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Challenges facing group work online

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ABSTRACT

Online group work can be complicated because of its asynchronous characteristics and lack of physical presence, and its requirements for skills in handling technology, human relationships, and content-related tasks. This study focuses on the administrative, logistical and relationship-related challenges in online group work. Challenges in areas such as commitment/responsibility, communication/coordination, structure/management, and leadership are discussed; strategies for how to streamline the management of online group work, how to decrease unnecessary logistical load and extra layers of structure, and how to improve online group work through the design of the syllabus are presented. The study suggests that instructors split group work into individual portions, use peer evaluation, establish guidelines for communication, use tools such as Google Drive to streamline duplicate works, monitor the process of the group work, and give group members freedom, ownership, and autonomy in their group work.

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Introduction

Group work gives students opportunities to collectively construct knowledge and therefore is seen as an important pedagogical tool in online teaching and learning (Bruffee, 1999; Morgan, Williams, Cameron, & Wade, 2014). Working in groups, students can compare, synthesize, and weave different ideas into their own learning. Sharing voices with group members, students feel connected with each other and can form a learning community (Smith & Dirkx, 2007). According to Stahl, Cress, Law, and Ludvigsen (2014), students conducting online group work also score higher in their overall learning performance.

However, group work is challenging due to the nature of online learning, including unsynchronized communications between the instructor and learners and learners and learners, different time zones, lack of visual cues, students' hidden identities, and limited verbal communication cues (McConnell, 2000; Smith, 2005; Straus & McGrath, 1994). Most students resist the idea of online group work because of prior negative experiences with unproductive or difficult group members, their having to carry too much workload themselves, and their grades not reflecting their contributions to group projects (Brindley, Walti, & Blaschke,

2009). Piezon (2008) indicated that common challenges to group work include free riding, group process, group size, and types of tasks. In this paper, non-academic factors such as administrative, logistical, and relational issues in online group work were explored to help identify the challenges of online group work, which has not been thoroughly discussed by researchers studying online group work. The research question was: what are the main challenges in online group work?

Online group work

Many factors affect group work, such as types of tasks, technology, group size, and individual accountability (Hathorn & Ingram, 2002). Roberts and McInerney (2007) identified some major problems in online group learning, including students' resistance to the idea of group work, their lack of skills for group work, the free rider and sucker effect. In online group work, individuals often have to sacrifice their personal interests for the benefit of the group. Constraints such as time and distance cause lack of or delayed feedback from group members. What makes online group work more difficult is that some students do not like to take suggestions and criticism from group members, which prevents further interactions and constructive feedback (Thompson & Ku, 2010). MacNeill, Telner, Sparaggis-Agaliotis, and Hanna (2014) indicated that online collaborative group work is time-consuming and resource intensive and it may not be ideal for short interactions.

If done correctly, however, online group work can help optimize student learning. MacNeill et al. (2014) emphasized that online group work can provide learners with a much deeper and richer experience and is a good opportunity for learners to develop high-order thinking skills and learn how to deal with complex and abstract tasks. To motivate students' interest in group work, instructors need to point out the benefits of group work, such as the different types of learning skills students can develop from working in a group and credits they can get for their individual efforts (Roberts & McInerney, 2007), as well as the team spirit and teamwork skills group members can develop, such as communication, leadership, shared vision, and negotiation (Jackson et al., 2014).

Group formation, including determining group size, dividing up groups, and forming groups, is a crucial part of online group work. Group size is particularly important to online group work. Bridges and Hallinger (1995) suggested that each learning group should have no more than six members. Smith and Dirkx (2007) recommend less than four, because the interactions through writing and messages will be intense and group members will feel overwhelmed in responding to each other if the size of the group is too big. In terms of how to form groups, most instructors randomly form groups (Roberts & McInerney, 2007), but many form heterogeneous groups because they believe heterogeneous groups promote innovation (O'Reilly, Williams, & Barsade, 1998) and can stimulate diverse ideas (Smith & Dirkx, 2007). However, other scholars recommend the development of homogenous groups because forming heterogeneous groups may increase within-group conflict (Rosser, 1997).

