FAVORABILITY OF STRATEGIES TO FACILITATE ONLINE GROUP WORK

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ABSTRACT

Students aspiring to become teachers in public schools often find it necessary to complete their college degrees online. They will, of course, need to have the required skills that those graduates from face-to-face institutions possess. One of those skills is to be able to collaborate with colleagues in small group settings. This paper investigates the use of methods that allow online instructors to facilitate collaborative group projects. Demographic data from students were compared to the satisfaction with the techniques to investigate favored methods between groups of students.

Keywords: collaboration, groupwork, distance education

FACILITATING ONLINE GROUP WORK

Many colleges and universities today are faced with local constraints that make offering online courses to their students a necessity. Some of these constraints include geographical distance from the student population, flexibility in course offering times, and the availability of space in which to offer the courses. Online courses can be attractive to students who are working full time, live a significant distance from the nearest campus, and need flexibility with scheduling.

Online courses can be very effective delivery vehicles, provided they use effective methods. The learning community that takes place in face-to-face classes need not be sacrificed if online student engagement is properly nurtured. Moreover, the small group activities frequently utilized in face-to-face classes can take place, if done properly, in any online class.

Experienced online instructors know too well how their students dread having to do group work in online classes. However, it is necessary for students, when they become teachers, to be able to perform in group work as nearly all the decision making that takes place at a school is done by committees. The students need to be able to withstand the tensions that often take place within groups and be able to rise above those tensions to advocate more effectively for children. This article examines the relationship between the favorability of several techniques designed to facilitate online group work and the demographic data provided by students at both the graduate and undergraduate levels.

REVIEW OF THE LITERATURE

Little has been written specifically about facilitating online groupwork, but much has been written on the overall topic of online instructional pedagogy. It is universally agreed upon that engagement is a necessary ingredient of any classroom, be it face-to-face or virtual. Much of the pertinent research in the area of online learning focuses on engagement and how important the instructor's role is in facilitating engagement. Perhaps even more important than in traditional face-to face classes is the development of relationships among students and between the students and the instructor. When "high" collaboration occurs in a class, relationships become even more valued (Wicks et al., 2015), and it is especially important to develop learner-learner relationships (Marmon, Vanscoder, & Gordesky, 2014). The ability to build relationships in an online course is one of the criteria that leads to high student satisfaction ratings (Boling et al., 2014; Serdyukov & Serdyukova, 2015). Students

value both their relationships with each other and their relationship with their instructor (Jung, 2013; Lister, 2014). Moreover, research has shown that students, in all classes regardless of whether they are face-to-face or virtual, achieve better when provided with peer and/or instructor feedback (Ku, Tseng & Akarasriworn, 2013). Students need to feel connected to other members of the class in order to develop the trust necessary to accept that feedback (Kim, Glassman, & Williams, 2015; Serdyukov & Serdyukova, 2015).

Recently, many new online tools have been developed for facilitating collaboration in online classes. Virtual meetings, discussion threads, and other learning activities have led to a sense of enhanced knowledge creation (Singh, 2013). However, these new tools can be a source of initial stress for students who lack technology skills or who feel anxious using them (Jung, 2013). These tools alone are not sufficient for an online course, as students also need the instructor to be able to competently choose the right tools and actively support their use (Serdyukov & Serdyukova, 2015). The instructor can actively support the use of the tools by explicitly teaching the students to use them effectively and by helping students see the relevance of the tools to the content of the course.

Specific to the topic of this paper is research on facilitating group work in an online class. Again, new technologies offer promise (Bernier & Stenstrom, 2016). The use of synchronous discussion facilitates the decision making and planning of group projects (Lister, 2014). Relationship building is at least as important for small group achievement as it is for whole class achievement, and high collaboration in a group is associated with increased "teamwork satisfaction" (Ku, Tseng, & Akarasriworn, 2013). Additionally, group work completed by students in an online environment tends to lead to increased overall learning performance (Vandenhouten, Gallagher-Lepak, Reilly, & Ralston-Berg, 2014). However, there are challenges associated with online group work, including asynchronous communication, lack of visual cues, limited verbal communication cues, and student resistance to group work due to prior negative experiences (Chang & Kang, 2016). This study seeks to measure the student satisfaction with potential solutions to some of these challenges.

