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Online Collaborative Learning: Analyzing the Process through Living the Experience

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Abstract

Online collaborative learning is a complex process as it requires thoughtful and pedagogical considerations regarding the design, implementation, and assessment. To understand online collaborative learning, it is critical to involve stakeholders' perspectives of their lived experiences. A qualitative case study was selected to carry out the investigation. Two online graduate courses were purposefully involved in the study. Data were collected from semi-structured interviews and online observations of students and instructors. The collected data were analyzed using a constant comparative analysis method. The results revealed that multiple proactive supports (i.e., social, pedagogical, and technical support) play critical roles in fostering meaningful collaboration. Instructor presence is an essential factor that enables collaboration to occur as desired through setting the stage, modeling desired expectations, and guiding students to reach expected outcomes. Assessments also have an impact on students' level of engagement; therefore, incorporating both formative and summative assessments for both the product and the process of collaboration is recommended. The findings of this study have implications for online collaboration scaffolding and implementation to support online instructors.

Introduction

Today's online learning has become more interactive and collaborative. With the evolution of technological tools, instructors can incorporate collaborative learning in a meaningful way. Collaborative learning in the online environment does not occur by chance. It requires positive interdependence and a collective commitment to build knowledge. Through discourse and knowledge building, students work together "to identify and advance ideas of understanding, and to apply their new understanding and analytical terms and tools to solving problems, constructing plans or developing explanations for phenomena" (Harasim, 2012, p. 88). Therefore, online collaboration requires pedagogical decisions regarding the design of the tasks, the types of scaffolding to support the process, and the preparation of students to actively participate (Lock & Johnson, 2017). Understanding these elements enables educators to create meaningful experiences for online students.

Online collaboration should be understood through the lived experiences of stakeholders. Limited research has been conducted to analyze the process of online collaboration (Du et al., 2017) based on stakeholders' lived

experiences. Thus, the current study aims to explore the instructors' and students' experiences with online collaboration. The main question that guides the current research is: What structures and scaffolds need to be in place to support student collaboration in online learning environments?

Background

Social Constructivism

Research on collaborative learning has been guided by the social constructivism theory (Johnson & Johnson, 1996), which was developed by Vygotsky (1978), who theorized that knowledge is socially constructed. Vygotsky's theory of learning *The Zone of Proximal Development* emphasizes the role of social interactions in cognitive development. It suggests that learning occurs when learners interact with others who are more capable or, beyond their individual actual development levels—instead within their level of potential development. Through social interaction and collaboration, "people challenge what is known, enhance connections with existing knowledge and build new pathways for additional ideas" (Bryan & Bates, 2015, p. 17). As a result of the collaborative process, members generate a product that "is the synthesis of shared information and ideas," which is different from any individual could produce alone (Ingram & Hathorn, 2004, p. 221).

Online Learning

Online learning involves the use of the Internet for educational purposes, such as accessing learning content, interacting with others, and receiving instructions from instructors. Ally (2008) defined online learning as "the use of the Internet to access learning materials; to interact with the content, instructors, and other learners; and to obtain support during the learning process, in order to acquire knowledge, to construct personal meaning, and to grow from the learning experience (p. 2). Online learning goes beyond having access to the Internet and learning content; it is about having multiple types of interactions (i.e., student–content, student–student, and student–instructor) to engage actively in the learning process and thus to acquire knowledge. Online learning is evolving in technological and pedagogical ways, which can create "a rich learning experience for students" (Wilcox & Lock, 2014, p. 2062).

The evolution of technological tools enables instructors and learners to interact synchronously and asynchronously. Synchronous interaction occurs at a specific time in which participants communicate at the same time via computer-mediated communication (CMC) tools, such as web conferences, webcasts, and teleconferences or chat rooms. Asynchronous interaction occurs at different times based on each participant's availability through communication tools that are usually text-based, such as email, online forums, collaborative documents, or other discussion formats. Integrating both types of interactions can create an engaging learning environment. Such learning environment aims to "motivate learners, facilitate deep processing, build the whole person, cater to individual differences, promote meaningful learning, encourage interaction, provide relevant feedback, facilitate contextual learning, and provide support during the learning process" (Ally, 2008, p. 18).