When forming groups, it is important to give students group ownership, freedom and autonomy, allow them to clarify their roles and specify their topics, and let them control the contents, process, and outcomes of their group work (Brindley et al., 2009). It should be up to the group, not the instructor, to determine what role each group member plays throughout the group project. Leadership in a group can be assigned or form naturally based on specific traits (Eby, Cader, & Noble, 2003; Gressick & Derry, 2010; Northouse, 2007;

Spillane, 2006). Regardless of whether or not leaders are selected or leadership is distributed across group members over time, leadership should be shared among members (Spillane, 2006). Davis and Eisenhardt (2011) identified three types of leadership: dominating leadership, where a single group member controls decision-making and barely incorporates other members' perspectives; consensus leadership, where group members collaboratively share decision-making and different perspectives, but progress is very slow since it takes time to gain consensus; and rotating leadership, where group members rotate their decision control and their objectives and incorporate diverse inputs from all group members.

Uneven contribution among group members, known as free-rider effect and sucker effect, is a common problem in online group work. Free-rider effect, where some group members do little group work – or the opposite, sucker effect – can negatively impact group members' contributions. Collaborative group work is usually completed together by group members with shared thoughts and joint and coordinated actions (eg, Bruffee, 1999; Henri & Rigault, 1996; Roschelle & Teasley, 1995; Schrage, 1990; Siemens, 2002). In such cases, students focus mainly on the procedures of how to complete the task, and how to establish relationships and utilize the strengths of all group members, and all the students in the same group usually receive the same grade, which is the main reason for the free-rider or sucker effect.

Jackson et al. (2014) pointed out some challenges that small groups are faced with, including group members' different levels of responsiveness and engagement, and their different expectations and commitments. Muuro, Wagacha, Kihoro, and Oboko's (2014) study of students' challenges in an online collaborative learning environment in Kenya shows that 54% of the research participants indicated that lack of participation from other group members was the biggest challenge to group work. Other challenges include a lack of feedback from the instructor and peers. However, "the difference in skills or knowledge level among group members was not perceived as a big challenge (19%)" (Muuro et al., 2014, p. 145).

It is not realistic to expect all students to have the same level of responsibilities, productive work and commitment throughout the group work. Therefore, some scholars view peer evaluation an important step to stimulate productive group work. Instructor evaluation, student's self- and peer-evaluations, all can help motivate students. To avoid free-rider and sucker effect, instructors can inform students that they might receive different grades based on their contributions (Roberts & McInerney, 2007; Thompson & Ku, 2010). Instructors can assign and evaluate individual contributions by having students perform self-evaluation and record or reflect on their contributions (Roberts & McInerney, 2007). To avoid free-rider and sucker effects, subgroups can be created and peer evaluation used (Chin & Overton, 2005; Watkins & Daly, 2003). Allowing students to evaluate each other's work helps students see the strengths and weaknesses of each other's work and provide constructive feedback (Lou, 2004; Lou, Dedic, & Rosenfield, 2003). Each member can conduct an anonymous evaluation to rate other group members or use a chart to indicate each member's contributions publicly (Roberts & McInerney, 2007). Through peer evaluation, students see the dynamics and consequences of different strategies employed by different groups and the process of different groups' work.

From the instructor's perspective, monitoring each group's work can help them stay on track. Brindley et al. (2009) suggested that instructors provide clear and transparent learning goals, group tasks, timelines, and explicit expectations in the course syllabus to ensure that group work tasks are achievable and properly scheduled. These management-related issues should be clearly described upfront so that students can concentrate on collaboration

rather than on trying to understand the tasks. Monitoring the process of group activities and providing timely feedback on learning content and tasks and participation can also help students build good relationships (Coll, Rochera, de Gispert, & Díaz-Barriga, 2013).

