

Collaborative Learning Experiences in Online Instructional Design Courses

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Abstract

Few universities are currently offering an online course with collaborative learning component in Instructional Design. This study shared information on an on-going evaluation of online Instructional Design courses from 94 graduate students who have taken this course, hoping to find out the most effective way to deliver similar courses. This research focused on how effectively the instructor integrated various functions of Blackboard and other teaching and managing strategies into the online course. Findings on students' attitudes toward this course and strategies for building online collaborative learning communities from both the students' and instructor's points of view were discussed and explored.

Introduction

Effective learning is not simply about the transfer of knowledge but about developing skills for life-long learning (Vargo, 1997). Although learning can take place in any environment, Ramsden (1992) suggested that effective education is based on deep learning that is learner-centered, active, and in context. Web-based courses claim to have moved learning from instructor-centered to learner-centered approaches and require learners to be self-disciplined to maximize their learning.

Distance education has developed dramatically during the past few years through the application of learning theory to the delivery of materials. Baker (1995) indicated that interaction is important for a variety of learning types, level of learning satisfaction, and persistence. Interaction is central to the expectations of teachers and learners in distance education and is a primary goal of the educational process (Berge, 2002). However, students perceived too much interaction as frustrating busy work, whereas too little interaction might cause isolation (Berge, 1999).

According to Moore (2003), there are four types of interaction identified in the literature: learner-content interaction, learner-instructor interaction, learner-learner interaction, and learner-interface interaction. This research study investigated all four types of interaction in online courses but specifically focused on the third type of interaction: Learner-learner interaction. In a study conducted by Northrup (2002), it was found that participants liked to discuss ideas and concepts as well as to share information with their peers. Participants considered promoting online collaboration and conversation an important attribute of distance learning.

Traditional pedagogical approaches in education have decontextualized knowledge and skills to real-world application (McLoughlin, 2002). Candy, Crebert, and O'Leary (1994) underscored that university education should develop a capacity for and understanding of teamwork along with critical thinking. This situation calls for educators to develop activities that support group collaboration (Bennett, 2004). Working collaboratively helps students to take into consideration different perspectives while building a deep understanding. It also reflects how people work in real-world contexts and how practitioners share knowledge within a community (Brown, Collins, & Duguid, 1989; Duffy & Cunningham, 1996; Lave & Wenger, 1991).

Collaborative learning refers to an instructional method in which small groups of learners mutually engage in the learning environment to accomplish a shared goal (Abrami & Bures, 1996; Bruffee, 1993; Murphy, Cifuentes, & Shih, 2001; Tu & Corry, 2002). Collaboration should at least contain sharing the learning tasks, combining expertise, knowledge, and skills, and building a learning community (Bernard, Rojo de Rubalcava, & St-Pierre, 2000; Slavin, 1995). The advantages of collaborative learning include the encouragement of active and constructive learning, deep processing of information, critical thinking, and goal-based learning (Bernard et al., 2000). Slavin (1995) asserted that collaborative learning enhances the opportunity to combine expertise, share knowledge and skills, and build a learning community. Despite these benefits and the massive literature base advocating collaborative learning, researchers have pointed out that

collaborative groups frequently do not work well (Salomon, 1992).

Online collaboration can be defined as the collaborative learning that takes place in a distance-learning environment. A critical factor to the success of online collaboration is the feeling of learners being engaged in a leaning community (Yang, 2002). Hasler-Waters and Napier (2002) contended that receiving support, getting acquainted, establishing communication, building trust, and getting organized are elements that foster successful online teams. Although online group collaboration can generate new knowledge, attitudes, and behaviors, it requires significantly more time and effort than traditional learning (Kulp, 1999).

Previous studies revealed both positive and negative student perspectives toward online collaborative learning. Students expressed that their communication skills and problem-solving skills were improved through online collaboration (Yang, 2002). In Kitchen and McDougall's study (1999), students reported enjoying the convenience and opportunity to collaborate online. However, some described their dissatisfaction regarding the instructional strategies and the delivery methods. Research also disclosed that learners tend to resist group collaboration because the outcomes depend on the input of other group members (Ko & Rossen, 2001).

