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Student Perceptions of Group Work in an Online Course: Benefits and Challenges

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Abstract

Online group work is becoming an increasingly popular instructional strategy. Although researchers have questioned the benefits of group work in online learning environments, little empirical research has examined the challenges it presents. The purpose of this study was to investigate the experiences of students involved in online group work to explore its benefits and challenges. The findings indicated that most learners found that building familiarity with group members, receiving instructors' prompt feedback, and managing time effectively were beneficial. Challenges resulted from difficulties communicating, misunderstanding of course goals, and a perceived lack of sense of community. Suggestions for addressing these challenges are provided.

Résumé

Le travail de groupe en ligne devient une stratégie pédagogique de plus en plus populaire. Même si les chercheurs remettent en cause les bénéfices du travail de groupe dans les environnements d'apprentissage en ligne, peu de recherche empirique a été faite sur les défis qu'il présente. Le but de cette étude était d'investiguer les expériences d'étudiants impliqués dans le travail de groupe en ligne, pour explorer ses bénéfices et ses défis. Les résultats indiquent que la plupart des apprenants trouvent que construire la familiarité avec les membres du groupe, recevoir de la rétroaction de l'enseignant rapidement, et gérer le temps efficacement étaient bénéfiques. Les défis se situaient dans les difficultés de communication, les malentendus à propos des buts du cours, et un manque perçu de sens de la communauté. Des suggestions pour répondre à ces défis sont offertes.

Introduction

Online learning is a popular delivery method for teaching and learning in higher education settings. The number of students in the U.S. enrolled in distance education courses offered by degree-granting postsecondary institutions increased from 1.6 million in the fall 2002 to 3.5 million by the fall 2006 (Allen & Seaman, 2007). As in face-to-face learning environments, online learning environments are designed in a variety of

ways using many strategies to meet the needs of the students. For example, students in online courses are asked to complete work individually as well as to complete projects in groups.

Online group work is an instructional strategy that is becoming increasingly popular (Bonk, Lee, Liu, & Su, 2007). Online group work is defined as students working together as a small group, "executing simultaneous, collaborative work processes through electronic media without regard to geographic location" (Chinowsky & Rojas, 2003: 89). The group work that takes place in online courses thus ranges from participation on a discussion board to working in small groups as part of the learning process. Students in a small group may also work with other students to complete a group project, such as writing a paper or developing a product through discussion, negotiation, and feedback in an online learning environment.

Scholars have stressed the need to take a closer look at group interaction in online learning environments in order to promote effective interaction (Driver, 2002). However, few studies have examined the challenges of group work from a student perspective. Therefore, to improve our practice, we need to expand our knowledge of what students find challenging, as well as beneficial, about group work in online settings.

The purpose of this study was to investigate the students' perceptions of their group work experiences in an online course in a formal learning context. We also sought to identify strategies that can be implemented to assist students in completing group work online. In this paper, we report the results of our study. We begin by describing some of the literature that guided the study. Next, we present the methods used, including participant information, the context for the study, data collection, and data analysis. We conclude with a discussion of the findings and implications for future research and practice.

Literature Review

In this section, we review some of the reported benefits and challenges of group work in an online course, the strengths of an online learning environment, the weaknesses of an online learning environment, how these factors might affect student group work in an online class, as well as what factors impact student satisfaction with online group work.

Benefits and Challenges of Online Group Work

Some of the literature related to online learning indicates that group work in online classes is beneficial because it enables learners to develop higher order and critical thinking skills as well as to build knowledge and

meaning (Conrad & Donaldson, 2004; Palloff & Pratt, 2005). However, other researchers have reported that online group work may be perceived by students as more challenging than group work in face-to-face settings (Graham, 2002; Häkkinen, 2004; Taylor, 2005). For example, online group work among distance learners lacks some of the social interaction that occurs in face-to-face settings (Kreijns & Kirschner, 2004). This may result in unfamiliarity among group members, which can lead to deficient group dynamics (Fung, 2004). Online collaborative groups may also go through delayed group developmental stages, taking longer to develop social relationships (Fung, 2004; Johnson, Suriya, Yoon, Berrett, & Fluer, 2002).

Strengths and Weaknesses of Online Learning Environment

Researchers have found that learners perceive flexibility and convenience as strengths of online learning environments (see, for example, Song, Singleton, Hill, & Koh, 2004). In such environments students can spend time on class projects on their own terms, namely, without having to be physically there. Through bulletin boards, chat rooms, electronic mail, and white boards, students can communicate with their instructor and with each other at any time. This is also a strength of online group work, where flexibility and convenience enable contact with group members anywhere, anytime.