Methodology

This case study was conducted at a Midwestern research university in the USA. Research participants were recruited from two graduate courses that were delivered completely online in Fall 2014 and Spring 2015. Course A was about adult learning theories, and Course B was about the foundations of adult education. The first author was the instructor of the courses. Approval was obtained from the university's Human Subject Participation (IRB) committee and research participation invitation was sent to students registered in both courses. Participants were notified at the beginning of the research that their participation in the study was completely anonymous and voluntary. Whether they chose to participate or not would not affect their grade in any way and they could leave the study at any time without penalty. Students who chose not to be participants could still gain the same number of bonus points (2 points) as that of the participants by writing a 3-page paper about how the multimedia tools promoted their learning. Of all the total students, 30 (50%) agreed to participate in this study; they ranged in age from their 20s to over age 60s. Around 90% of the participants were white (Caucasian). They lived in different locations in or outside of the state and most of them were working when taking the courses.

Both courses were 16 weeks long and were delivered via the Blackboard online learning management system. In the first week, students were required to post and share their video or audio self-introductions on Blackboard. Groups were formed in the third week. Groups were assigned differently in Course A and Course B. In Course A, students who selected the same research topic for their project were grouped together; in Course B, students were allowed to select groups which were created by the instructor randomly: Those who selected Group One, for example, became members of Group One. The sizes of the groups varied from one to six students.

In both courses, students were required to:

- participate in online discussions (individual assignments accounting for 29–30% of the final grade),
- write three monthly summaries (group assignment worth 8–9% of the final grade),
- conduct one group project (40–43% of the final grade, with group members asked to work together to complete a big project that was divided into five to six assignments with assignments building on one another. The final assignment was a demonstration of what the group members had completed in previous assignments),
- complete project-related individual assignments (12–15% of the final grade),
- write a final reflection paper (7% of the final grade, individual work), and
- write “Your Story” (this gave students the possibility to earn 2 bonus points) in which students wrote about their experiences of both group and individual work in the courses.

The length of the course assignments varied by course; however, the project-related assignments were a significant portion of the course. In both courses, individual assignments and group assignments were equally divided. All the groups had to post their project-related assignments to their group blogs. Individual students were required to read and comment

on assignments from other groups. All the individual comments were integrated into the grading system.

Each group's work was evaluated by the instructor based on the grading rubrics. The instructor's feedback was posted in that group's blog so that all group members could read and learn from it. In the 2014 course rubrics, one point was assigned for groups sharing their work in their group blogs and identifying their specific roles in their group project. In the 2015 course rubrics, one additional point was assigned to motivate students' timely responses due to some previous students' complaining about their irresponsible group members who were always late in replying to group members' emails.

In this study, we tried to understand the main challenges of online group work by understanding learners' experiences and their reflections of these experiences. Multiple primary sources of data were collected to strengthen and validate the findings (Lincoln & Guba, 1985) at both individual and group levels. At the individual level, each participant's mid-term course reflection (individual learning experience and experience of working as a group), their final reflection papers, and their "Your Story" papers were collected. At the group level, monthly summaries done by each group were collected. Monthly summaries documented students' learning journey in the previous month and their plan for the following month. Students summarized the process of how they did their group assignments, what difficulties they had in doing their group work, and what lessons they had learned. This kind of qualitative research focuses on how people interpret and make sense of their experiences (Ritchie, Lewis, Nicholls, & Ormston, 2013).

Data was analyzed using inductive content analysis. Standard inductive content analysis includes open coding, creating categories, and abstracting the themes (Elo & Kyngäs, 2008). "Codes are tags (Miles & Huberman, 1994) or labels, which are assigned to whole documents or segments of documents (ie, paragraphs, sentences, or words) to help catalog key concepts while preserving the context in which these concepts occur" (Bradley, Curry, & Devers, 2007, p. 1761).

In Table 1, there are five columns. In the first column are the numbers assigned to each participant to help trace the original data; in the second column are keywords and short phrases that help label the main points in a sentence. "In open coding, events/actions/interactions are compared with others for similarities and differences. They are also given conceptual labels. In this way, conceptually similar events/actions/interactions are grouped together to form categories and subcategories" (Corbin & Strauss, 1990, p. 12). After initial open coding, all those rows sharing similar keywords were moved next to each other and compared for similarities and differences. All the rows that have similar meaning were merged to develop main categories and subcategories. In the third column are excerpts of the raw data. Bold formatting was used to highlight those sentences that relate to the keywords. In the fourth column are the categories, which are broader and upper-level concepts that help to group segmented contents together into a meaningful sentence. In the fifth column are themes or main concepts abstracted from categories.