Instructional Design is a compulsory course for graduate students in the field of Educational Technology, unanimously regarded as one of the most difficult courses. Students typically learn how to design an instructional lesson or module. From creating initial design documents to the ultimate actual lessons, it is not uncommon to hear students complaining how confusing the whole process is. In fall 2001, a university in the mid-western area of the United States offered this course online for the first time, using a delivery platform called Blackboard. The Blackboard program used to deliver online Instructional Design courses provided web-based tools that made communication and other collaborative exercises easier for online teachers and students.

There has been limited research that reports student perceptions and attitudes toward their online collaboration experiences as well as what factors students consider crucial in an online learning environment. What exists has mostly focused on student perspectives with their online learning experiences. This research intended to examine online collaborating learning experiences from students' point of view to provide a basis for evaluating the effectiveness of online instructional design courses and to provide suggestions and strategies that instructors could implement in their online courses. The following research questions were addressed:

1. What were student perceptions and attitudes toward taking an online course in instructional design?
2. What were student attitudes toward working in a collaborative setting in the online environment?
3. What elements did students consider critical for a successful online course?

Method

Subjects

The subjects were 94 mid-western graduate students enrolled in an online course in Instructional Design. Data were collected between the years of 2002 to 2004. Eighty percent of the subjects were either majoring in Educational Technology or Educational media. Sixty four females and 30 males participated. Eighty of the students were American and 14 were international. Less than five percent of these students had experience with taking completely online courses.

Online Course Format

The instructor delivered this course using a web-based course management system called Blackboard. The interface of Blackboard is shown in Figure 1. For important announcements, the instructor would post each announcement under the "Announcements" function as well as email the same announcement to each student in case students failed to login in Blackboard that day. To remind students of course objectives, activities, and requirements, a course syllabus was posted under the "Syllabus" function. To create online communities among students, the instructor asked students to email their biographies and pictures to the instructor before the end of the first week. The instructor posted each student's biography, picture, and contact information under "Faculty Information" function and encourage students to view other students' information on Blackboard and contact each other.

To keep students on task, the instructor used the "Assignments" function to post information and inform student what weekly activities and readings should be completed. To encourage interaction and build an online community, the "Communication", "Chat" and "Discussion Board" functions offer common places for the instructor and students to post questions and share ideas with each other.

To offer information other than readings from a required textbook, the instructor also developed weekly mini-lectures that synthesized important textbook information. These mini-lessons as well as examples of design documents and self-paced lessons were posted in a "Course Material" function. For additional

information that related to a specific topic, the instructor would post supporting web links under the “Web Sites” function. The instructor also posted the grade for each assignment under the “Student Tool” function to allow students to check grades online.

To encourage collaboration and increase interaction among students in this online course, the students were asked to form groups of three and to send the names of their group members to the instructor by the end of the second week. For students who did not send names, the instructor would randomly assign three people to form a group. Each group would then decide on a topic of interest and create a design document and self-paced lesson for that particular topic throughout the semester. The instructor used the “Groups” function and placed those students together as one group. From there, group members had access to participating in a synchronous group chat room, posting messages under the group discussion board, sending email to selected group members or the whole group, and posting assignments via file exchange. In order to encourage equal contribution among students, all students were informed in the beginning of the semester that instructor, self, and peer evaluation would be counted as 20 percent of their final grade.

In the process of creating a design document of the chosen topic, each group was required to work on the draft design document for three assignments. The first assignment covered needs assessment, learner analysis, contextual analysis, and task analysis. The second assignment contained instructional objectives, questions and feedback. The third assignment included instructional sequencing, instructional strategies, and message design. Each group would provide feedback to and receive feedback from their group members, revise their first drafts based on the peer feedback, and post their revised drafts online via file exchange under the “Groups” function. Posting assignments on the file exchange allowed the group members and the instructor to access documents for reading. Following the posting of these drafts, the instructor would look over the revised draft of the assignment that each group produced and provide feedback to each group. Students would then modify drafts based on the instructor’s feedback.

The same procedures were repeated for each assignment and students would compile all revised assignments together into a final design document. After all sections of the design process were covered, students would develop a self-paced lesson based on the design document that they had been developing. Students would then conduct a formative evaluation to test the draft of the self-paced lesson to its target audience and write up an evaluation report. Students would then use the evaluation results and learner feedback to revise their self-paced lessons and design documents. Finally, students submitted the final version of the design document and self-paced lesson during the last week of the semester.