Other researchers suggest that students in an online learning environment can develop critical thinking skills as well as reflection skills. Conrad and Donaldson (2004) argue that collaborative activities in online learning environments that involved student idea sharing and other forms of interaction trigger deeper processing of content. Palloff and Pratt (2005) also point out that group work in online learning environments promotes transformative learning by developing critical thinking skills and by encouraging reflection. The asynchronous environment allows students to read messages, reflect on them, and write carefully about their ideas over time (Petrides, 2002; Vonderwell, 2003). As a result, students may receive more thoughtful and in-depth comments from their classmates than what might occur in a synchronous context.

While learners have provided insights into the benefits of online classes, several weaknesses have also been reported. One of these is lack of a sense of community (Song, et al., 2004; Vonderwell, 2003). Online learning participants indicated a lack of connection with faculty and other learners, stating that this reduced sense of connection had a negative impact on their overall class experience. A lack of connection can also have a negative impact on group work in online environments. However, it should also be noted that a similar lack of connection is also routine in traditional classroom courses.

Another weakness reported in the literature is difficulty with communication. In Vonderwell's (2003) study, some students worried about communication problems they might encounter since they did not see each other face-to-face. These included delayed response and unfamiliarity with classmates. Kim, Liu, and Bonk (2005) reported that the difficulty of communication was one of the key barriers among peers because of learners' time zone differences and the absence of face-to-face meetings. Difficulty with communication can be particularly challenging for groups working online, where delays and not having a sense of knowing the group members can have a clear impact on group performance.

These challenges should be addressed to improve the quality of learning and increase students' satisfaction with online classes in general and online group work in particular. Because student satisfaction is an important measure of the quality of online education (Mayadas, Bourne, & Moore, 2003), one needs to consider ways to enhance the quality of the learning experience. We also need to know what factors students' recognize as challenging in the online learning experience and how those factors relate to student satisfaction and performance.

The overall strengths and weaknesses of online learning create an important context for understanding specific interactions in these environments. As indicated above, many of the reported strengths and weaknesses relate to participant interaction. This pattern also holds true when examining group work in online contexts. Several aspects of group work are related to the social interaction that occurs when teams of students work collaboratively toward project completion.

The Factors Impacting Student Satisfaction with Online Group Work

Social interaction is important for online group work as it can impact students' perception of collaboration and social presence. Social interaction plays a role in enhancing student learning and satisfaction with online courses. Social interaction is also affected by features of the online learning environment, individual learners' characteristics, and instructors' pedagogical strategies. In turn, social interaction may impact group formation, group dynamics, and the building of group structures (Kreijns, Kirschner, Jochems, & Van Buuren, 2004). Understanding how these elements work together during group work in an online context is important for facilitating learning. Some researchers have sought to identify strategies to make the social interactions that occur in online group work more explicit. For example, the framework proposed by Kreijins et al. (2004) suggests that relationship sociality, social presence, pedagogical technique, and interaction are important aspects for facilitating group work in an online context.

Social presence-the feeling of community or connection among learners (Gunawardena & Zittle, 1997)-is one aspect of interaction that has received considerable attention in the literature. The three categories of social presence, open communication, cohesive responses, and affective connections, work progressively to create a community (Garrison &Vaughan, 2008). Meaningful communication is achieved when students can interact in an open manner. As such, "social relationships create a sense of belonging, support freedom of expression, and maintain group cohesiveness, but they do not structure and focus academic interest among the students" (Garrison &Vaughan, 2008: 21). Social interaction is insufficient to sustain a community and achieve academic goals; however, the presence of group cohesion can enable students to engage in discourse and work collaboratively (Garrison & Vaughan, 2008). Some researchers, such as Tu and McIsaac (2002), have attempted to gain more insight into social presence by exploring its various aspects. Tu and McIsaac proposed three dimensions of social presence: social context, online communication, and interactivity. According to their model, each dimension is important for facilitating learning. Other researchers who have explored the impact of social presence in online environments indicated that social presence is positively associated with student satisfaction with online courses (Gunawardena & Zittle, 1997; Palloff & Pratt, 2005). Social presence is one key factor that influences online group processes and development (Gunawardena et al., 2001). Social presence may enable students to develop effective groups online by helping establish a context for communication and interactivity. In turn, social presence may assist the students in building a sense of community in an online class (Garrison & Anderson, 2003; Garrison & Vaughan, 2008; Palloff & Pratt, 2005).