Table 1. Data ana ysis.

Name	Key words	Data	Categories	Themes
No.1	Credibility	I can also appreciate having us state our roles in each part of the project , I think that aids in accountability	Increase the credibility of the work by asking students to indicate their roles in each assignment	Commitment and credibility
No.2	Leadership	To be honest, I struggled with some of the technology issues . One of my group members created the blog because the rest of us had no idea. ... I believe my biggest struggle is taking the first leap. ... However it isn't fair for me to always allow someone else to initiate the difficult task because I fear failure. ... If anything, I would suggest requiring everyone to do separate technical task , just to make sure it isn't always falling on someone else's shoulder	Rotate the leadership for different aspects of assignments to avoid personal strengths being overshadowed by other group members	Leadership rotation
No.3	Collaborative work	The group nature of the work benefited me a lot workload-wise : having someone to work with me and to dialog with about how to approach the work, divide it up, and boil down the essence of what was required . This helped me to avoid my tendency (at least in part) to overwork topics and projects	Work with group members collaboratively in terms of how to approach the work, divide the work and narrow down the work; benefit of collaborative work: load sharing	Collaborative work process; benefit of collaborative work

Note: Bold text indicates the parts of the sentences that relate to the keywords.

Findings

Benefits of group work

Our data analysis indicates that the research participants enjoyed group work due to the group work's sharing, and collaborative and asynchronous characteristics, as noted in the literature (Bruffee, 1999; Morgan et al., 2014; Smith & Dirkx, 2007). Workload sharing and collaboration allowed the participants to better manage their learning load and avoid forcing all the work upon one person as one student shared in her "My Stories":

The group nature of the work benefited me a lot workload-wise: having someone to work with me and to dialogue with about how to approach the work, divide it up, and boil down the essence of what was required. This helped me to avoid my tendency (at least in part) to overwork topics and projects.

Through group work, research participants learned to work with their group members collaboratively on various aspects of the assignment, such as how to approach the project and how to divide tasks. One student emphasized in her "Final Reflection Paper" that "The biggest helpful portion of this type of collaboration is that you can easily do your own work, but still learn what others see on the same subject. Different perspectives are often useful to continue development of ideas."

Participants also indicated that they had learned from other students' strengths and gained insight from their unique perspectives. One student said,

If you can make your group work cohesively, your learning will be maximized by learning from each other in addition to mastering course objectives. Those who are weak in specific areas get the opportunity to learn from those who are strong in those skill areas, etc.

They mutually supported and motivated each other through feedback in their group blogs.

In spite of these benefits of group work, however, our data analysis reveals the following challenges of collaborative group work: commitment/responsibility, communication/coordination, structure/management, and leadership.

Challenges of group work

Challenge 1: commitment/responsibility

Commitment and responsibility are needed for a group to do quality work. However, irresponsibility and lack of commitment are common in group work. For example, some group members left without responding to other group members. Instances like these make group work difficult. Though students were asked to reflect on what they did in all of their group assignments and what roles each of them played, commitment and responsibility could not be guaranteed. “Unequal task distribution, incomplete submissions, and incorrect submissions,” summarized by one student in her “Final Reflection Paper,” are examples of irresponsible behaviors. The amount of stress and duplicated work created by irresponsible group members far outweighed any positive contributions that they may have made, as one student stated:

It may all be my perspective, but this made the group projects cumbersome and very complicated. I could never establish clear work tasks and assignments until the last minute, nor engage in the necessary level of communication until the last minute, nor agree on timely scheduling to prevent this from occurring.

Responsible students had to make a lot of compromises to leverage normal communication and slow down and to wait for irresponsible group-mates. In particular, group-work caused more stress for some group members when they volunteered to do more than they should for the project. Sucker effect is quite common in online group work (Roberts & McInerney, 2007), as one student said:

It only seemed to work if I leveraged the pressure of the deadlines to get communication moving and do the same for accomplishing the work in the last hours before deadlines, and for me, to build in margin to do extra work.

