. While there, she started teaching as an adjunct at City College and decided that academia was where she truly wanted to be. Before moving to Pace, Dr. Mosley was a tenured assistant professor at Hostos Community College where she had been teaching full-time for eight years.

Dr. Mosley's research interests are in pedagogy, including such things as on the use of LEGO's for strengthening and extending problem-solving skills, managing writing across the curriculum (such as in Computer Programming II), detecting plagiarism in programs, and on approaches to introducing the object paradigm. Prior to shifting her attention to research, Dr. Mosley developed training manuals for organizations including Texaco, Pepsi, McGraw-Hill, and the Port Authority of New York.
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Abstract
Including service-learning into the Web curriculum offers teachers a powerful pedagogical strategy and encourages students to take an active role within their communities. This qualitative research study conducted in 2004 with Pace University students and the Greenburgh Central 7 School District explains what happens when teachers integrate service experiences into the Web curriculum. This paper discusses the effect of service experiences on teaching and learning. Furthermore, this paper describes how students react to and develop when this strategy is implemented.

Context and Background
Service-learning is now recognized as one of the keystones of the educational reform movement. It has been further defined as a teaching strategy that depends on reciprocal university-community partnerships. Service-learning provides an innovative pedagogical approach to realizing higher education’s civic responsibilities (Bringle, Games, & Malloy, 1999; Bringle, Hatcher, & Games, 1997). Stevens (2002) argued that service-learning, which combines a curriculum of learning with performing necessary services in the community, can be pivotal in the continuing need to build character, citizenship, and a sense of ethics. In 1983, Ernest Boyer for example, emphasized that the act of service introduces students to new people and new ideas. It further establishes, according to Boyer, connections between academics and society at large and is inherent to the mission of higher education (Vernon & Foster, 2002, p. 208).

Community visionaries are aware of the importance of building sustainable models that strengthen the community. At Johnson County Community College, community leaders were instrumental in defining and establishing a new graduation with Civic Honors program (Carlsen, Lindahl, & Lindahl, 2004). Graduation with Civic Honors is a simple idea: At the culmination of an academic career, a student received recognition for being well-rounded in academics and community service. The Pennsylvania State University, The Ohio State University, and the University of Wisconsin-Extension are documenting and sharing models of outreach scholarship in a partnership for change (Childers, Martin, Dann, Dufour, Bruns, & Wise 2002). These three universities are fostering leaders committed to (1) defining models of outreach scholarship, (2) building a network of leaders who can learn from each other, and (3) creating an outreach culture at their respective institutions. From the perspective of a multicultural and increasingly global society, higher education has a responsibility to help students develop a multifaceted character, proficient at dealing with various cultures (Rhoads, 2003).
Web development is a challenging area that is of increasing interest to students in information systems and other disciplines. It is necessary to complement classroom lectures with hands-on laboratory exercises to reinforce the material, but providing meaningful laboratory exercises is challenging. Although the benefits of service-learning are evident, and this experience is obviously something we want our students participating in, we often are challenged to justify why it should be integrated into Web design courses. This paper presents the results of a qualitative research study that explores the link between service-learning and Web design for a Web development course in the fall of 2004. In addition, this paper will also provide implications for faculty interested in facilitating learning through this teaching methodology.

Service-Learning at Pace University

Pace University interprets its mission of opportunitas as a mandate to collaborate across constituencies, both internal and external, to create an “engaged campus.” Hence, it is one of the only institutions in the nation to have, as a hallmark of its core curriculum, a civic engagement and public values component. This component requires all students to complete a three-credit core curriculum service-learning course before graduation. This course requires students to participate in an organized service activity that meets community-identified needs. Students reflect on their service activity in such a way as to increase their understanding and application of the course content and to enhance their sense of civic responsibility.

Normally, a service-learning course requires anywhere from ten to twenty hours of service with selected community-based organizations or schools. Faculty who teach service-learning courses have found that there are numerous benefits to extending the boundaries of the classroom into the community. One of the key benefits to using service-learning as a pedagogical tool is that this hands-on approach offers the student an opportunity to apply the material learned in the classroom immediately. The service experience elucidates the relevancy of the course content. The service opportunities seek to further the students’ civic education while providing skill development that is valuable for career preparation. Hence, service-learning is a complement to classroom learning. Service-learning can be a teaching tool that focuses on critical thinking, problem solving, project management, and civic and community responsibility.