Technology is another factor identified as being relevant to students' satisfaction with online group work. Technology gives geographically and temporally distributed students the opportunity for collaboration in a virtual workplace by providing an environment for knowledge construction (Stacey, 1999). Technology impacts both group interaction and group dynamics (Brandon & Hollingshead, 1999; McDonald & Gibson, 1998). Technical problems may hinder communication between group members, which, in turn, can make collaboration between group members difficult. Ensuring the security and reliability of the technological environment is important for online group work, since this will enable smoother interactions. In addition, helping students feel comfortable with the system and with the software that they are using will also assist with the online interactions of the group.

Another important aspect of group work is the level of interaction and engagement experienced within the group. Increasingly, researchers view

a group as a social system. According to Forsyth (1999), groups are systems of interacting individuals within a dynamic environment; their development is affected by many different elements. Carabajal, Lapointe, and Gunawardena (2003) suggest three online group development dimensions including task, social, and technological aspects. To gain insight into online group development, we need to understand how the dimensions influence each other and, in turn, how they impact interaction and learning for group members.

Carabajal et al. (2003) also suggest that groups go through three stages that include entry, process, and outcome. Entry consists of any factors present at the beginning of the group setting such as members' characteristics, learners' skills and personalities, group size, task types, and culture. Process elements include participation, role, communication pattern, group history, and leadership. Outcomes are what the group produces and achieves, including the groups' performance (e.g., production, decision) and the group members' satisfaction and learning. Hence, as a group is a dynamic system, online group development is affected by many different elements. In online group development, all entry elements influence group processes, which also affect outcomes such as satisfaction and group performance.

Methods

This study sought to gain a further understanding of some of the factors that students perceive as beneficial and challenging to group work online. Specifically, we addressed three research questions:

1. What factors of online group work do students recognize as beneficial in the learning process?
2. What factors of online group work do students recognize as challenging in the learning process?
3. How do students' perceptions of online group work differ between individuals reporting they were satisfied with the online group work experience and those reporting they were unsatisfied with the online group work experience?

A mixed methods design was used to answer the research questions. Creswell (1999) indicated that a mixed methods approach, using both quantitative (predominately closed-ended response survey) and qualitative methods (interview), is a valuable strategy when studying complex environments. The survey items were used to determine what level of perceived challenges, and perceived beneficial factors in their group work experiences were. Statistical correlations were performed on the survey data to determine which items were related to students'

satisfaction with group work. The interviews were used to gain deeper insights into the students' perceptions.

Participants

The participants in this study were all graduate students at a large university in the Southern United States. Thirty-seven students participated in the survey and five participants participated in a follow-up interview. The participants' ages ranged from 20 to 50; fifteen students were between 20 and 29, nine students were between 30 and 39, eleven students were between 40 and 49, and two students were between 50 and 59.There were 21 males (56.8%) and 16 females (43.2%). Many were instructional technology majors and had taken several classes online prior to the class used in the study.

Limitation

There was a limitation associated with the research. The participants were determined by using purposeful sampling, with a focus on graduate students in a formal course in instructional technology. Generalizability should not be expected nor assumed.

Context

The participants in this study were enrolled in an instructional design course in an instructional technology degree program. The course is required by the instructional technology program for students taking master's level courses. This course, the fully online version supported by HorizonWimba®, was offered in two semesters: spring and summer. The spring course met synchronously online for two and one half hours on one night of each week. The summer course met synchronously online for two and one half hours every weekday for three weeks. Both offerings of the course required participants to be involved in a group project in which students worked on several instructional design activities (e.g., analyzing the context where the instruction would occur, developing instructional materials for their proposed instructional solution).

In this course, students formed groups during an initial face-to-face meeting that took place on the first day of class. Students were provided with many opportunities to get to know each other through a variety of activities during the first class (i.e., discussing their hobbies; geographic origins; interesting education areas, such as K-12, higher education, and business/industry; sitting together and talking within an interest group). The final groups each consisted of three to six students.

The students were also provided with an overview of the group project during the initial face-to-face meeting. The group project was a design document written in a narrative style that included various

sections that are traditionally found in real-world Instructional Design reports (e.g., description of the analysis completed, recommendations for evaluation of the instruction). The team designed the project as a potential solution to a clearly defined instructional problem. Some groups chose a project leader or a coordinator for the group project. Most of the groups allocated their members to specific roles such as instructional designer, reviewer, developer, and evaluator.