Some students recommended peer ratings to motivate students’ contributions. One student said:

It does not make sense for some students to benefit from the work of others when they are causing a great deal of stress/burden that they are not able to carry. That needs to be reflected somehow. I have heard that other courses have the students rate each other afterwards. That might be a way to hold people accountable and make them more aware of their contributions to a group as satisfactory or not. And it could also be a way for the instructor to see deficiencies.

Free-rider effect caused a lack of group collaboration, and there was barely any knowledge exchange among group members, which could discourage responsible students from being engaged in the project. A student who worked with a group member and suffered from free-rider effect reflected:

When we actually talked about the projects, I mostly shared my thoughts and it felt like I simply had them mimicked back to me but no real exchange of ideas or collaboration. Therefore, when I had the alone time to reflect on what was being experienced as a group it was of no real benefit to have a partner other than learning more about the interpersonal nature of the group dynamics. This added no new knowledge or insights to the actual project and process being engaged in. Perhaps if I had more than one partner that dynamic would have been different.

The comment from this student illustrates how he was disappointed by his group member's lack of contribution to their group project and to his learning because he did not receive any substantial feedback from his group member.

There are also many unpredictable factors that can cause a group not to function well, including some members withdrawing from the course without notifying other members, and changing schedules due to changes in their personal life and work. One student said:

In group work, we are responsible for others and not just ourselves to the extent that we have to perform our best and strive to not let the ball drop. Sometimes there are so many balls in the air that juggling is completely ineffective.

Challenge 2: communication/coordination

Communication in a timely manner is difficult in online group work since students don't see each other physically. Some students said that they could use Skype to improve communication but it was difficult to find a time that worked for everybody. One student shared her experience about how to improve communication among her group members:

The only thing I worried about was getting my work done on time and waiting to hear from the other group members. A few weeks after starting this course, I was able to get a new phone and downloaded the Blackboard App and Outlook. I was able to communicate with my group members almost immediately with Outlook notifications which made the group projects easier to work on.

Students were asked to share their experiences about their group work. To avoid conflicts within the group, some group members posted fake positive feedback in their blogs to hide their disappointment with their group work. One student shared such hidden feelings:

Most of the time I know people don't really share what is on their minds with their professors, because the repercussions are harder than to simply endure and make it work. I myself knew that full disclosure in this instance during the projects would have been more work than to simply press onward.

It seems to be common sense that communication on a regular basis is helpful for staying on track, but most students in this study tended not to initiate any communication. They waited for other group members to start conversations. One student described such a situation and recommended that students take the initiative instead of passively waiting for others:

While working in a group, it is easy to assume your classmates will take care of the work and answer each other's questions, and that you can just wait until they do so. However, it is crucial that everyone responds to each other's emails, texts, etc. as quickly as possible to keep the process moving. If everyone assumes the other people will do the work, nothing will get done. It is much better to take initiative, and the others will likely follow your lead.

Most research participants indicated that it was hard to coordinate with several people and to divide up the work evenly. Scheduling a time with group members to discuss assignments was difficult and the asynchronous nature of group work was especially hard and complicated when students from different time zones tried to coordinate times. What was more difficult for their online group work was the lack of motivation to stimulate the interests of all group members. Most of the time, group members just completed their parts and treated the group work as their own asset since it was a collaborative work. They did not really challenge each other in order to avoid conflicts, as one student said:

I think we were working under the mentality that, once each of us finished a section of an assignment, we might skim over it and call it “done.” None of us wanted to take the time to really challenge each other to revise and improve our work.

Group work calls for collaboration, fairness and equality. However, in practice, complete fairness and equal work is impossible. In one of the groups, members’ skill sets such as critical thinking, communication and writing skills, and levels of comprehension and participation were not balanced. Some students had to slow down in order to not only do their own parts of the project but also help their team members with their work, which resulted in their shouldering the burden of the whole group. This ended up creating more work for them, which lowered the overall quality of their work. In the end, the actual communication process caused more stress for group members than the project itself.