Chang and Kang (2016) reported that negotiating how to break down the tasks for an online group project and avoid duplicating work was a challenge for participants. Those participants searched for and used collaboration technology that allowed the entire group to see what revisions had been made by which participant. Participants in the study detailed in this article were introduced to web-based, task-tracker software. Group project boards were created to allow the group to see what tasks needed to be done, and individual cards were attached to the group project boards to break those tasks down.

Having multiple channels for communication between both instructor and learners as well as among learners increased levels of student engagement (Dixson, 2010), which also positively impacts academic success (Stephens & Roberts, 2017). Participants in a study conducted by Chang and Kang (2016) contended that it was difficult to coordinate online group work with several people and schedule time to discuss tasks with group members due to the asynchronous nature of the group. Those participants attempted to use technology to discuss the project synchronously; however, due to participants being in different time zones, finding a common time was a challenge. The study detailed in this paper recommended that students use technology to schedule virtual meetings with the instructor through the use of Zoom, a web-based virtual meeting site.

Students routinely express a preference for working independently and complain of the different levels of commitment of other group members and the different levels of technical savvy of the members (Bernier & Stenstrom, 2016). Group member participation is one thing, but true collaboration is a much higher form of interaction that necessitates the competent leadership of the instructor (Zhao, Sullivan & Mellenius, 2014). The instructor must guard against the "free-rider" effect, when some group members rely on other group members to do most of the work (Messersmith, 2015; Singh, 2013). Moreover, students need to understand that working in these groups prepares them to work in groups similar to those that they will be working with in their careers, where not all colleagues have the same motivation or work ethic (Messersmith, 2015). Participants in Chang and Kang's (2016) study identified that working with group members that

either completed everything on their own or left all the work to the other group members was a negative experience for online group work. Participants in that study recommended that the instructor divide the tasks up for the group members rather than putting that responsibility within the group. Alternatively, Stephens and Roberts (2017) contend that collaboration in online group work is better facilitated when learners work together on the same assignment as opposed to working individually on different components of the same assignment. In the project outlined in this paper, the instructor chose to use structured assignments that consisted of individual components of the same assignment.

The literature recommends keeping the size of each online small group to no more than four to five members (Singh, 2013), and there are reported successes where online group members describe feeling closer to their online group members than they did with face-to-face groups (Messersmith, 2015). It is clear, however, that much more pedagogical research needs to be done on facilitating online groupwork (Bernier & Stenstrom, 2016).

PURPOSE OF THE STUDY

The principle investigator of this paper implemented several techniques to better facilitate the groupwork in his online classes. These techniques included the students using the results of a personality test to introduce themselves to their group members, incorporating the use of virtual meetings, structuring assignments to help prevent group failure, and facilitating a group processing website, Trello. In order to increase both the effectiveness and the acceptance of group work in an online class, this study investigated the following research questions:

RQ1. Are there significant differences between student demographic factors (gender, graduate status, major) and student satisfaction with the four techniques used in this study?

RQ2. How satisfied were students with the four techniques used in this study?

METHODOLOGY

This survey, provided to undergraduate and graduate education students in a Midwestern school district, invited 70 graduate and undergraduate students in the principal investigator's online classes for general education and special education majors to evaluate four techniques used to enhance their online group work. Participation in the survey was voluntary and 58 students (83%) responded. See Table 1 for demographics. The four techniques used to facilitate online group work included: a personality test, virtual meetings, structured assignments, and a group processing website called Trello.

Table 1.Participant Demographics

Participants	N=58
Gender	
Male	9
Female	49
Grad Status	
Undergraduate	45
Graduate	13
Major	
General Education	25
Special Education	15
Both (Double Major)	13

Personality Test

The principal investigator first sought to stimulate the engagement of the group members with their group. Students were asked to take the Jung Typology Test (http://www.humanmetrics.com/cgi-win/jtypes2.asp) and share their results in their introduction to the group. The Jung Typology Test yielded a profile of 16 possible personality types with explanations for each type. Students were evaluated as being a combination of introverted or extroverted, sensing or intuitive, thinking or feeling, and judging or perceiving. Students were then asked to reflect on their results in their introduction to the group and how, based on those results, they tend to function in a group. For example, one student wrote,

> *After taking the test, I was labeled as ASFJ. I am 9% extrovert, 1% in sensing, 16% in feeling, and 31% in judging. This personality makes sense for me, the description states that we like to be in charge, & that they get hurt easily, this is very accurate for me.*

Another student wrote,

> *The results of my Jung test were Extravert (33%) Sensing (9%) Thinking (3%) Judging (6%). I am not surprised by these results at all [as] I am a very social person and love hanging out with my friends and meeting new people.*