Online instructors play a critical role because the physical presence of the online instructor is absent, and thus

her or his social presence needs to be thoughtfully planned. Shea, Li, and Pickett (2006) noted that "a strong and active presence on the part of the instructor – one in which she or he actively guides and orchestrates the discourse – is related both to students' sense of connectedness [community] and learning" (p. 185). Establishing instructor presence "doesn't just naturally happen ... [it] is a result of awareness, understanding, involvement through experience, and intentional planning and design on the part of the instructor" (Lehman & Conceiçào, 2010, p. 4). Different strategies can be used to establish and to maintain instructor presence, including but not limited to, participating regularly in discussions, providing ongoing feedback, responding promptly to students' emails, and addressing students by their names (Oyarzun, Conklin, & Barreto, 2017). Using such strategies may influence "student motivation, satisfaction, and perceived learning" (Oyarzun et al., 2017, p. 120). Online instructors need to be strategic in their presence to assist students in reaching the desired outcomes without appearing to dominate the learning process.

Online Collaborative Learning

Online learning is best accomplished through interactions and collaboration (Bonk, 2009; Palloff & Pratt, 2007). Online collaborative learning is more than an activity; rather, it "needs to be conceived as an overarching way of learning that fosters continued knowledge building" (Lock & Johnson, 2017, p. 47). For this to occur, pedagogical considerations need to be applied to the design of tasks, the facilitation of the learning process, and student preparedness (Lock & Johnson, 2017). Online collaborative tasks vary in length and intensity; they range from short weekly tasks to large final projects (Lock & Johnson, 2017). For example, a weekly discussion is one of the most used collaborative tasks in online learning, where ideas are exchanged, perspectives are negotiated, and feedback is provided through "posts rather than synchronous dialog" (Johnson, 2016, p. 1484). Online collaborative learning has the potential to reduce learner isolation, to help students gain a deeper level of constructing knowledge, and to achieve the desired outcomes (Palloff & Pratt, 2007).

Collaboration requires "sharing responsibilities; giving and receiving support (emotional and cognitive); arguing/discussing their own ideas; establishing agreements; listening to opinions; exchanging information and points of view; and comparing ideas, interpretations, and alternative representations" (Manso & Garzón, 2011, p. 33). Understanding these components is crucial in designing and facilitating collaborative learning experiences. Ingram and Hathron (2004) identified three crucial elements:

- Participation: Each member of the group should participate actively in the learning process.
- Interaction: Members need to interact with each other to share information and to test ideas.
- Synthesis: The product is created by members and represents the synthesis of ideas.

Having a sense of community is fundamental for collaboration to occur (Demosthenous, Panaoura, & Eteokleous, 2020; Garrison, 2011). A sense of community influences "the flow of information among all learners, availability of support, commitment to group goals, cooperation among members, and satisfaction with group efforts" (Rovai, 2002, p. 3). Therefore, a positive correlation between collaboration and sense of community has been found (Chatterjee & Correia, 2020). Three main factors influence students' sense of community: 1) the design of learning activities that enables students' interactions and thus builds social

relationships (Trespalacios et al., 2021; Johnson & Altowairiki, 2017; Garrison, 2011); 2) the thoughtful use of appropriate technological tools, such as multimodal discussion forums, video conference meetings, and social media networking (Trespalacios et al., 2021); and 3) online communication and netiquette, such as openness, politeness, and respect (Trespalacios et al., 2021; Garrison, 2011). To assess the existence of an online learning community, Palloff and Pratt (2007) recommended the following observable indicators:

- Active interactions between and among online learners.
- Exchange of resources among learners.
- Expression of support and encouragement between learners
- Socially constructed knowledge through agreement or questioning of ideas.
- Willingness to critically evaluate the work of others.

Online collaborative learning has attracted considerable attention (Cheng et al., 2016). Much of the research focuses on the outcomes of online collaborative learning, such as student satisfaction and perceived learning (Capdeferro & Romero, 2012; Keengwe, Adjei-Boateng, & Diteeyont, 2012); however, limited attention has been given to its process. Understanding the process enables educators to better design and facilitate meaningful learning experiences. The challenge is to create enabling conditions that foster online collaboration.