Challenge 3: structure/management

The findings indicate that group work is complicated when the structure of the group is multi-layered and management is duplicated. Some participants complained that the process of negotiating how to do group work added extra work for them. One student recommended that “clear expectations and grading criteria for group work contributions are decided by the professor and shared in the syllabus, instead of allowing each group to decide the division of tasks and roles of members.” Another student shared her experience about how the lack of streamlining resources and ideas caused duplicate work and lowered group productivity:

Working in the groups added an extra element that took away from my work because there were several assignments that my group spent more time figuring out how to do it than actually doing the work. The back-to-back deadlines for group assignments prevented me from spending a lot of time reviewing my group members’ contributions before they had to be submitted, which hurt the quality of our papers because we were repeating information and didn’t have common themes running through the papers and dissuaded me from going back to read it because we were already on to the next thing.

When working on group assignments, the students found out that it was challenging to collaborate on papers and ended up searching for and learning to use collaboration technology. One student reflected:

At first, writing a group paper was messy because we were emailing each of our sections and versions of the paper to each other, resulting in multiple and different copies of the paper. We then had to search for the most updated information in each copy and merge it together. Fortunately, we realized we could use Google Docs, and this made our process much more streamlined.

Tools such as Google Docs helped the students avoid duplicate revisions in assignments and enabled them to easily update content without having to save and email each other their revisions, which greatly simplified the layer of document management in the group work process.

Group size also affects the management and the dynamics of group work. The findings indicate that a small-sized group is easy to manage. But to create a good group dynamic, there should be a minimum requirement for group size. One student noted:

My only suggestion is making groups have a minimum and maximum size. To truly have a collaborative learning experience, you must have members to collaborate. This semester, several groups had just 2 or in some cases 1 person. This is not very effective collaboration. The big thing is if you can limit (based on enrolment) to 3–4 people per group, then you can at least have a balanced learning environment.

The larger a group is, the more complicated and difficult it is to manage, because it takes time and energy to coordinate. One student shared her experience of how difficult it was to manage communications and clarify questions in a group of five:

Five students were just too many for a group project through distance education. It made setting up times to communicate very difficult, since everyone has busy lives. It was also difficult when one member would ask a question and get somewhat different responses yet didn't bother to get clarification about who they should listen to. Instead they will always pick the easiest route possible and leave the work for others to do.

Based on the overall quality of the group work and group members' reflections and monthly summaries in these courses, groups that had fewer than five members could do the group work efficiently. The most productive, comprehensive, and in-depth group assignments were usually completed by the groups that had at least one group partner, preferably two, to balance the group dynamics. But this does not mean that the larger the group is, the better it can perform. When a group had more than four members, there were usually more complaints about some group members not being productive and efficient, and some group members not having enough chances to engage in the substantial work.

Challenge 4: leadership

The findings also indicate that group work can easily degenerate into chaos when there is no one to lead the group. As one student reflected:

Another issue, it was very easy to get off track when completing group assignments, due to a lack of leadership. Perhaps if we appointed a leader for the group who will commit to keeping the group on track, oversee all work, and facilitate discussions this would have lessened the confusion.

Although a leader is needed to oversee the overall group work process and initiate discussions, not everybody liked to be a leader because being a leader means taking on more work and more responsibilities. One student reflected: "Since our group was comprised of two members, I found it challenging to evenly divide 'captain' roles. At times it does become exhausting when you feel you are responsible for the group work if it doesn't get done." Another student said that she did not want to take the lead in her group and hoped that they could share the responsibilities and leadership on different assignments, so that they could come together as a group to tackle the assignments together.

In group work, it is encouraged for group members to use each other's strengths. Although this strategy helps the group complete its work in an efficient way, it can also deprive students of the chance to learn those skills and knowledge which they lack. One student in this study mentioned how she lost opportunities to learn technical skills because the leader of her group took care of the technical issues throughout the project. This student recommended a system of leadership rotation to help individual group members gain opportunities to learn knowledge and skills in those areas they are weak, but oftentimes are overshadowed by those group members who have expertise in those areas.