Data Collection

Data collection tools for the study included surveys and interviews. The survey, completed by 37 participants, was comprised of 15 questions focused on learner characteristics, perceived challenges, and perceived beneficial factors in their group work experiences (see Figure 1 for an example of survey and interview questions). The survey, designed by multiple researchers to investigate students' perception of an online learning environment, has been used in several research studies (see, Song et al., 2004). In this research, the two authors added six items regarding online group work to the survey based on the literature. The survey was also tested on a small sample of learners in a pilot test. Revisions were made based on the feedback from the sample prior to full implementation.

Survey data were collected via a Web-based survey. The first researcher contacted students who took the instructional design course synchronously online during a two-year period to ask them to participate. During this time, the students would have had the same assignments and the same instructor for the course.

After conducting the survey, the first author contacted the participants, who provided additional information and agreed to participate in the follow-up interview in the survey, by email. The first author interviewed five participants (see Figure 1 for an example of survey and interview questions). Four of these students were instructional technology majors. The purpose of the interviews was to obtain data in regard to the students' perceptions of group work in an online class and to solicit their advice for new learners and online instructors on how to facilitate student online group work. The data collection process ended in the summer of 2005.

Figure 1. An Example of Survey and Interview Questions

Survey Sample Questions

9. What problems did you encounter while doing group work? Select all that apply.
__difficulty understanding goals/objectives
__difficulty communication
__lack of accountability
__lack of adequate subjective knowledge
__lack of feedback
__lack of leadership
__lack of sense of community
__lack of time
__technical problems
__other (please list as many as applicable):

10. Which factors do you think are important in achieving success in a group work? Select the appropriate response.

	Importance				
Factor	Not	Somewhat	Important	Very	Extremely
Clarity of objectives	1	2	3	4	5
Instructor feedback	1	2	3	4	5
Motivation of the group members	1	2	3	4	5
Time management	1	2	3	4	5
Technology comfort level	1	2	3	4	5
Accountability	1	2	3	4	5
Teamwork	1	2	3	4	5
Subject knowledge	1	2	3	4	5
Suitable role	1	2	3	4	5
Group size	1	2	3	4	5
Resources	1	2	3	4	5

Interview Sample Questions

1. Think about a time when you took XXXX online and worked with your group members. Could you tell me about your experiences in group work in an online course? Could you tell me about what worked well in your online group work?

2. Could you tell me what challenges you faced in your online group work?

3. What suggestions would you make to a student participating in a group work project in an online course for the first time?

4. What suggestions would you give an instructor on how to facilitate students' group work in an online learning environment?

Data Analysis

The purpose of this study was not to build a theory, but to gain a deeper understanding of the factors that students perceive as beneficial and challenging to online group work. The data analyses were designed to decipher which factors students perceived as beneficial in group work process and which factors were perceived as challenging.

In the case of the quantitative data, the survey data were analyzed using SPSS. The survey included yes/no responses and responses to questions using a five-point Likert-type scale. This study used descriptive statistics to calculate mean or standard deviations of the data. In addition, t-statistic and chi-square analyses were used to compare the two groups (the satisfied sub-group and the unsatisfied sub-group).

All participants were divided into two subgroups: the satisfied subgroup and the unsatisfied subgroup according to self-report of satisfaction or dissatisfaction with the online group experience (i.e., Question one on the survey, "How satisfied were you with your online group work experiences?" using a five-point Likert-type scale; ranging from 1 = "Very Dissatisfied" to 5 = "Very Satisfied"). Students who responded to this question with 1, 2, or 3 were labeled as "unsatisfied with the group work experience," while those who responded with 4 or 5 were labeled as "satisfied with the group work experience."

Inductive analysis methods were used to analyze the follow-up interviews. The basic strategy for this method is to constantly compare a particular incident in the data with another incident in the same set or another set of data; this assists in generating social theory (Charmaz, 2002; Strauss & Corbin, 1998). Qualitative data were organized according to the participants' responses to each interview question. Two researchers coded the interview transcripts individually and then compared their codings in order to identify themes that would inform the initial research questions. Multiple sources of data were collected and used to check for validity and reliability (Merriam, 1998). Peer examination was also used to ensure the trustworthiness of this qualitative inquiry (Merriam, 1998). Results from the analysis are discussed in the following sections.

Results

The results of this study indicate several trends in the factors perceived by learners as beneficial and challenging regarding group work in an online class. The overall research questions have been used to organize the presentation of the data. Quotes provided in this section are from interviews with the participants.

What factors of online group work do students recognize as beneficial?