Although the benefits of service-learning are evident and this experience is obviously something we want our students participating in, we often are challenged to justify why it should be integrated into Web design courses. This research seeks to explore the link between service-learning and Web development and present an approach of seamlessly integrating service-learning into the Web curricular
The Service-Learning Project

In the fall semester of 2004, thirty-four students were enrolled in the Web Design for Non-Profit Organizations (CIS 102W), a service-learning course. This was the second time the course was offered in our Technology Systems Department within the School of Computer Science and Information Systems. A service-learning project was designed and implemented. Of these thirty-four students, ten were liberal arts majors, six were marketing majors, three were English majors, seven were business majors, and eight were undecided. Three of the thirty-four students were graduating seniors. Eight were female, and twenty-six were male.

The course objectives were established for the students. By the end of the semester, students would be able to:

- Define a Web site mission and target user population
- Collect user requirements for a Web site
- Design an appropriate Web page and site
- Perform usability testing on a Web site
- Implement and manage a Web site successfully
- Describe the concept and experience of community service

The service-learning project requires at least 25 hours for the students to complete and can be split across a number of laboratory sessions. The design of the laboratory exercises considered the above pedagogical objectives. First, the laboratory sessions allowed students to explore issues in Web development with a user-centered approach and apply what was presented in the lectures and reading. Next, the lab sessions encouraged students to collectively solve design problems in creative ways. Lastly, these sessions encouraged student collaboration and project management skills.

Interaction and feedback are vital in improving the quality and success of learning with online components (Cornell & Martin, 1997). Consequently, a feedback mechanism was integrated into this course, enabling students to comment on class lectures, topics, and other concerns relevant to the instructional process. Use of multimedia materials, and an interactive discussion board provided a strong technological dimension to the course that kept the class connected even after class hours. Students rated this component as a strength of the course and stated that it facilitated collaborative efforts for their Web site development.
Research Methods

The service-learning project took students 25 to 45 hours (throughout the semester) and accounted for one-third of their final grade. Students were asked to self-select into groups of three or four based on class and work schedules and to select one of the five departments from the Greenburgh Central 7 School District to redesign. The instructor had previously met with organizational contacts and briefly described the project. Ten teams were formed consisting of six (three-member-teams) and four (four-member-teams), resulting in two teams developing each of the sites.

Table 1

Ten teams were formed to redesign the five Web sites at Greenburgh Central 7 School District

<table>
<thead>
<tr>
<th>Team</th>
<th>Site</th>
</tr>
</thead>
<tbody>
<tr>
<td>Team #1 (3 members)</td>
<td>PTA</td>
</tr>
<tr>
<td>Team #2 (3 members)</td>
<td>PTA</td>
</tr>
<tr>
<td>Team #3 (4 members)</td>
<td>Technology in Education Department</td>
</tr>
<tr>
<td>Team #4 (4 members)</td>
<td>Technology in Education Department</td>
</tr>
<tr>
<td>Team #5 (3 members)</td>
<td>Arts in Education Department</td>
</tr>
<tr>
<td>Team #6 (3 members)</td>
<td>Arts in Education Department</td>
</tr>
<tr>
<td>Team #7 (3 members)</td>
<td>School Choice Department</td>
</tr>
<tr>
<td>Team #8 (3 members)</td>
<td>School Choice Department</td>
</tr>
<tr>
<td>Team #9 (4 members)</td>
<td>Teacher Center</td>
</tr>
<tr>
<td>Team #10 (4 members)</td>
<td>Teacher Center</td>
</tr>
</tbody>
</table>

During the four weeks of design and information gathering, the Pace students would work within their respective teams in the design, layout, and prototyping of their site. In the fifth week of class, the clients came to the university to meet with the varying teams and to see the prototypes. During the next four weeks, the teams modified the site to incorporate the client's feedback, performed usability testing and analysis of the site, and prepared for their final presentation. In the tenth week of class, termed presentation week, the students presented their sites to the clients. The clients received the site on CD, a technical manual explaining how the site works, and a usability study. The clients were asked to provide feedback on each team's site and to select one which they will implement in the future. This information was emailed to the instructor to assist in grading purposes.

At the conclusion of the course, student and client participants were interviewed to explore their perceptions about service-learning. Students were asked to talk about their service-learning experience and discuss whether they felt it enhanced or hindered their learning Web development. Clients were asked to give feedback on their experience interacting with the students and the Web sites they received.
Reflections—The Student’s Perspective

By the end of the semester, all thirty-four students demonstrated knowledge of the course objectives. In addition to completing the service-learning project, all students were required to complete lab assignments that tested to see if they knew how to write a Web site mission statement and determine the site’s target user population. All the teams were able to successfully obtain the user requirements from the client.

Many students had reservations and outright fear of teaching others a subject they themselves had very little knowledge about. These fears were latent for many of the students. Over the course of the semester, their insights about Web development became clearer and confidence levels increased as they mastered the course content. Many students at the beginning of the semester objected to having to do community service. However, at the end of the semester, many of them made positive statements in regards to community service.