Materials

During the last week of each semester, students completed a 20-item Student Attitude Survey designed for this study to indicate their attitudes toward the online learning environment and their general attitudes toward this course. These items were 5-point Likert-scale items that ranged from 1 (strongly disagree) to 5 (strongly agree). The KR-20 reliability coefficient for the 20 Likert-type items was .87.

The second part of the survey was comprised of five open-ended questions dealing with student perceptions toward online learning environment, online collaborated setting, working on group projects, and suggestions on the important elements that a successful online course should comprise. These questions were: 1. What did you like most about the online setting? 2. What did you like least about the online setting? 3. Did you like or dislike learning in an online collaborative setting? Why or why not? 4. Do you think you would have learned more in this class if you had done your project alone?, and 5. You have just lived through a fully online course. In your opinion, what do you consider as a successful online course? What elements should be there?

Procedure

Data was collected from the Student Attitude Survey across five semesters of a graduate level instructional design course. In these full-semester courses students worked in small groups to collaboratively create instructional units. The process of teaching this online course has been observed and recorded in detail by the first author. The Student Attitude Survey was sent out as an email attachment to students during the final week of the each semester. All participants filled out the 20-item Student Attitude Survey and responded to five open-ended questions and sent their responses as an email attachment to their instructor by the last day of the semester.

Data Analysis

From the Student Attitude Survey, student responses were calculated and ranked for each survey item. From the five open-ended questions, a thematic analysis was conducted to identify emerging themes and patterns for

responses of each question. Furthermore, the recurring responses were categorized and counted and provide the framework for discussion.

Results

Student Attitude Survey

The means and standard deviations for the 20-item Student Attitude Survey were calculated and reported in Table 1. The overall mean score across the Student Attitude Survey items was 3.86, a rating indicating agreement with positive statements about this course. The five highest-rated statements on the survey were “I like the mini-lectures provided by the instructors” ($M = 4.43$, $SD = .65$), “I liked the File Exchange function on Blackboard” ($M = 4.42$, $SD = .66$), “I like to see the short biography of my instructors and classmates on Blackboard” ($M = 4.40$, $SD = .66$), “I liked the Announcement function on Blackboard” ($M = 4.39$, $SD = .66$), and “I liked the feedback that my instructors provided” ($M = 4.32$, $SD = .69$). The five lowest-rated statements were “This course was easy” ($M = 2.20$, $SD = .91$), “I liked the textbook that we used in this course” ($M = 3.41$, $SD = .92$), “I liked the group format in this course” ($M = 3.45$, $SD = 1.31$), “I liked the online environment of the course” ($M = 3.46$, $SD = 1.19$), and “I would take this course as an online course again” ($M = 3.52$, $SD = 1.26$).

Table 1 *Student Attitude Survey Scores*

Statement	<i>M</i>	<i>SD</i>
1. I liked the mini-lectures provided by the instructors.	4.43	.65
2. I liked the File Exchange function on Blackboard.	4.42	.66
3. I like to see the short biography of my instructors and classmates on Blackboard.	4.40	.66
4. I liked the Announcement function on Blackboard.	4.39	.66
5. I liked the feedback that my instructors provided.	4.32	.69
6. I like to see pictures of my instructors and classmates on Blackboard.	4.27	.72
7. I learned a lot from this course.	4.11	.77
8. I like to receive feedback from my group members.	4.09	.86
9. I would like to meet with my instructors and classmates face-to-face some day.	4.06	.89
10. The grading was fair in this course.	3.99	.80
11. I liked this course.	3.97	.89
12. I spent more time working on this course than my other courses.	3.76	1.02
13. I like to provide feedback to my group members.	3.68	1.05
14. The amount of the work required was fair.	3.65	.90
15. I would recommend this online course to others.	3.53	1.13
16. I would take this course as an online course again.	3.52	1.26
17. I liked the online environment of the course.	3.46	1.19

18. I liked the group format in this course.	3.45	1.31
19. I liked the textbook that we used in this course.	3.41	.92
20. This course was easy.	2.20	.91
Total	3.86	.49

Note. Responses ranged from 1 (Strongly Disagree) to 5 (Strongly Agree).