The Research Context and Design

The aim of the study was to explore graduate students' and instructors' experiences with online collaborative learning. The goal of the study was to develop a deeper understanding of the dynamics of collaborative learning. The collaborative learning process was analyzed from multiple perspectives, including those of the researcher, instructors, and students, from the beginning to completion, including design, implementation, facilitation, and guidance. Understanding the dynamic from the lived experience of both the students and the instructors enables instructional designers and online instructors to create a positive learning experience.

Case study research was purposefully selected due to the exploratory nature of the research. The case study approach promotes "an in-depth description and analysis" (Merriam, 2009, p. 43) of the phenomenon under investigation. The following was investigated: Which structures and scaffolds need to be in place to support student collaboration in online learning environments? Two online graduate courses were purposefully selected for the study, and each course functioned as a separate case study. The following sections provide a detailed description of the cases and participants, the methods of data collection, and analysis.

Case Description

Two online graduate courses were purposefully selected for the study as they employed collaborative learning as the main learning approach. Both courses studied (i.e., Course A and Course B) were part of a four course-sequence within two specific graduate certificate cohort-based programs in education at a Canadian university. The two courses were delivered online over a 13-week period—semester length—and contained various opportunities for student interactions with the learning management system (LMS) using both asynchronous and

synchronous communication forums. Each course had its own instructional design, educational purpose, and number of enrolled students.

Course (A) included 23 students. Asynchronous discussion forums and synchronous (four webinars) communication formats were used during the semester. The collaborative learning requirements in this course involved three learning tasks. The first task was moderating a weekly discussion with a small group of students by posting discussion questions, providing comments, offering resources, and summarizing the discussion that captured the key learning outcomes at the end of the week. This learning task was worth 25% of the course grade. The second task was providing peer feedback on each other's individual learning tasks. There was not any grade for this task. Third, the final project was worth 50% of the course grade, and students had the option to work individually or collaboratively. Six students participated in the study in addition to the course instructor.

Course (B) included 10 students. Asynchronous and synchronous (i.e., two webinars) communication forums were used during the semester. The collaborative learning requirements for this course involved four learning tasks. The first was designing an online seminar with a small group of students, facilitating the seminar discussion, and posting a summary that synthesized the discussion and captured the key learning outcomes from the seminar. This group seminar was worth 25% of the course grade. Students were asked to participate actively in the weekly seminar to build collective knowledge, which was worth 20% of the course grade. For the final project, which was worth 30% of the course grade, students had the option to work collaboratively. Seven students participated in the study in addition to the course instructor.

Table 1 summarizes the number of enrolled students in each course and how many of them gave their consent to participate in the study.

Table 1. Number of Enrolled Students and Participants

Course	Number of students	Number of participating students	Number of participating instructors
A	23 students	4 students gave permission to observe their interactions. 2 students participated in the interviews.	One instructor who taught the course participated in the study.
B	10 students	4 students gave permission to observe their interactions. 3 students participated in the interviews.	One instructor who taught the course participated in the study.

Methods

Data were gathered from two main sources: semi-structured interviews and online observations. Interviews were conducted with the participating students and online instructors based on their convenience. The interview questions were designed to: 1) explore each participant's experience with online collaborative learning and 2) gain an understanding of their perspectives of the collaborative process. Each interview was approximately 30-

40 minutes in length. All interviews were audio-recorded and transcribed verbatim. Member checking was used with interview transcripts (Denzin & Lincoln, 1998).

The online instructors were interviewed on two separate occasions. The first interview occurred at the beginning of the course to describe the design, scaffolds, methods, and strategies to be used in the courses. The interview questions included, but were not limited to: What are the characteristics of meaningful collaboration? How do online instructors facilitate the collaboration process and encourage student participation? What are the key factors that need to be considered in the design of a collaboration task? How can online instructors prepare and encourage students to participate actively in the collaboration process? Describe the types of structures and scaffolding that will be used in this course to support student collaboration.