Virtual Meetings

Virtual meetings were another powerful way to increase the engagement of students in an online class, and the same can be said for online virtual "group" meetings. There are several free or inexpensive virtual meeting websites that allow for group members to see each other in virtual meetings. The principle investigator used Zoom, a web-based virtual meeting site (zoom.us). A link to the session was sent to the students in advance, and the instructor was able to share his desktop screen with the others at the meeting and present specific content examples. For example, the instructor could simply talk the students through a tour of the course website and emphasize where all of the assignments, reading materials, quizzes, and discussion threads were located. The instructor could share examples of successfully completed assignments and give both positive and negative examples. Of course, as this was an online class, often a convenient time for all students could not be found, and the meeting was recorded for those students to watch at a later time. Students were also encouraged to submit questions in advance of the session, especially if they were unable to attend and participate in the session.

Structured Assignments

Another technique used to improve online group work was the use of structured assignments. Students often complain that online group work is adversely affected by a group member failing to do their part. The instructor structured the group project so that each person's part of an overall topic was able to stand alone from the others to prevent one irresponsible group member from hurting the group project. For example, in the principal investigator's online Medical Aspects of Individuals with Disabilities class, one group's overall topic was "Genetic Disorders" and the group members' parts were "Duchene's Muscular Dystrophy," "Angleman's Syndrome," "Down Syndrome," "Fragile X Syndrome," and "Prader-Willi Syndrome." In the same instructor's online Legal Issues in Special Education class, one group's overall topic was "Interventions," and the group members' parts were "Interventions in Reading," "Interventions in Math," "Interventions in Behavior," "Interventions in Content," and "Interventions in Early Childhood."

Trello

Trello (trello.com) is a web-based program that allows people to keep track of group projects and preserve confidentiality when necessary. In schools, there are many committees that meet on behalf of students, and not everyone in a school has permission to view that student's records. Trello allows for screening of members in groups and each person's "card" is attached to files that they have permission to see. Moreover, Trello allows each group member to post material to that site and notifies the other members when new material has been added. Thus, it provides a complete record of the continuous progress of a group towards an eventual goal. For example, consider that a student is having difficulty in school and a committee of professionals meets to brainstorm solutions for that student. The progress of that committee can be tracked on a Trello project board. In the principal investigator's classes, students had group projects that they kept track of on their particular group project board.

Participants were asked to comment on the use of these tools that were designed to foster their online group work. The survey was conducted online after the conclusion of the courses. Students were asked to rate the use of each technique on a 5-point Likert scale with 1 being low and 5 being high. They were also given the opportunity to comment on any of the aspects of the use of these group facilitation techniques.

RESULTS

The researchers performed a one-way ANOVA to determine if a relationship existed between a technique and the gender of the participant. There were no statistically significant relationships between these two variables. See Table 2 for the results of this ANOVA.

The researchers also performed a one-way ANOVA to determine if a relationship existed between a technique and the graduation status

Table 2. Use of Online Group Work Techniques by Participant Gender

	Sum of Squares	dF	Mean Square	F	Sig
Personality Test	.056	1	.056	.082	.775
Virtual Meetings	.423	1	.423	.269	.606
Structured Assignments	.145	1	.145	.119	.732
Trello	2.068	1	2.068	1.032	.314

N = 58

Table 3. Use of Online Group Work Techniques by Participant Graduation Status

Technique	Sum of Squares	dF	Mean Square	F	Sig
Personality Test	2.213	1	2.213	3.416	.070
Virtual Meetings	9.983	1	9.983	7.128	.010*
Structured Assignments	6.762	1	6.762	6.106	.017*
Trello	6.622	1	6.622	3.442	.069

N = 58

*P < .05

Table 4. Use of Online Group Work Techniques by Teacher Participant Major

Technique	Sum of Squares	dF	Mean Square	F	Sig
Personality Test	.681	2	.341	.466	.630
Virtual Meetings	1.407	2	.704	.449	.641
Structured Assignments	1.777	2	.888	.697	.503
Trello	1.178	2	.589	.300	.742

N = 58

of the student. The only statistically significant relationships between a technique and the graduate status of the participant were the use of structured assignments, $F(1,58) = 6.762$, $p = .017$, and the use of virtual meetings $F(1,58) = 9.983$, $p = .01$. See Table 3 for the results of this ANOVA. Graduates rated the use of structured assignments much higher (4.3) than did undergraduates (3.5), and they also rated the use of virtual meeting (4.5) higher than did undergraduates (3.5).