The survey used a five-point Likert-type scale (ranging from 1 = "Not important" to 5 = "Extremely important") to indicate which online group work factors were most beneficial in their learning process. The participants identified the following factors as beneficial in their group work (listed in rank order by mean): clarity of objectives (4.51), teamwork (4.46), motivation of group members (4.41), time management (4.24), accountability (4.08), and instructor feedback (4.05) (see Table 1). The results were also divided according to the individual students who reported being satisfied with their online group work experience and those who reported being dissatisfied with their online group work experience. Overall, all factors were perceived as beneficial in promoting group work in an online class by both the satisfied subgroup and the unsatisfied subgroup.

The analysis of the interview transcripts indicated similar results. Most of the participants indicated that building familiarity among group members, instructor's help with group formation, clear feedback and guidelines regarding the group project was beneficial.

All participants perceived building familiarity among group members as beneficial. Building familiarity involves getting to know each other in order to establish working relationships. For example, Stacy, one of the participants, mentioned the importance of building a relationship: "Without being able to see each other's faces, it's hard to understand where people are coming from and their reactions and what they really mean." Stacy made the following suggestions about building relationships:

> I think without fun you cannot have a good group. So, maybe, it would be most important that people first, you know, go play putt-putt or go have dinner and try to build more of a relationship before trying to negotiate all of the confusing communications.

Another student, Michael, also mentioned that his group "didn't have much conflict" because "the group pretty much knew each other." His group had five members, two of whom he already knew from a previous class. He explained how he began to get closer to his group members: "I got a chance to talk to them and hear stories about them, just little things, about family and what they did in their spare time. And so that made me grow closer to everybody else." He suggested that to build relationships students should spend some time talking "not just about team work, [or] about projects, but we talked about things outside of school" to learn more about the group members' personalities.

Table 1. Summary of Factors That Promote Success in Group work in an Online Course

Question Items	Satisfied subgroup (N = 18) Mean (Std.)	Unsatisfied subgroup (N = 19) Mean (Std.)
Which factors do you think are important in achieving success in group work?		
Clarity of Objectives	4.67 (.594)	4.37 (.761)
Teamwork	4.44 (.544)	4.47 (.854)
Motivation of the Group Members	4.33 (.594)	4.47 (.513)
Time Management	4.17 (.707)	4.32 (.749)
Accountability	3.83 (.806)	4.32 (.813)
Instructor Feedback	4.22 (.647)	3.89 (.809)

Note: Scale ranges from 1 = "not important" through 5 = "extremely important." The satisfied group was divided by the students who answered question one with "four" and "five." Question one was "How satisfied were you satisfied with your online group work experiences?"

The participants also perceived assistance with group formation as beneficial. Finding a group was difficult in this online learning environment because students did not have the chance to build a strong rapport after a one-time face-to-face meeting. Group formation factors include commonalities, group size, interest, differing abilities, and suitable roles. Jennifer, one of the participants, stated the importance of the group members' commonalty including their interests, common subject areas, and subject knowledge. She stated, "At least we had some common subject area knowledge to work with." Karen also expressed her negative experience and pointed out how the instructor's facilitation of the group process would have been helpful given the group members' different interests and backgrounds. She suggested that the instructor should help students to find an "appropriate" group formation. She stated,

> It was hard because everybody was from such different backgrounds and had different interests. And I was really on the fringe. So, a lot of them were very similar to each other. But I was just way out there. So, that's a big challenge I think that the professor needs to facilitate that.

Most of participants perceived the instructor's prompt and clear feedback and guidelines as beneficial. Michael expressed his positive

experience about this type of feedback. His team asked for feedback to make sure they were going in the right direction. His instructor gave them imperative feedback such as "You need to change this," "Maybe you need to look into this more," and "You're going in the right direction." Jennifer pointed out that an instructor should give just in time and detailed feedback: "Make a real effort to give them [the students] feedback. If you're expecting something to be turned in on a daily basis or every other day then give feedback as often as you possibly can."

What factors of online group work do students recognize as challenging?

The survey used a yes/no scale to indicate which online group work factors were perceived as most challenging in the learning process. Many participants in this research study reported the following as challenges in their group work experiences (in rank order by percentage): difficulty understanding goals (49%), lack of a sense of community (38%), difficulty with communication (30%), and lack of accountability (27%). Across all levels of satisfaction in both subgroups, it appeared that difficulty understanding goals was the most challenging factor in group work online. Lack of time was also an important issue to both two groups.

Comparing the two subgroups, there were statistically significant differences in some challenging factors at $\alpha = .05$ (see Table 2). Participants in the unsatisfied subgroup perceived some aspects as more challenging than did participants in the satisfied subgroup. A lack of a sense of community was the biggest gap between the two groups, which differed 52%. Next, difficulties of understanding of goals/objectives, difficulty with communication, and lack of accountability had over a 30% difference between the two groups. Table Two also illustrates that student subject knowledge, accountability, difficulty with technology, a lack of feedback, a lack of a sense of community, leadership, and course design (goals/objectives, timeframe) affected students' perception negatively.