The second instructor interview occurred at the end of the course to reflect on student collaborative learning experiences and to make recommendations. Some of the second interview question were: How did you facilitate the online collaboration process? How did the design of learning tasks foster student collaboration? Was there any significant difference in the process and/or the quality of the product between student groups? Was there any challenge with the collaboration process or product during the course? How did you facilitate each group collaboration? What are some key factors that foster collaboration and participation? Based on your current experience, what would you change or alter in the design and facilitation of the course to enhance the collaboration process?

The students were interviewed on two separate occasions. The first interview occurred halfway through the course to describe the collaborative learning process (e.g., planning, decision making, level of contribution, instructor facilitation). Some of the interview questions were: Describe the types of structure and scaffolding being used to support collaboration. What do online learners need to actively collaborate? Based on your experience, how do online students encourage each other to actively participate in the collaboration process? What kinds of technological tools have been used to support online collaboration? What challenges might students face during the collaboration process?

The second student interview occurred at the end of the course to reflect on the experience of online collaborative learning (e.g., satisfaction, challenges, recommendation). Some of the questions were: Describe your experience with this online course. What structures or guidance were given to you that supported your group's collaborative process? How did the instructor guide and facilitate collaborative learning during the semester? Was there any challenge with the collaboration process or product during the course? If you were given the opportunity to change or alter the design and facilitation of this course, what change would you make to enhance the collaboration process and/or product?

The second source of data, online observations, was conducted throughout the semester to understand and to analyze the online collaborative learning process. The observational protocol, which included a descriptive section to record activities as they occurred and a reflective section to record the researcher's notes about the process and activities, was used to document online observations. The researcher had the opportunity to observe

the instructors' and students' interactions and participation in the collaborative learning process in both synchronous and asynchronous communication forums.

A constant comparative analysis (Merriam, 2009) was used to analyze the collected data. A constant comparative analysis is inductive and comparative and "has been widely used thorough qualitative research without building grounded theory" (Merriam, 2009, p. 175). The data were coded, and then similar/related codes were grouped to build initial themes. The initial themes from each set of data were compared to each other to verify the master list of coding and themes that represent the all-important data of the study. The themes were continually reviewed and examined to ensure that they were responsive to the research questions and that they met Merriam's (2009) criteria:1) Themes should be responsive to the purpose of the research; 2) Themes should be exhaustive and represent data in the study; 3) Themes should be mutually exclusive; and 4) Themes should be sensitizing.

Results

The major findings discussed in this section relate to the question: What structures and scaffolds need to be in place to support student collaboration in online learning environments? As such, the major themes included: 1) Set the stage for collaboration; 2) Build a safe community; 3) Model desired expectations; 4) Guide the collaboration process; and 5) Assess the collaboration process and outcomes. Each of these themes is explained in the following sections.

Set the Stage for Collaboration

The first theme identified the importance of setting the stage for collaboration to occur effectively. This was described as being accomplished through preparing students pedagogically, technologically, and socially for online collaboration, as noted in both instructor and student interviews. Providing clear expectations and specific requirements for each learning task helped students in reaching the desired outcomes. Course (A) instructor said, "Often, we ask people to collaborate, but people really don't know what it means to collaborate." Specifically, students need "a clear outline of what the course expectations are, which include a specific description of what active collaboration means to the instructor so that learners understand what is expected of them" (as noted by one of the students). Also, students had to know "what they're expected to get out of this process and clearly defined assessment strategy" (as remarked by one of the students). As a result, students' level of collaboration may be affected by the level of clarity of collaboration requirements and assessments. For example, one of the students highlighted:

> "I notice that I am far more motivated and active in the course where the instructor has set out clear expectations for active participation and where the assessment is based on how active and in-depth our consistent collaboration is…while I find it really difficult to motivate myself to participate in [another course] were there weren't clear guidelines set out for what the instructor expected in terms of collaboration or contributions."

In terms of technological preparation, Course (A) instructor noted that online students varied in their comfort level with using technology for learning. Therefore, customized support was offered, as he explained:

> "Some people are comfortable and want to do immediate email messages with me, whereas other people want to hear my voice, and it may not be from Skype because they may not be that technically confident, so they want to phone me, and I think that's important because if I'm going to set up this environment of collaboration, they have to know first that they can collaborate in trust with me first."