Attitudes Toward Online Course (Likes and Dislikes)

When asked what students liked most about this online course, flexibility, convenience, easy communication, semi-constructive nature of the course, group member and instructor feedback, weekly mini-lectures, project examples, face-to-face meetings with group members, and studying at their own pace were the what they liked the most about this course. They also liked the fact that instructors posted each student's picture and biography on Blackboard in order for them to know each other and to cultivate an online community.

When asked what students liked least about this course, some of them indicated lack of immediate interaction and feedback, isolation during the learning process, the fact that some group members failed to provide constructive feedback on time, coordinating with group members, technical difficulties, the textbook, and inadequate computer knowledge diminished their enjoyment of this course. They also expressed that they missed the active class atmosphere where they were able to raise questions in class to discuss with classmates and instructors.

Attitudes Toward Online Collaborated Setting (Likes and Dislikes)

When students were asked whether they liked or disliked learning in an online collaborated setting, 32 students (34%) liked learning in an online collaborated setting, 47 students (47%) disliked learning in an online collaborated setting, and 14 students (16%) had mixed feelings.

Students who liked learning in an online collaborative setting appreciated having group members that they could bounce ideas with and having opportunities to provide and receive feedback from others. In that way, they felt that they were "forced" and had responsibilities to read the chapters and course materials thoroughly so they could provide constructive feedback to their group members. Some positive comments from students regarding learning in an online collaborated setting were:

I really enjoyed working with partners as we bounced ideas and feedback off of each other to create, what I feel, is a quality project. We worked well together and came up with ideas we could not have if we were working independently. Our willingness to work together, combining our resources, greatly helped our overall product.

The collaborative piece of this of this course was critical to avoid total frustration and annoyance. Initially, I found the information and language very confusing. With a group to bounce off of, it didn't feel quite so hopeless. The exchange of ideas led us to a much better product than any of us would have created alone. Also, this approach mimics team teaching which is the environment most of us inhabit in our schools making it more authentic.

For those students who disliked learning in an online collaborated setting, some of their reasons were the ineffective and inefficient communication, uneven workloads and efforts, difficulty adjusting to each other's schedules, the time consuming nature of the class, and arguing with group members on ideas. Some negative comments from students regarding learning in an online collaborated setting were:

I normally work very well in groups and enjoy the group setting. However, it is very hard to be in a group with complete strangers just over the Internet. I felt at times that I was doing most of the work and they weren't putting as much effort into the project as I was.... Communication was also difficult because I couldn't explain my ideas in the way that I would have been if we were to meet face to face. The whole process was very frustrating!

I liked the online setting, but disliked the collaboration. If you are teamed with people who are shooting for a 'B' or just to pass the class, it is difficult to get an 'A' for a group assignment without taking on the majority of the work. I feel that I shouldered the vast majority of the work for the group. In this way, this online class was

far more work than a traditional class. I do not know how I would feel if it was an online, non-collaborative class. It is hard to distribute the work evenly in an online class...

Some comments from students with mixed feelings regarding learning in an online collaborated setting were:

I dislike having to rely on others (and their schedules) to complete assignments, especially when it impacted my schedule and my grades. On the other hand, I do like getting feedback from others and being able to work at my own pace at times that are convenient for me.

I must admit, at first I absolutely hated it. (I know that's a strong word, but I did.) If the course had not been a requirement, I would have dropped it. Communication felt exasperating. But with time, and getting to know my teammates, it got easier. We worked out the kinks. I had great teammates. (I don't believe that is always the case.) When one of us was stuck, one always came through. (I can't imagine what this would be like if there was someone not doing their part!) Now, I miss them. I wrote them yesterday to tell them I thought I was having ID withdrawals!

Attitudes Toward Online Collaborated Learning

When asked whether students would have learned more in this class if they had done their project alone, 70 students (75%) said "No", 14 students (15%) indicated "Yes", and 10 students (11%) kept their opinion as neutral. From student responses, we also discovered that in order for students working well in groups in an online collaborative setting, the five Cs (Communicate, Cooperate, Compromise, Compliment, and Commitment) need to be included.

