FACULTY AND STUDENT PERCEPTIONS ABOUT ONLINE INTERACTIONS: DO FACULTY AND STUDENT PERCEPTIONS DIFFER?

Jessica Reece
FACULTY AND STUDENT PERCEPTIONS ABOUT ONLINE INTERACTIONS: DO FACULTY AND STUDENT PERCEPTIONS DIFFER?

by

Jessica Misha Reece

A Proposal Submitted in Partial Fulfillment of the Requirements for the Degree of Doctor of Education

Major: Instructional Design and Technology

The University of Memphis

May 2024
Dedication

This dissertation is dedicated to my family. To my late parents, Billy and Florence, I am grateful for the encouragement and values you instilled in me, as without you, this accomplishment would not have been possible. Dad, you always wanted me to be a doctor, so I guess you get your wish, just not exactly how you intended. To my best friend and partner, Joey, thank you for your support, encouragement, and patience as I pursued this doctorate. To my son, Joey, thank you for your patience and understanding that Mommy needed quiet time to work, and I cannot wait to see what all you accomplish. I have been truly blessed with such a wonderful, supportive family, and I am so thankful and love you all more than words can express.
Abstract

The demand for colleges across the world to convert their courses to an online format has increased with the number of learners enrolled in at least one online course increasing each year (Seaman et al., 2018). Unfortunately, a study by Garris & Fleck (2020) found that many students complained that when their courses transitioned to an online format, the course content became less enjoyable, less interesting, facilitated less interaction, and decreased in learning value. As a result, research is sorely needed to guide educators in preserving the educational value of college courses in a progressively digital context.

This study is guided by the framework of Michael G. Moore’s (1989) three types of interactions: learner-learner, learner-instructor, and learner-content. Moore’s theory states that learners should be able to interact with one another, their instructors, and with the content to achieve success, satisfaction, and motivation within the course. The purpose of this quantitative causal comparative study is to examine to what extent a student's perceptions of interactions (learner-learner, learner-instructor, learner-content) differ from faculty in an online course at a community college. Participants will be selected using a convenience sampling method and consist of faculty teaching online courses along with students currently enrolled in online courses. Data will be collected in the form of faculty and student surveys to answer the question of whether faculty and students’ perceptions about interactions differ in online courses.
Table of Contents

CHAPTER ONE: INTRODUCTION .........................................................................................3
  Introduction..................................................................................................................3
  Purpose Statement.......................................................................................................5
  Theoretical Framework .................................................................................................6
  Question(s) ..................................................................................................................6
  Definitions ..................................................................................................................7

CHAPTER TWO: REVIEW OF THE LITERATURE ............................................................9

CHAPTER THREE: METHODOLOGY ..............................................................................39
  Introduction..................................................................................................................39
  The Investigation Plan .................................................................................................40
  Participants/Learner Characteristics ........................................................................41
  Setting .......................................................................................................................42
  Data Collection/Procedures .......................................................................................45

CHAPTER FOUR: RESULTS ..............................................................................................48

CHAPTER FIVE: DISCUSSION AND CONCLUSIONS ....................................................57
List of Abbreviations

Information Technology (IT)

Institutional Review Board (IRB)

Learning Management System (LMS)

Teaching and Learning Center (TLC)
CHAPTER ONE: INTRODUCTION

Introduction

Over the past decade, technological advancements have caused an exponential growth in online learning in higher education with the number of learners enrolled in at least one online course increasing each year (Seaman et al., 2018). An LMS (learning management system) has proven itself as a powerful method of enhancing online course content. An LMS allows instructors to make course content directly accessible for students. In online learning, students interact with their peers and instructors through various asynchronous and synchronous options within the LMS (Vlachopoulos & Makri, 2019). When used in an online course, an LMS enhances opportunities for students to interact with course content, peers, and instructors. These three types of interactions in online courses are important in meeting students’ learning outcomes (Vlachopoulos & Makri, 2019), and interactions within a course keep the student engaged with the content and motivated to complete the course (Castro et al., 2019).

Moore (1989) suggested that three types of interactions - Learner-Content Interaction, Learner-Learner Interaction, and Learner-Instructor Interaction - are central to learning and motivation. All three types of interactions are important whether the course is delivered in a face-to-face or online learning environment. When Moore (1989) first proposed the three types of interaction, courses were largely delivered in a face-to-face model. Since then, Moore’s theory of the three types of interactions has been readily applied to the online context in several studies finding that online learning and activity-driven learner-content interactions have a positive
impact on academic achievement, but learner-instructor interaction is perceived as most important by students.

**Problem of Practice Statement**

In higher education institutions, online courses are becoming more commonplace (Xie et al., 2020). Despite their ubiquity, students say the transition to an online context has resulted in courses that are less enjoyable, less interesting, facilitated less interaction, and decreased in learning value (Garris & Fleck, 2020). When interviewed, students disclosed that online courses lack a sense of belonging, connectedness, and engagement which lead to dissatisfaction with the educational experience (Xie et al., 2020). Moreover, some students have expressed that they do not think online courses have the same interactive quality or potential to interact with instructors, peers, and content as offered by traditional face-to-face courses (Dobbs et al., 2017).

Overcoming this perceived shortcoming in online courses is essential since interactivity within an educational setting has been proven to increase student motivation and achievement.