Course (B) instructor created tutorial videos that explained the use of different technological tools, such as how to navigate the course through LMS or using other required tools along with responding to student emails to address their technical concerns.

To prepare students socially for collaboration, students were encouraged to support and to learn from each other by presenting their ideas and negotiating their perspectives in a constructive way. For example, one of the students said, "It was very clearly written to be respectful of each other and to keep an open mind." Other students appreciated that the instructor talked about collaborative learning, saying, "He made it clear from the beginning that we're all working together; we're not individuals. It's good to collaborate and learn from each other—get and share resources." In addition, Course (A) instructor did facilitate social–cognitive interactions by connecting students who had similar backgrounds and/or learning interests. The students appreciated this tactic. As one student said, the instructor "was always kind of letting us know which of our classmates were working on similar topics or came from similar backgrounds." As a result, the students were able to support each other by sharing their resources and negotiating their ideas.

In summary, setting the stage for online collaboration requires preparing students pedagogically, technologically, and socially. Providing clear and detailed descriptions for collaborative requirements, supporting students to navigate and to use required technological tools, and facilitating social–cognitive interactions were the main strategies identified.

Building a Safe Community

During the interviews, four students and two instructors highlighted that building a safe community is a key factor that influences online collaboration. Students need to feel safe and comfortable to actively participate in the collaboration process. As one student stated, "[Students] need to be able to feel comfortable in the environment and feel that [they] are valued members of the group, and … [they are] going to be respected when [they] participate and that [their] ideas are valuable." Another student reported, "There needs to be an environment that supports collaboration and makes people feel comfortable and positive about the process." A third student said, "I think when you feel comfortable talking with someone, you get more meaningful discussions; you're not afraid to give some criticism to people." Course (A) instructor explained that creating and maintaining an online community "doesn't happen overnight. It doesn't happen automatically. It really helps when you have a teacher who listens quite a bit" and enable social–cognitive relationships to be formed. Similarly, Course (B) instructor highlighted that the "relationship formation is foundational whether it's an online course or face to face, so how do you establish that safe and caring environment for learning to occur

where people can feel free to take risks and collaborate?"

To build a safe community, three strategies were identified. First, social activities were used to foster positive social relationships among and between students in the online environment. An introductory activity was used to provide an opportunity for students to learn about each other, such as their backgrounds, work experiences, and interests. In addition, course café was used as an informal space for students to interact with each other, share their experiences, ask for help, and exchange resources.

Second, providing and modeling proper etiquette was used to facilitate the formation of the community. Course (B) instructor highlighted that a "sense of professionalism and being kind to one another and respecting differences is extremely important" for online collaboration. Students also highlighted the importance of respectful manners in an online learning environment and how it can influence collaboration. For example, one student said, "I think you need to be able to feel comfortable in the environment and feel that you are a valued member of the group, and … you're going to be respected when you participate and that your ideas are valuable." The students appreciated how their instructors were keen in providing and modeling proper instruction that fostered meaningful online collaboration. As one student explained, "It was very clearly written to be respectful of each other and to keep an open mind."

Third, one student noted that synchronous sessions may affect students' sense of belonging and sense of community. According to the student, synchronous sessions do not affect the quality of learning but rather develop a sense of belonging: "Our human need to be a part of a group, a part of that community and a sense of who our peers are and where they're coming from… so you have that sense of empathy for each other."

In summary, the participants reported the importance of building a safe community to foster online collaboration. Three strategies were identified to build a supportive community: 1) Using social activities to form social relationships; 2) Providing and modeling proper instruction that values each member's contribution while providing constructive feedback; and 3) Incorporating synchronous sessions to promote a sense of belonging.

Model Desired Expectations

Modeling the desired expectations was identified as a supportive factor to promote online collaboration. This was evidenced by the instructor interviews. For example, Course (A) instructor said, "I think what's really important …is to model the type of behavior [that you want] students to do, so if you want to create a collaborative environment, you've got to model what it's going to be." The instructors in both courses modeled the learning process by moderating the first couple of weekly discussions as the main collaborative task. They posted discussion questions and then moderated the discussions by providing additional resources (e.g., videos, articles, experts), asking more questions to encourage deeper understanding, and responding to students' responses. As the instructor explained, moderating the first online discussion provided an opportunity for students to observe the moderation of an online discussion and therefore gave them a blueprint to follow or even

to use to create their own when they were responsible for facilitating the weekly discussion. The students appreciated their instructors' modeling. As one student stated, "That was really helpful for us to be able to see what we needed to do instead of just telling us what to do—being able to see it in action." Modeling the desired expectations assisted the students in clearly understanding the process/requirement and thus achieving the desired learning outcomes.