Finally, the researchers performed a one-way ANOVA to determine if a relationship existed between a technique and the academic major of the participant. There were no statistically significant relationships between these two variables. See Table 4 for the results of this ANOVA.

While there were only a few significant statistical interactions, a review of the overall means for each technique indicate at least slightly better results using each of the four described techniques. See Table 5 for the overall technique means.

In addition to the quantitative data, students in the primary investigator's classroom were asked to reflect on their online group experience. The use of Structured Assignments was appreciated. One student wrote,

Table 5. Overall Technique Means

Technique	Mean
Personality Test	3.48
Virtual Meetings	3.69
Structured Assignments	3.67
Trello	3.45

N = 58

> *I really liked that you did the group work the way that you did. It was nice that we all had our own parts and we did not have to be dependent on everyone else. I liked that we had a main topic and then were split into our individual projects. I thought it was a lot less stressful than when everyone is dependent on each other's work to be able to finish their own.*

The use of a personality test to introduce oneself to the group produced some interesting comments

indicative of deep reflection. One student wrote to the group, "I hope this description of my Jung results hasn't scared you away from working with me, but I think it is best to put it all out there up front." Another student wrote,

> *The Jung Typology Test showed that I was (INFJ), Introverted 78%, Intuitive12%, feeling 12%, judging 67%. I agree with this because I am the type of person who keeps to myself most of the time along with a emotion side. I work well in a group and do what is asked of me, yet will step up and lead when need be.*

Overwhelmingly, students wrote of the virtual meetings, "Our virtual session went really well." The instructor is very important to the success of the virtual group meeting. One student wrote, "I like that [the instructor] is in on the conversations. I think that having [the instructor] there guides us to discuss what needs to be accomplished."

The use of Trello was also widely praised. One student wrote of Trello,

> *I had never heard of Trello before this class, but after using it for weeks to communicate with group members, I think it is a great thing. It's so easy to use once you get the hang of it and do be able to do so much and put conversations into certain grouping so you know what each one is about, it is a great way to stay organized. It really has made groupwork less stressful and more enjoyable for the online classes. In my future online classes, I am for sure going to mention using Trello to group members to communicate.*

Another student wrote, "I think Trello is a good way for our group to communicate and I really like the website. It makes this group project so much easier!"

DISCUSSION

This study was done to examine the relationships between the techniques used to facilitate online group work and the demographics of participants. The only statistically significant relationships were between graduate students and the techniques of virtual meetings and structured assignments. The researchers conjecture that the reason for the existence of these relationships is a greater need for flexibility in scheduling for graduate students, who often take online courses simultaneously with working a full-time schedule and balancing family or other commitments. It is possible these students had a greater appreciation for being able to either synchronously interact with classmates and the instructor or watch the recorded version at a later time if necessary. Additionally, graduate students often have already had negative experiences with group work during their undergraduate work and have experienced group members who either do all the work or do none of the work. They may find a structured assignment with individual components centering around a primary topic a way to avoid those negative experiences.

Additionally, this study was done to examine student satisfaction with the four techniques used to facilitate online group work. The open-ended comments indicated that students found an appreciation for the techniques. The comments around the personality test indicated that students were able to take their personal results and reflect on the accuracy. It made for a good point of introduction with the other members of their groups and a potential way for students to work on roles and responsibilities within the group.

LIMITATIONS

There were several limitations to this study. First, the survey was done with only one group of students taught by one instructor. It would be beneficial to replicate the survey in other online courses taught by other instructors to determine a more accurate representation of the relationships and satisfaction with the techniques. Second, the survey was a post-evaluation of the techniques. It would be beneficial to do a presurvey of student opinions about group work, specifically online group work, with a postsurvey at the end of the course to determine any change in opinion toward group work. A third limitation was the small sample size. It is limited to the number of students that participated in the courses that utilized these strategies. It would be beneficial to replicate the study with a greater number of students.

IMPLICATIONS

This study has implications for future research in online teaching. First, this survey should be replicated in additional online courses taught by other instructors to more accurately determine

relationships between the student demographics and the techniques as well as student satisfaction with the techniques. Second, the techniques utilized in this study were determined by the instructor. It would be beneficial to survey students in online courses about what kinds of tools they feel would be beneficial to facilitating group work. Finally, it would be useful to the research on online teaching to investigate the relationship between facilitated group work and student academic performance. Investigators should compare the performance of students in online course work doing similar group work projects with and without facilitation tools to see in which situation students perform better.