Discussions, implications, and limitations

Though students can easily feel isolated and disconnected in online group work due to the lack of visual clues and communication skills (McConnell, 2000; Smith, 2005; Straus & McGrath, 1994), the participants of this study benefited from several aspects of online group

work. Most of them enjoyed the ability to share workload and acquire different types of knowledge and skills from each other in group work (Bruffee, 1999; Stahl et al., 2014). This was especially true when they were involved in those group projects that required an enormous amount of work with multiple tasks. These types of group work create opportunities for students to get mutual support and form a sense of community, which is in line with Smith and Dirkx's (2007) findings on group work. Research participants also indicated that online group work required group members to be on the same page, make commitments, and communicate on a regular basis in order to clarify questions, update group members on their progress, streamline their group work, and avoid duplicate work (McConnell, 2000; Smith, 2005; Straus & McGrath, 1994).

The findings of this study also resonate with the literature that one of the biggest challenges in online group work is the irresponsibility and lack of commitment of some students (Brindley et al., 2009; Piezon, 2008). Due to students' unbalanced skill sets and expectations for the course (Jackson et al., 2014), some group members contribute more than they gain from their group members. These students have to sacrifice their personal interests for the benefit of the group, which is unfair to them and, therefore, makes them resist the idea of group work (Roberts & McInerney, 2007). Also, many students will not be motivated to contribute to group work if they all receive the same grade. Free-rider effect (Roberts & McInerney, 2007) in online group work causes good students to receive no substantial feedback and to gain no new knowledge and skills from the free riders, but to bear the weight of the whole group and carry too much on their shoulders; they have to be responsible not only for themselves but also for the other group members, which can be overwhelming, especially when there is more than one member who does not work and when there are too many balls in the air that they are juggling. Simple mistakes such as incomplete submissions and incorrect submissions from some group members can cause duplicate work and stress for other group members.

Some scholars recommended providing "a mechanism to individualize grades, which will allow for points to be adjusted when participation in a group is noticeably uneven or complaints regarding participation surface" (Morgan et al., 2014, p. 40). Cooperative group work and peer review are such mechanisms. Cooperative group work can motivate individual group members to contribute, which helps to address the shortcomings of collaborative learning. Instructors can help build cooperative group work by splitting group work into independent individual portions and steps so that group members can easily divide up tasks and be more focused on the task itself (Melothe & Deering, 1994). Group members can be given the option of doing part of a large assignment individually, and their work be graded separately. Peer review is another strategy that can prevent free-rider effect (Chin & Overton, 2005) and motivate everyone to do their part of the group assignments. In designing a course syllabus, instructors can ask students to share their assignments in a public place such as blogs so that everyone can see each other's work and provide constructive feedback. Group members should be given the opportunity to evaluate each other's work anonymously. Such peer evaluation can motivate group members to be responsible when they know that their peers will anonymously evaluate their work. Peer evaluation strategy also makes many students feel connected because they can see each other's strengths and weaknesses shared in their group blogs (Lou, 2004; Lou et al., 2003).

Communication in online group work is much harder than in face-to-face communication. Face-to-face communication can show multiple context clues expressed

by multiple senses such as vision, hearing, and touch (Kupritz & Cowell, 2011; Short, Williams, & Christie, 1976). Communication in an online group, however, often mainly relies on text and lacks the multiple senses that can be used to detect the nuanced meanings hidden in both verbal and nonverbal communication. Further, transparent and authentic communication is hard in online group work since some group members fake the communication to make it pleasant and positive to avoid conflicts in the group. Many group members do not want to report the problems in a group, but rather endure and sacrifice, so as to avoid conflicts and create an artificial harmony. Using tools such as Skype can partially compensate for the limitations of online communication by showing the voices, faces and body language of the group members; however, such free tools have limitations in terms of the size of the members who may talk synchronously.

Instructors can monitor the process of the group activities and help group members keep on track by providing them with timely feedback (Coll et al., 2013). However, instructors will not be aware all the personal issues and circumstances within groups that can prevent group members from doing productive work. Therefore, strategies such as peer review can give group members opportunities to reveal more of themselves in the process of doing their work. Immediate feedback can provide a safety net for learners and help them avoid frustration, especially when they deal with difficult tasks (Clariana, 1990; Knoblauch & Brannon, 1981). Delayed communication is common due to the fact that most online communications are asynchronous and many group members often wait for other group members to initiate a conversation. Mobile telephones are becoming an important part of the learners' life, so apps such as Blackboard downloaded to mobile phones can be used to shorten the communication delay and make online communication instant and convenient. Instructors can also establish guidelines for communication and build guidelines about timely responses into the course grading rubrics.