The Pace students achieved all of the learning outcomes via the service-learning experience. It is my belief that working with the client motivated them to take learning seriously since they knew that would be applying what they learned before the semester ended. Many of them went above and beyond the scope of this course, learning features on their own to enhance the site and "wow" the client. The two teams designing the same site enjoyed competing against each other, and this competitive environment stimulated and motivated them to excel in their Web designs. One of the Pace students commented, "This class competition really challenged me to work hard. I think our team worked really well together, and we have an excellent site to show for it."

Reflections—The Client’s Perspective

The partnership developed between Pace University and Greenburgh Central 7 School District provided an exchange of resources and talent as well as exposing students to new career choices. The students had an exciting time building the Web sites and having an impact on the community. Figure 1 and Figure 2 illustrate the major changes made to the PTA and Arts I Education sites. The Web site on the left-hand side in each figure is the original site; the site on the right-hand side is the new site redesigned by Pace University students. The students were very effective in redesigning and reorganizing the information. The new Web sites are colorful and have a user-friendly navigation scheme. Figure 1 uses a tabular and sidebar layout scheme, whereas Figure 2 uses a linked bar at the top and provides users with a selection panel on the right for navigation. Figure 2 also has a gallery section in which student artwork is presented by school. The top of this site has an animation of circles and lines created in Flash, which gives an artsy appeal to this site. Lastly, Figure 3 depicts a combination of navigation schemes. The site utilizes a tab approach which when clicked upon automatically changes the selection panel on the right-hand side.
Figure 1. Comparing the original and redesigned PTA Web sites.

Figure 2. Comparing the original and redesigned Arts in Education Web sites.

Figure 3. Comparing the original and redesigned Technology in Education Web sites.
Mr. Velez (the director of technology) was so impressed with the student Web site designs that he was vital in obtaining press coverage (The Yonkers Tribune and Westchester.com) for the students' work.

Implications

Including service-learning into the curriculum often demands a reconfiguration of traditional methods of learning and teaching. As with any new approach, the instructor has to make changes. This transformation in pedagogic methodology poses new challenges for instructors and students.

First, obtaining clients was our biggest challenge. Organizing and establishing the various service-learning partnerships required much preparation and screening. Next, finding community partners who had the ability to host their own Web site became problematic. We were not in a position to provide hosting services; thus, we selected those organizations that had servers. Presently, we are looking into obtaining a grant to provide hosting services for those clients who do not have the ability to do so. Lastly, we learned the importance of communicating the expectations of the course to the client at the onset of the project. In one instance, the service-learning experience had to be curtailed because the client wanted more than the students could produce within the semester timeframe. Hence, it is imperative that the client understands what the students will deliver to them at the conclusion of the experience. It is better to have this discussion at the beginning of the project. This way, misconceptions can be resolved before the project begins.

The four critical success factors needed to integrate service-learning seamlessly into a content course are: (1) teamwork, (2) communication, (3) student journal logs, and (4) use of project management tools. Teamwork was fundamental to the success of the teams. The project had too many tasks for one person or a dysfunctional team to achieve. Communication was vital to the Web site being accepted. In working with school administrators, faculty, and clients, the Pace University students had to be articulate in explaining their ideas and in conveying their Web knowledge. Journaling was an important aspect by which students were able to see a shift in their attitudes towards service. The journals were also instrumental in having a central repository of their interactions with the client in the event that something went awry. Project management software assisted the teams in completing the Web sites within the specified timeframe.
Conclusion

Those who have taught introductory Web design courses know how difficult it is to simulate a real-world setting for course projects. One major objective of these courses focuses on Web usability and all of the other human factors that relate to the user experience on the Web. It is a challenge to design projects that meet these objectives and at the same time provide useful experiences for students. Hypothetical case studies or innovative simulations cannot offer students the same experience as working in a real-world setting with real-world users.

Integrating service-learning into Web design courses has considerable potential. By working with real users, students have the experience of dealing with the political, social, and ethical problems that exist in a workplace. Through the service experiences, students discovered how Web design could empower a community and address digital-divide issues. Overall, this experience helped students understand the meaning of community, of reaching out to others via technology, and strengthened their sense of their technological abilities. The students felt that not only had they brought about change by developing a Web site, but also they had a better grasp on the Web development process from conception to implementation.

In summary, this course taught our students how to solve Web development problems using technology. They were presented with poorly designed Web sites, they were given Web software, and they were told to implement a solution. To help them comprehend what this work entailed, the service-learning aspect of this course presented them with real-world problems. This experience went beyond the textbook, classroom, and subject matter. Integrating service-learning into a Web design curricular not only produces Web designers but also educates them about realizing their responsibility to empower their communities with technology.
References


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