With regard to practice, this study has identified four tools that online course instructors could use to facilitate group work. The students expressed satisfaction with the tools through their positive comments. While this study is not a conclusive solution to the challenges that face online instructors with regard to group work, it does provide additional tools that have potential usefulness to help build relationships within groups and to positively impact student collaboration and learning.

CONCLUSION

It is telling from the data, as well as from the reflections from the students, that the four techniques emphasized in this study were of higher value to graduate students than to undergraduates. Clearly, students in high-quality online classes are expected to be strong, independent learners, and many undergraduate students are challenged in these classes. It is also telling that no demographic, be it gender, graduate status, or major, thought any of the four techniques made the course worse. The techniques presented in this study have the potential to be useful tools for instructors in facilitating group work in online courses.

REFERENCES

Bernier, A., & Stenstrom, C. (2016). Moving from chance and "chemistry" to skills: Improving online student learning outcomes in small group collaboration. Education for Information, 32(1), 55–69. doi:10.3233/EFI-150960

Boling, E. C., Holan, E., Horbatt, B., Hough, M., Jean-Louis, J., Khurana, C., … Spiezio, C. (2014). Using online tools for communication and collaboration: Understanding educators' experiences in an online course. The Internet and Higher Education, 23, 48–55. doi:10.1016/j.iheduc.2014.07.002

Chang, B., & Kang, H. (2016). Challenges facing group work online. Distance Education, 37(1), 73–88.

Dixson, M. D. (2010). Creating effective student engagement in online courses: What do students find engaging? Journal of the Scholarship of Teaching and Learning, 10(2), 1–13.

Jung, I. (2013). Improving online collaborative learning: Strategies to mitigate stress. Procedia—Social and Behavioral Sciences, 93, 322–325. doi:10.1016/j.sbspro.2013.09.197

Kim, Y., Glassman, M., & Williams, M. S. (2015). Connecting agents: Engagement and motivation in online collaboration. Computers in Human Behavior, 49, 333–342. doi:10.1016/j.chb.2015.03.015

Ku, H., Tseng, H. W., & Akarasriworn, C. (2013). Collaboration factors, teamwork satisfaction, and student attitudes toward online collaborative learning. Computers in Human Behavior, 29(3), 922–929. doi:10.1016/j.chb.2012.12.019

Lister, M. (2014). Trends in the design of e-learning and online learning. MERLOT: Journal of Online Learning & Teaching, 10(4), 671–680.

Marmon, M., Vanscoder, J., & Gordesky, J. (2014). Online student satisfaction: An examination of preference, asynchronous course elements and collaboration among online students. Current Issues in Education, 17(3), 1–11.

Messersmith, A. S. (2015). Preparing students for 21st century teamwork: Effective collaboration in the online group communication course. Communication Teacher, 29(4), 219–226. doi:10.1080/17404622.2015.1046188

Serdyukov, P., & Serdyukova, N. (2015). Effects of communication, socialization and collaboration on online learning. European Scientific Journal, 2, 86–100.

Singh, R. (2013). Collaboration in the cloud: Role of interaction and online collaborative tools in enhancing knowledge creation in virtual environments. Journal of Information & Knowledge Management, 12(4). doi:10.1142/S0219649213500305

Stephens, G. E., & Roberts, K. L. (2017). Facilitating collaboration in online groups. Journal of Educators Online, 14(1), Retrieved from https://www.thejeo.com/archive/2017_14_1/stephens_roberts

Vandenhouten, C., Gallagher-Lepak, S., Reilly, J., & Ralston-Berg, P. (2014). Collaboration in E-learning: A study using the flexible E-learning framework. Online Learning Journal, 18(3), 1–14.

Wicks, D., Craft, B. B., Lee, D., Lumpe, A., Henrikson, R., Baliram, N., Bian, X., … Wicks, K. (2015). An evaluation of low versus high collaboration in online learning. Online Learning Journal, 19(4). doi:10.24059/olj.v19i4.552

Zhao, H., Sullivan, K. P., & Mellenius, I. (2014). Participation, interaction and social presence: An exploratory study of collaboration in online peer review groups. British Journal of Educational Technology, 45(5), 807–819. doi:10.1111/bjet.12094