Group work can become cumbersome when the structure of the group is complicated and management is messy. In online group work, where group members rely mainly on written text back and forth to discuss their tasks and exchange their work, multiple messages and various versions of the work can be created, which can easily lead to complication and confusion. Tools can be used to reduce the possibility of duplicate work and decrease the extra layers of text documents. Tools such as Google Drive or Google Docs can help students work on the same document simultaneously, decrease the extra layers of text documents, and thereby avoid duplicating work.

"Working as a group required time for group processes such as collaboration and compromise. This process was labor intensive" (MacNeill et al., 2014, p. 110). Group management can be complicated and coordination can be difficult when the size of the group reaches a certain number. The larger the size is, the harder it is to manage group work in terms of scheduling meetings, having efficient communications, and coordinating and streamlining tasks. Sometimes, a question from a group member may result in multiple versions of replies, which makes it difficult to even decide which one to choose from. The ideal-sized group should keep a balance and create a group dynamic. Smith and Dirkx (2007) recommended a group size of less than four members to avoid group members feeling overwhelmed in responding to a large amount of messages sent by group members. The findings of this study suggest that a group size of three to four is ideal. With three to four students in one group, it is more efficient to create good group dynamics and easier for members to manage and delegate tasks, simplify the group relationship, and streamline duplicate work.

From the instructor's perspective, learning goals, tasks, and explicit expectations should be clearly described to help students spend less time on clarifying tasks (Brindley et al., 2009). The findings of this study also indicate that group work with simple structure and fewer layers of administration will help students spend less time figuring out the logistical issues. Some students suggested that the instructor divide the tasks and assign roles to the students to prevent students from spending extra time on clarifying logistical and management work. This would give the students more time to concentrate on the content-related work. Other students were against this idea of letting the instructor control the process of group work. Therefore, our finding is consistent with the literature that instructors should play roles in some areas but should avoid interfering in other areas by allowing group members to form their own roles (Gressick & Derry, 2010). To be more specific, instructors can provide clear goals, expectations of the course work, and achievable tasks and monitor the process of the group work (Brindley et al., 2009), but they do need to give group members freedom, ownership, and autonomy to establish their own group, clarify their own roles, and control the process of their own group work (Brindley et al., 2009).

The role of the leader for each assignment keeps the group on track, oversees all work, and facilitates discussions. In online group work, when the leader is not identified, it can easily cause group work to be delayed, duplicated, or misunderstood. Identifying a leader is crucial. However, not every group member likes to take the leadership role. In this study, those who were the group leaders felt that they were overloaded and took the risk of taking responsibility for their group members' grade. Some students felt that the dominating leadership made them lose the opportunity to learn and practice certain skills in which they were weak. The result is that each group's situation is different. It is up to the group members themselves to decide whether or not they would like to distribute the leadership over several group members (Spillane, 2006) rotate the leadership among the group members, or have one group member lead the whole group (Davis & Eisenhardt, 2011). In practice, instructors can create guidelines to help students choose the best leadership style that suits their group. Once the group is formed, group members can create a table which indicates each member's roles in each assignment, who will take the lead in each assignment, or who will lead one portion of the assignment. They can rotate the roles in different areas so that each student can learn some skills in which they are weakest. Group members should indicate their roles in each assignment, and share these roles with the whole class, so that all members will be recognized for their roles and contributions.

Though the emphasis of this study was on identifying challenges facing online group work by analyzing individual students' group work experiences, a group perspective is equally, if not more, important. It is also important to find out the impact of these factors on group performance. Therefore, future research is suggested to study such research questions from a group perspective and explore how group performance is affected by the factors identified in this research. Because the focus of this study was on student perceptions based on subjective reflections on their group work experiences, it is suggested that future research studies employ experimental research design to collect objective evidence to validate the findings of this study. To further benefit the field, it is recommended to replicate this study with multicultural student populations studying an online learning environment.

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