The first C is to *Communicate* and students mentioned, "We instantly established a routine that was very focused on the task at hand; we were able to be honest in working with each other and truly developed a cordial, often fun working relationship." and "...by having to work with others, I had to exercise people skills and learn to get along and say things in persuasive rather than confrontive ways..."

The second C is to *Cooperate* and students expressed, "It's always great to have someone else be the sounding board, especially when they have just as much ownership in the assignment.", "Having group ideas and a checks and balance system really worked well. I learned more hashing out the details with my group than I would have on my own.", and "I really feel our final product was better for the added insights and creativity of three minds instead of one.... I think each of us benefited from the camaraderie we experienced, and the support."

The third C is to *Compromise* and students stated, "It meant compromise, especially in the area of topic selection as we all had our own content we wanted to deal with..." and "I think being forced together in a group, not of our own choosing, best simulated the business environment. We were forced to cooperate, compromise and communicate with each other in a way that working alone would not allow."

The fourth C is to *Compliment* each other and students indicated, "We all really complimented each other. I must admit I was stuck two times while doing this project. One of the other teammates got the ball rolling and I think they would say the same thing about me at times when they were stuck.", "We had strengths that complimented each other, so we got to see the whole picture and fill in the gaps", and "...when working in a group you can draw on the strengths of the individual group members. In our group one member was a better writer, one had more experience with power point, etc. Plus we could all draw from personal experiences."

The fifth C is to *Commit* to the team and student commented, "...having members that work as hard as you and are as committed makes all the difference" and "Having the advantage of each teammate contributing his/her different perspectives for the project was terrific. Moreover, we supported each other both academically and emotionally, since taking an on-line course was very challenging to us novices."

Critical Elements in an Online Course

When asked about what students considered as critical elements in a successful online course, their top ten comments included: 1. Frequent instructor-to-student and peer-to-peer communication (55%), 2. Clear objectives, materials, and course outlines (33%), 3. Useful mini-lectures (20%), 4. Strong instructor support (18%), 5. Opportunities to access and view previous project examples (18%), 6. User-friendly features on Blackboard (12%), 7. Superior organizational skills (12%), 8. Just in time resources (11%), 9. Proficiencies in technology (10%), and 10. Periodic online discussion (10%). In addition, posting pictures and bios of students and faculty, clarifying project deadlines, mastering better self-regulation and self-efficacy traits, and having the

opportunity to see other groups' projects (> 7%) were important attributes that student considered as crucial elements in a successful online course.

Discussion

This research focused on how effectively the instructor integrated various functions of Blackboard and other teaching and managing strategies into an online course in Instructional Design. Findings on students' attitudes toward this course and strategies for building online collaborative learning communities from both the students' and instructor's points of view were discussed. Although many of the findings are similar to previous studies, less frequently observed in the literature are the actual comments that indicate a dislike of group activity while admitting the importance of it.

According to Simoff and Maher (1997), a successful online learning course depends on (1) delivering course materials to students in time and (2) providing effective communication between students and instructors. The instructor in this course concurred with this statement and posted timely mini-lectures and project examples. The instructor also incorporated online group activities to encourage communication between students (peer feedback) and instructors (instructor feedback) via announcement, email, discussion board, file exchange, and chat functions. Interestingly, the students also ranked the "I like the mini-lectures provided by the instructors" and "I liked the File Exchange function on Blackboard" as the two highest-rated items on the Student Attitude Survey.

Similar to other research findings (Hiltz, 1998; Howland & Moore, 1998; Yang 2002), our results indicate that convenience, flexibility, and easy communication were common themes in the positive student responses regarding the online setting while communication difficulties, lack of face-to-face interaction, and sense of isolation were the overriding negative themes regarding the online setting.

When asked whether students liked or disliked learning in an online collaborative setting, different opinions were noted. Half of students (50%) indicated they disliked learning in an online collaborative setting while one third of students (34%) held opposite opinions. The finding that 50 percent of students disliked the collaborative setting corresponds with the statement of "I liked the group format in this course" on the Student Attitude Survey ($M = 3.45$) that was rated as the third lowest items on the Student Attitude Survey. Contrarily, when asked whether students would have learned more in this class if they had done their project individually, three out of four students (75%) felt that the collaborative environment produced greater learning. Such findings emphasize the usefulness and importance of online collaborative learning.