Guiding the Collaboration Process

The instructors' role did not end at the modeling stage of the learning process; their presence was needed to guide the collaborative process as well. This was highlighted by one instructor, who stated, "You need to be a leader. This is really important in an online course because what happens is things can really go off direction quickly. So, I've got to bring people back. I've got to refocus people and keep people moving forward." The instructors used various strategies to guide the collaborative process. For example, Course (A) instructor contacted each group during their collaborative process via email on three occasions: before they started moderating the weekly discussion to provide resources and to check whether they needed any additional help; in the middle of their collaboration process, specifically when they posted their weekly discussion questions to acknowledge their work; and at the end of the week's discussion to provide some suggestions and guidelines for their discussion summary.

The students appreciated the instructor's effort in guiding and supporting their process by providing examples and resources. For example, one student said that "the instructor just offering support, sending out emails to each group saying, 'are you okay? Do you have any questions? Here's the stuff that people did other years,' that's really helpful." Other students emphasized the importance of the instructor's presence and mentorship during the collaboration process to deal with emerging issues, such as unfair workload, unproductive students, and conflicting perspectives. Furthermore, the instructor made course announcements at the beginning of each week to acknowledge the groups' contributions. Announcements included acknowledgment for the moderators of the current week discussion for their effort as well as introducing the group that would be moderating the upcoming week discussion. He also reminded the students about the current week's tasks and the weekly discussion.

Course (B) instructor asked each group to submit a proposal for their respective topic seminar before their discussion moderation began to provide formative feedback. Based on the instructor's formative feedback, the students could enhance their design before they were moderating the seminar. The three students in the study appreciated the instructor's feedback. For example, one student said, "She [the instructor] gave us very constructive formative feedback, and we were able to integrate her feedback to [actually] provide a much higher quality seminar for our classmates." The instructor also emailed each group one or two weeks before the date of their seminar in case they needed help and after their seminar to acknowledge their work.

Overall, the online instructor played a crucial role throughout students' collaboration process. Providing formative feedback, resolving any conflict, acknowledging student contribution, and ascertaining the needs for

additional recourses and help were some of the advantages of guiding the student collaboration process.

Assess Collaboration Process and Outcomes

Using both formative and summative assessments was an important factor to support and to foster online collaboration. In both courses, the instructors provided ongoing formative feedback throughout the collaboration process, as explained in the previous sections. Furthermore, assessing the collaborative process influenced the students' level of participation. As one of the students noted, "You had to collaborate in order to complete your learning task, so it was in some ways forced." Another student stated that assessing the collaborative process motivated them to engage in the learning process: "That [was] part of your mark, so you have to participate. Otherwise, I think there would be people who would choose not to participate." For example, in the first course, all students provided peer feedback when it was a part of the grade. In contrast, the final project that did not include peer review as part of the assessment, and only eight of 23 students provided a peer review. According to the instructor, there is a need to have an assessment component even at the graduate level to motivate students to participate in the collaboration process as desired. Using both formative and summative assessments in the process and the products of collaboration was a critical pedagogy decision.

Discussion

Online collaborative learning requires careful planning of what do before to set the stage, during to facilitate the process, and after to assess the learning process and outcomes. Based on the findings from the study, setting the stage for collaboration is a supportive mechanism that enables the process to effectively occur. Building a supportive learning environment in which students feel safe to present their ideas and to negotiate their perspectives along with sufficient preparation for students to actively participate in the learning process are the main strategies that can be used to set the stage. The main key to building a community is establishing social relationships (Tu, 2004).

