Abstract: Two graduate classes, from different academic programs, were brought together to work collaboratively on the design and development of a Web-Based Training project. The projects were problem-based and derived from students’ workplace situations. The classes were supported by a course management system that provided supplemental instruction, communication and file-sharing capabilities, as well as access to common resources and instructor guidance and feedback. Students met with their instructors weekly, and met for an hour of each class with their teams. They continued the team discourse via message boards, chats, and electronically shared documents, all within the course management system. This paper describes this experience and the impact the computer-supported learning environment had on the quality of student projects and recounts some of the stumbling blocks and successes.

Background

Currently, there are two courses being taught that deal with creating documents for the World Wide Web (WWW). One course is taught in the Information Systems (INFSY) curriculum and deals with the technical side of the Webpage in programming and markup languages including JavaScript and XML. The other course is taught in the Training & Development (T&D) program and deals with the effective design of Web-Based Training (WBT) and its application in the workplace. Each courses’ requirements included a team project consisting of detailed planning documents and an operational WBT site. The INFSY course required programming documents, while the T&D course required instructional analyses, objectives, and storyboards.

At the end of each semester, Student Evaluations of Teaching Effectiveness (SRTE) forms were completed by each student and the results reviewed. Responses to the written, open-ended questions indicated that students in the T&D design class, while satisfied with the design skill practice, would like to have more skill in the technical aspects of WBT and familiarity with the capabilities of Java, JavaScript, and XML to carry out their designs. Their designs were well-done, but their lack of technical skills prohibited them from fully developing the instructional website project they had designed. Projects in the INFSY course sometimes lacked the structure and organization necessary to be effective, although they utilized the programming languages skillfully.

The INFYS students lacked the instructional design background and the T&D students lacked the technical skills to create functional, professional quality websites. The student projects required by both courses were being evaluated on either technical skill or design, but not both, due to the scope of each course’s objectives. Since both design and development is critical to professional WBT, and there is currently no single course that would provide student competency in both, the students become proficient on only one level. Would this be a good application of collaborative learning?

In searching for related research specifically focused on higher education, one study were identified dealing with the effects of collaborative activities on a group of undergraduate students’ tolerance toward diversity.
Another study investigated cooperative groups of college physics students working on solving problems in groups (Heller, 1992), but no research was identified that investigated cross-discipline teams in computer-related courses, working on a collaborative project. This study is intended to evaluate the factors affecting the success of that cross-discipline collaborative project activity among graduate students.

If the INFSY students were exposed to good design practices and the T&D students learn some of the capabilities of Web programming, the student experience would be more complete and result in better WBT sites. The collaborative nature of participation on a design and development team allows for peer tutoring opportunities across disciplines and the synergy should result in a better product. It was hypothesized that students would benefit from working collaboratively on a Web-based Training (WBT) project, but some students like team projects and others prefer working alone. Would required participation on a collaborative project put any students at risk?

The Study

The instructors of the two courses worked out a mutually acceptable semester schedule which included separate instructional times along with joint sessions for the collaborative teams to work. Since the students initially lacked the skills to produce the project, the first half of the semester was spent primarily in instruction. The 36 students participating in the study (24 INFSY and 12 T&D students) were introduced to the course management system and to their team members early on. There were five teams with 5 to 9 members on each team. There were at least two T&D students on each team and the teams were mixed in gender. They were instructed to discuss with their team members possible training problems for which they might design and develop the WBT. As the semester progressed and their skills increased, students met with their teams more frequently and for a larger portion of the class session to design and develop these WBT solutions.

The course management system was utilized to create a learning environment where students could communicate through message boards and chats, as well as e-mail to teams, individuals, or groups of individuals. The system allowed the instructor to assign teams and set up the team communications. Students utilized the team file manager most. There, they could upload design and web documents to a common team area accessible only to instructors and members of that team. They were constantly receiving feedback from team members, peers, and instructors through one of these communication conduits.

Results

At the end of the course, the students were asked to complete an online satisfaction survey in addition to the usual SRTEs. The survey was a Likert scale assessment tool of 21 statements where students were asked to rate their own contributions or those of their project partners on issues such as attitude, amount of work completed, correction of errors, level of participation, degree of knowledge, organizational skills, and willingness to participate in another collaborative WBT project with those team members. Of the 14 females and 22 males participating, 50% reported having a Very Strong relationship with their project team members and the same number responded that the work done by their partners on the project was done fairly accurately. In general, they were pleased with the amount of work (61% Very Strong) and attitude toward the work of project partners (55% Very Strong, 25% Strong).

There were mixed responses regarding issues such as technical competency of their project partners (47% responded Very Strong, 42 % Strong, 6% Neutral, 3% Weak) and the reliability of project partners ( 44% very good, 36% good, 14% neutral, 6%poor). Communication with the team was a problem with only 36% reporting the communication as Very Strong, and 31% reported Strong communications (14% Neutral, 17% Weak, 3% Very Weak).

In addition to the survey, the students made a presentation to the combined classes, demonstrating their final projects. Each project was graded once by each instructor, using the same criteria used for the projects completed when the courses did not collaborate. The INFSY instructor evaluated the programming and technical aspects, while the T&D instructor evaluated the instructional design aspects and the use of principles of screen design. The quality of the projects was very good They followed a more intuitive course and demonstrated a logical application of Web conventions to facilitate learning. Students felt that they had a better
grasp of the whole process and that, although exasperating at times, the cross-discipline team experience was valuable in learning a broader approach to instructional Website design and development.

Conclusions

The survey results and comments reflected that students felt that the final project was better for the teamwork, but that working with a team could be very frustrating. Many cited problems with scheduling time together, communications, poor turn-around time of partners, poor corrections of errors by partners, and poor flexibility. In spite of this, they felt that their project partners were fairly technically competent, fairly accurate in their work, completed the work assigned them, had good attitudes and did their share of the work.

The students also felt that they could not have accomplished as much as they did without the supporting elements of the course management system. The instructors were able to track students’ logins and course management system usage. Most of the students used all the communications conduits at one point or another and liked the ability to share documents the best. They would post a design or programming document and get feedback or modification suggestions from their team members, make the changes, and post again within a short amount of time. The course management system allowed them to work together at a distance and continue the dialog begun in class, getting peer as well as instructor guidance.

While the collaborative project activity was successful, student support provided by the course management system facilitated the process and allowed student to learn from one another. It encouraged an ongoing dialog among the team members and sustained the creative endeavor.

References