From student reactions to the fourth open-ended question, we find that the five Cs: Communicate, Cooperate, Compromise, Compliment, and Commitment need to be incorporated within the group setting so group members can have better working relationship with each other to produce quality projects and greater learning in an online collaborative environment. From their responses to the last open-ended question, we also identified the top ten critical elements that students considered in a successful online course. Overall, students concurred that a solid course structure (the ten critical elements), as well as encouraging and supporting collaborative project development (the 5 Cs), leads to effective learning and better quality of the final project. We have provided a model for online collaborative learning plans as shown in Figure 1.

Distance learning is gaining in popularity because of the convenience it brings and many academic institutions place more and more emphasis on developing online learning. However, the preparation for teaching online classes takes time, detailed thought, lots of patience, and adequate computer and communication skills. When designing the online teaching materials, instructors have to take interaction and collaboration into consideration and encourage interaction and support communal scaffolding throughout the collaboration process. Hopefully, such acts will motivate students in the online collaboration process and will make the collaboration a worthwhile learning experience for them.

The results of the study have practical significance for helping the department in which this study was conducted. Guidelines are offered for instructors planning to implement online collaborative learning components as well as students required to work collaboratively in the online environment. Furthermore, it may help the instructor to have a more systematic understanding of the pedagogical, technological, and administrative approaches to distance learning. Future research can explore various online teaching strategies to help student work well collaboratively and produce better outcomes in an online learning environment.

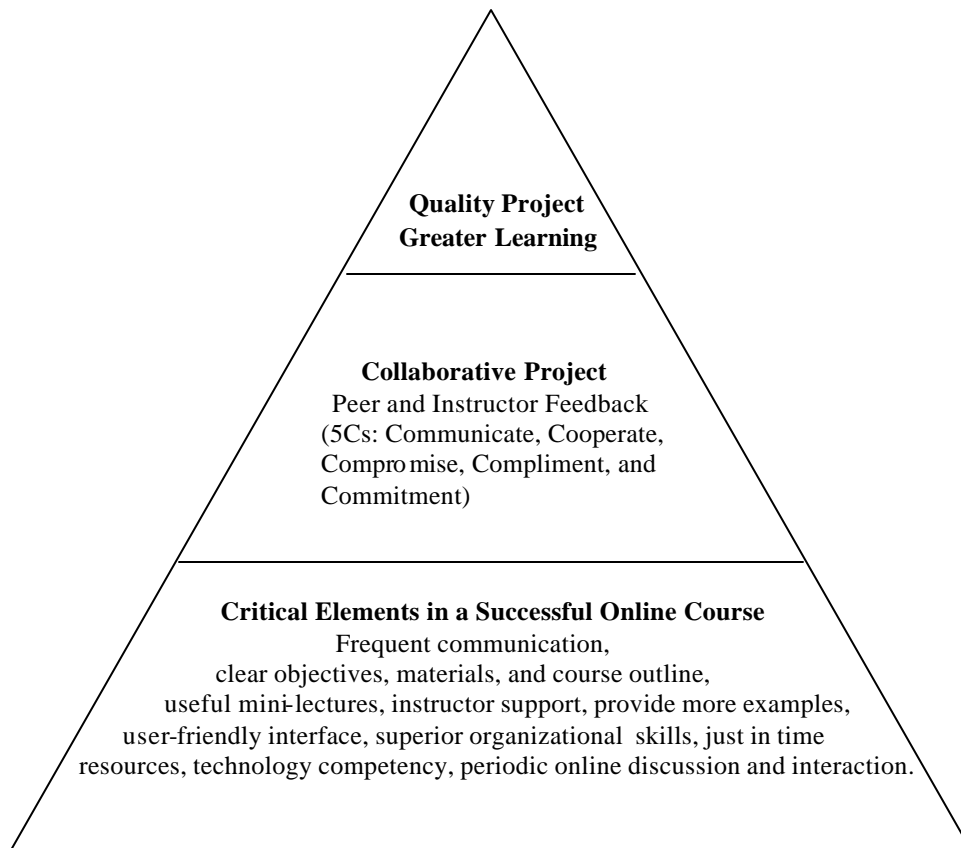


Figure 1. Online collaborative learning model.

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