Similar to pervious literature, this study has demonstrated that establishing social relationships that facilitate collaboration could occur by conducting introductory activities, having a social space for informal interactions, such as Course Café, connecting students who have similar interests or backgrounds, and providing instruction on proper etiquette and how to word appropriate messages that develop social and cognitive relationships (Trespalacios et al., 2021; Garrison, 2011; Redmond & Lock, 2006). Furthermore, it cannot be assumed that online students are equipped with sufficient knowledge and skills for collaboration (Lock & Johnson, 2017). Therefore, there is a need for sufficient preparation and ongoing support to be offered to assist students, considering that students vary in their course expectations, experiences, and skills. Adopting approaches to support this diversity can help instructors in setting the stage for collaboration in a thoughtful way.

Online instructor presence plays a critical role in fostering online collaborative learning. Brindely, Walti, and Blaschke (2009) noted that an "instructor needs to intervene as required to keep discussions on track, support and animate dynamic conversation, help students stay focused on the task, assist with relationship building, and

provide reassurance" (p. 13). In this study, the instructors asserted their presence by posting announcements to remind students about each week's tasks, connecting with each collaborative group to see how things were progressing, sending emails to acknowledge students' interaction and contributions, modeling desired expectations, and providing ongoing formative feedback. These findings are in line with Demosthenous et al.'s (2020) examination of online collaborative learning as they found that effective online instructor presence is needed to facilitate the collaboration process and to foster communication skills between and among students to reach the desired outcomes.

Similar to Lock and Johnson (2017), this study has shown that meaningful assessments for online collaborative learning occur through the use of formative and summative assessments on both the process and the final products. Assessing the process of collaborative work aims to reduce some group work issues (i.e., imbalance individual contribution, inequality individual commitment, negotiation issues), which may influence students' satisfaction (Demosthenous et al., 2020). Providing formative feedback on group collaboration processes played two roles. First, it assisted students in accessing their strengths and weaknesses and thus improving their performance. Second, it enabled instructors to monitor the process and to ascertain the need for additional help and/or resources. Using summative assessments motivated students to actively participate in the learning process. Although students did appreciate collaborative learning, they did not actively participate as expected when it was not graded.

Implications and Conclusions

Online collaborative learning is a complex process that requires thoughtful preparation, facilitation, and assessment. As online students have various expectations and experiences, it is important to prepare and to guide them for online collaboration. Therefore, online instructors play an active role in creating a supportive environment that promotes collaboration and in guiding the process to reach the desired expectations. The results show that a trusting environment should be built in which students feel comfortable to present their ideas, negotiate their perspectives, and seek help when needed. The main key to building a trusting online learning environment is establishing and maintaining social relationships (i.e., introductory activity, course café thread discussion, connecting students with similar interests, etc.). Students also need clear expectations and specific guidelines to actively participate in collaborative learning. Students should be taught collaboration skills (i.e., providing constructive feedback, challenging others' perspectives in a respectful manner, etc.). Having an active, regular instructor presence is recommended. Several strategies could be used by instructors to maintain their presence, including, but not limited to: 1). Publishing regular announcements (i.e., upcoming learning tasks, acknowledging students' participation, etc.); 2) Connecting with each group collaboration to touch base; 3) Participating in the weekly discussions; 4) Providing virtual office hours; and 5) Providing feedback on students' performance. As important, the collaboration process needs to be assessed to motivate students to actively participate; otherwise, some students might not participate in the collaboration process as expected.

Understanding the online collaborative learning environment along with its pedagogical practices is critical. Stakeholders must be adequately prepared and supported throughout their experiences with online collaborative

learning. Meaningful online collaborative learning needs to be thoughtfully planned, designed, implemented, and assessed.

Limitations and Future Study

The limitation of the study is related to the nature of the research design and generalizability. The aim of the study was to gain an in-depth understanding of online collaborative learning through the involvement of stakeholders' perspectives. It is important to consider the limited number of participants in the study, which limits generalizability. Through the provision of a detailed description of the study, readers are more likely to determine whether the findings can be transferred to their settings. Future research on this topic is recommended. A larger study is needed with a more varied sample of courses from different disciplines and different levels of courses (i.e., graduate and undergraduate levels) to explore essential factors, and scaffolding to foster online collaborative learning is recommended.

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