In line with the survey results, the analysis of the interview transcripts indicated participants perceived the lack of a sense of community, difficulty with communication, and lack of time as challenges for group work. The biggest challenge reported by study participants in the interviews was the lack of a sense of community. Karen, for example, stated that "it would take longer to get close without seeing people" because it was hard to get to know people's personalities. Some participants who had no commonality such as major, program, age, or job (teacher or non-teacher) felt more the lack of a sense of community in their group more strongly. Michael exemplified this sentiment:

> They [group members] were talking to each other a lot. They had stories they could share with each other because they knew each other so well and

> I was just sitting back being quiet because I couldn't relate to their stories because I'd never been in class with them.

Linda's comments challenged the very nature of online learning. She discussed the difficulty of accomplishing group projects online: "It would have been very hard to do online without being able to interact directly with each other. It would have taken a lot longer." She also addressed the difficulty with communication because of her group members' different writing styles and perspectives: "We didn't know each other, and we all had very different writing styles, and it was very hard to come up with a cohesive paper at the end of the project."

Table 2. Summary of Factors That Hinder Success in Group work in an Online Course

Question Items	% of satisfied subgrp (N = 18)	% of unsatisfied subgrp(N = 19)	% of diff. between grps
Which problems did you encounter while doing group work?			
Difficulty understanding goals/objectives	28%	68%	40%
Lack of a sense of community*	11%	63%	52%
Difficulty with communication *	11%	47%	36%
Lack of accountability *	11%	42%	31%
Lack of time	17%	32%	15%
Lack of feedback	17%	32%	15%
Lack of adequate subject knowledge	12%	26%	14%
Lack of leadership	6%	26%	20%
Difficulty with technology	17%	16%	-1%

Note: 0 = No, 1 = Yes. Values significant $p < .05$ are indicated by *. The Chi-Square test was used to determine the statistical significance. All tests had 1 degree of freedom.

Lack of time was also reported as a concern particularly by some of the participants in the shorter summer session. Karen pointed out that lack of time was the biggest problem. She argued that she did not have enough time to become familiar with and to understand the group project. She stated, "If I would have had more time to breathe then I could have figured it [project material] out." Reflecting on her group work experience, she said, "I think if I had had more time, then it would have been a really good experience to see what's out there and what kinds of technologies." Another participant in the short session, Jennifer, pointed out, "The workload was overwhelming. Umm, I think we all felt very stressed out during that class because we had so much to accomplish in such a short period of time." She also said that "It was like, 'Get this done now!' And our paper was weak in a lot of areas because we never had time to sit together." She also mentioned that she did not have enough reflection time, suggesting, "Just give them more time to reflect. We had no time to reflect."

How do students' perceptions of online group work differ between individuals reporting they are satisfied with the online group work experience and those reporting they are unsatisfied with the online group work experience?

The survey used a five-point Likert-type scale (ranging from 1 = "Not Satisfied" to 5 = "Very Satisfied") to indicate how students were satisfied with their group process and structure. The participants reported the following levels of satisfaction: satisfaction with group size (3.70), role in a group (3.68), workload (3.41), group decision process (3.38), and group members (3.30).

Overall, regarding all group process and structure, the participants in the unsatisfied subgroup were less satisfied than the participants in the satisfied group. Comparing the satisfied and unsatisfied groups, there were statistically significant differences in satisfaction with group size, workload, group decision process, group members, and role in group at $\alpha = .05$. Overall, regarding all group process and structure, the participants in the unsatisfied subgroup were less satisfied than the participants in the satisfied group. Satisfaction with the group decision process had the biggest mean difference between the two groups, which differed by 1.43 (see Table 3).

Table 3. Summary of Overall Satisfaction with Group work in an Online Course

Question Items	Satisfied subgroup (N = 18) Mean (Std.)	Unsatisfied subgroup (N = 19) Mean (Std.)
How satisfied were you with the group size in your project?*	4.33 (.907)	3.11 (0.994)
How satisfied were you with your role in your project?*	4.28 (.752)	3.11 (1.100)
How satisfied were you with your workload in the group work?*	3.89 (.758)	2.95 (1.129)
How satisfied were you with with the way group decisions were made?*	4.11 (.676)	2.68 (.820)
How satisfied were you with your team members?*	4.00 (.840)	2.63 (1.012)

Note: Scale ranges from 1 = "Very Dissatisfied" through 5 = "Very Satisfied." Values significant $p < .05$ are indicated by *. The t-statistic test was used to determine the statistical significance.

In their interviews as well as in their survey responses, students in the satisfied and unsatisfied subgroups ranked the challenges they faced differently. Participants who were dissatisfied with group work struggled with communication, finding a group, lack of a sense of community, lack of commonality with group members, and lack of subject knowledge. For example, when a researcher asked one participant how comfortable she felt with other members, the participant answered that Karen felt uncomfortable with all the group members except for one woman: "There was one girl who I really liked in my group a lot, that I felt comfortable with. But the other people either . . . I don't know, they all knew more than me and I just felt like I was just kind of a drag. Like I was just slowing the team down." Her comments indicate that she felt both a lack of community and a lack of subject knowledge.

In addition to discussing specific challenges and beneficial factors, interviewees also provided several suggestions for faculty members teaching online courses and for prospective online group work learners. The interview analysis indicated several important roles for instructors and students. While not directly related to the study, we thought they were important findings from the data. The suggestions are summarized in Table 4.

Table 4. Instructor and Student Roles in Group work in an Online Course

Instructor	Student
1. Helping students find a group	1. Building familiarity with each other
2. Supporting group formation	2. Spending time on planning; deciding how they will work together
3. Giving prompt, clear, and detailed feedback	3. Developing standards and norms for communication.
4. Providing clear objectives and a detailed explanation of group processes	4. Selecting a group coordinator
5. Motivating students	5. Held accountable for their work on group projects
6. Helping students to build virtual team skills	6. Discussing their situation with their group members, and letting their group members know up front if they can not finish their work before the deadline
	7. Believing in the importance of the group

Discussion and Implications

Despite the challenges described above, online group work was perceived as beneficial by many of the students in the online course. One predominant reason given was that the online learning format provided the learners with flexibility in terms of not having to be in a particular physical location to attend class. Further, participants indicated that the convenience afforded by the flexibility also assisted with participation in class. For example, although students did not meet face-to-face, group members communicated with each other, exchanged their ideas, received feedback through the bulletin board or email, and had group discussion through chat forums or telephone.

The results from the study also indicated that students found online group work to be more difficult than group work in face-to-face settings. In terms of what students indicated as most challenging in this study, difficulty with communication and lack of a sense of community were among the top factors. For example, four of the five interview participants indicated that they had face-to-face meetings because of the difficulties they had with online communication.

The communication barrier reported by participants in this study is reflected in the literature on online learning. For example, Kim et al. (2005) found that the difficulty of communication among peers is a major challenge due to the absence of face-to-face contact among the students in online settings. Thus, there is a need to work with learners to assist them in overcoming the difficulty of communication when learning in an online environment.

Online group work requires considerable interaction among group members. Yet current Web-based learning environments may not fully support opportunities for social interaction (Bonk et al. 2007; Kirschner & Van Bruggen, 2004), psychologically or technically. Text-based tools restrict interpersonal conversation to the exchange of text-based communication (as opposed to verbal communication) (Krejins & Kirschner, 2004). For some learners, the failure to express feelings, opinions, and describe situations can create significant barriers to communication. Technological challenges (e.g., slow connection speeds, lost connectivity) may also deter communication between group members making collaboration difficult. When communication is constrained by the technical apparatus, the collaborative process cannot function at an optimal level (Ragoonaden & Bordeleau, 2000). In both instances, problems may be solved by providing group process rules (protocols or standards) at the beginning of a project (Chinowsky & Rojas, 2003). Examples of group process rules include expecting a reply within 24 hours, sending e-mail outside the course system to let others know about challenges, and using the telephone to report problems. These strategies can assist in creating group norms and standards to help students to overcome the difficulties of online communication, thereby proving useful for the individual and the team.

Lack of a sense of community was also perceived as challenging for online group work by participants in this study. This is not a new challenge for learners in online learning environments in general. Many scholars have investigated lack of community in online learning (Hill, Raven, & Han, 2002; Kim et al. 2005; Song et al., 2004). Due to the properties of the medium, online groups may go through delayed group developmental stages, taking longer to develop social relationships (Fung, 2004; Gunawardena et al., 2001; Johnson et al., 2002). Such challenges may hinder building team trust and unity (Johnson et al., 2002). According to Gunawardena (1995), the development of a sense of community is the key to promoting collaborative learning. Social presence is important for promoting group dynamics and facilitating online group work (Garrison & Anderson, 2003; Garrison & Vaughan, 2008; Palloff & Pratt, 2005). To promote a sense of connection, an online instructor should provide numerous opportunities for learners to increase

their familiarity with group members and build more trusting relationships. As a result, learners may gradually form a community of learners. There is a need to work with learners to assist them with building familiarity and establishing a community in online groups. Integrating strategies for community building into the design of the course may assist with this effort (e.g., Conrad & Donaldson, 2004). Continued research related to community building strategies in a variety of contexts (e.g., small groups, large groups) is also needed to enable the advancement of best practices in the dynamic context of online learning environments and the group work that occurs in these environments.

Time management was also mentioned as a challenge in both the surveys and the interviews with participants in this study. Other scholars have also indicated that time management can be a challenge. For example, Palloff and Pratt (2005) suggest that groups need to know up front how much time a collaborative activity will take, and each group member needs to commit to that time. Hill (2002) and Song et al. (2004) found time management to be a useful skill for success in online learning settings, suggesting some strategies for managing time. For example, the students should feel a sense of responsibility and commitment to group projects and should also commit a specific amount of time to working on group projects. Providing learners with an overview of time management strategies should form a part of the orientation for online courses (Palloff & Pratt, 2005).

Given the importance of facilitating group work, implications for the design and development of these environments is also an important element for discussion. Difficulty understanding goals and objectives of the course and the project was also perceived as challenging during online group work in this study. Instructional designers should consider ways to facilitate group work in an online environment. Instructional designers should focus on student learning style, age, culture, group size, task type, communication tools, group composition and group process development. Strijbos, Martens, and Jochems (2004) suggest that learning objectives, task-type, group size, and computer support should all be designed to promote interaction in computer-supported group-based learning. Group members' satisfaction with group formation depends on group dynamics and is affected by many elements- entry elements and process elements as shown in the literature section (Carabajal et al., 2003). However, few models regarding the design of effective group work in online environments exist. The challenge that remains is one of examining the current models and processes that exist for face-to-face group work instruction and determining how well they work for online group work instruction.

The roles assumed by instructors and students in online learning environments and in online group situations are also important considerations. In this study, participants indicated that the instructor role should include being a facilitator, motivator, and guide. These recommendations are reflected in the literature. For example, Palloff and Pratt (2005) recommend that the instructor should act as "a facilitator or guide, allowing students to create their own learning process through the phases of collaborative activities" (p. 19). Instructors should be prepared to design and facilitate the most effective learning experience. Establishing teaching strategies for helping students' group work may prove to be useful. Successful collaborative learning does not start automatically (Oliver & Shaw, 2003).

Participants also indicated that it is important to help students build virtual team skills. Virtual team skills include "an understanding of human dynamics, knowledge of how to manage across functional areas and national cultures, and the ability to use communication technologies as their primary means of communicating and collaborating" (Durate & Snyder, 2001, p. 4). Virtual team skills can be developed in an online course. The most common framework for team development includes a normative stage, in which group members get to know one another and decide how they will work together (Palloff & Pratt, 2005). These things may help the learners engage in meaningful collaborative processes that allow them to better participate in and develop their group work. In addition, students should believe in the importance of the group. As one student stated, "We are one group."

Conclusion

The current study has several implications for practice and research. First, there is a need to work with learners to assist them with the difficulty of communication presented by online environments. Online group work requires significant interaction among group members, yet current Web-based learning environments may not fully support opportunities for social interaction. When learners do not express their feelings, opinions, and situation, this can create significant barriers to communication. These challenges should be addressed to improve the quality of learning and increase students' satisfaction with online group work experiences. Gaining communication skills to communicate with a diverse group of fellow students in an online class may be a key to success (Watkins & Corry, 2007). Assisting learners to establish strategies for overcoming the difficulty of online communication may prove to be useful.

Second, there is a need to work with learners to assist them with building familiarity and establishing community in online contexts.

Developing a supportive learning community does not occur without time and effort (Garrison & Vaughan, 2008). Without a supportive community of students, maintaining high student motivation and fostering joy in learning can be challenging. Integrating strategies for community building into the design of the course may assist with this effort (Song et al, 2004). Continued research related to community building strategies in a variety of contexts is also needed to enable the advancement of best practices in the dynamic context of online learning environments.

Third, there is a need for effective instructional design in online courses to better facilitate group work. The design should focus on the technological, task, and social dimensions that impact the group development process (Carabajal et al., 2003). Continuing to explore design models that are most effective for online collaborative learning will also help facilitate this activity.

Finally, online instructors need to adapt their teaching methods to better support students' group work. When learners have conflicts with their group members or have problems with their group work, they can feel frustrated. Establishing teaching strategies to facilitate students' group work may prove to be useful.

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