Because many studies have focused on only one or two types of Moore's interactions, there is a need to evaluate the importance of all three types of interactions relative to the perspectives of faculty members and higher education students (Belcher et al., 2015). While prior studies on the three interaction types have often been situated within traditional 4-year institutions, there is a gap in the research within the context of online courses at a community college. Learner-learner, learner-instructor, and learner-content interactions influence motivation, engagement, and willingness to continue in online courses (Zhu et al., 2020); therefore, it is of immediate importance that faculty learn how their perceptions of interactions in
their online courses may differ from students’ perceptions. The awareness as to how these interactions diverge may allow instructors and learning designers to develop interactive online courses at a community college that are more motivational and engaging for students.

**Purpose Statement**

The purpose of this quantitative, descriptive cross-sectional study is to examine to what extent students’ perceptions of interactions (learner-learner, learner-instructor, learner-content) differ from faculty in an online course at a community college. Faculty and students’ perceptions about online interactions will be measured at one point in time. A descriptive cross-sectional design is used to determine “what is” faculty and student perceptions of interactions in an online course. The dependent variables will be the types of interaction (learner-learner, learner-instructor, learner-content) in the online course and the independent variables will be faculty and students. Learner-learner variables will be interactions between students. Interactions between the instructor and student(s) will be the learner-instructor variables. Learner-content variables will be interactions between the student and course material.

A well-designed online course with an active-learning environment engages students in the learning process by means of peer, instructor, content, and interface interaction (Croxton, 2014). Research is needed to determine how important instructors perceive learner-learner, learner-instructor, and learner-content interactions in an online course in comparison to how important students perceive these types of interactions (Borup, 2016). Research is needed to understand how all three types of interaction play a role in online courses. Research will provide
a basis of faculty’s perceptions of beneficial interactions in online courses versus the students’ perception of beneficial interactions.

**Theoretical Framework**

The theoretical framework guiding this study is Moore’s (1989) three types of interaction: learner-learner interaction, learner-instructor interaction, and learner-content interaction. Learner-learner interaction occurs between peers such as students communicating on a discussion board in an online course. Learner-instructor interaction occurs between faculty and students such as the faculty member providing feedback to a student on a discussion board, email, or assignment in an online course. Learner-content interaction occurs between the student and content such as the student reading course material provided in the LMS for the online course (Lin, Zheng, & Zhang, 2017). Moore suggested that these three types of interactions should be incorporated in online courses for students to achieve successful outcomes. He argued that distinguishing among these three types of interactions would assist instructors in facilitating meaningful interactions when using different media such as digital presentations, audio or video lectures, and a learning management system (LMS). Within this research study, the three interaction constructs will be used to dynamically compare the perspectives of faculty and students on the relative interactivity of an online course.

**Question(s)**

The research questions for this study are:
Research Question 1. To what extent, if any, do students’ perceptions and faculty perceptions at a community college differ regarding interactions (learner-learner, learner-instructor, learner-content) in online courses?

a. To what extent, if any, do students’ perceptions and faculty perceptions at a community college differ regarding learner-learner interactions?

b. To what extent, if any, do students’ perceptions and faculty perceptions at a community college differ regarding learner-instructor interactions?

c. To what extent, if any, do students’ perceptions and faculty perceptions at a community college differ regarding learner-content interactions?

Definitions

Learner-Learner Interaction. The interactions between learners either alone or in group settings, with or without the presence of an instructor (Moore, 1993).

Learner-Instructor Interaction. The interactions between the learner(s) and instructor or other subject matter expert acting as the instructor (Moore, 1993).

Learner-Content Interaction. The interactions between the learner and course material or subject of study (Moore, 1993).

Learning Management System. The Learning Management System is an online software application that most institutions use to facilitate online programs and resources (Vlachopoulos & Makri, 2019).
**Online Learning or Distance Learning.** Students access course material and interact and engage with their instructor, peers, and content online using the Internet and offer flexible learning opportunities to study and learn at their own pace (Xie et al., 2020).

**Community College.** A two-year institution primarily attended by students living in the community or service-area for the two-year institution (Ellefson, 2015).

**Faculty.** Those employed by a higher education institution, whose job includes planning curriculum, stimulating and maintaining student’s interest in what is to be taught, and motivating the student to learn (Moore, 1989).

**Students.** Those who are taking a course to understand and master the course material provided by the faculty member of the course (Moore, 1989).
CHAPTER TWO: REVIEW OF THE LITERATURE

Introduction

Higher education institutions are beginning to offer more online courses. Not all students have evaluated this change as a positive transition and have stated that, when transitioned to an online format, courses became less enjoyable, less interesting, facilitated less interaction, and decreased in learning value when compared to traditionally presented courses (Garris & Fleck, 2020). This dissatisfaction with online courses constitutes a problem that may impact enrollment and passing rates of students. The following literature review focuses on a solution to the problem of decreased interactions at a community college in online courses by examining how faculty and students’ perceptions of interactions (learner-learner, learner-instructor, learner-content) differ. This literature review will first discuss the theoretical context that frames the study: Moore’s (1989) three types of interaction (learner-learner, learner-instructor, and learner-content interactions).

Many studies have focused on only one or two types of interactions in university-level online courses. Studies have primarily focused on learner-content and learner-instructor interaction and demonstrated how those interaction constructs validate understanding of course content and increase satisfaction with online course engagement (Al Mamum et al., 2022; Kang and Im, 2013). In many cases, while these studies analyzed learner-content and learner-instructor interactions, they failed to consider how learner-learner interactions impact student satisfaction or motivation. This study will evaluate all three types of interactions (learner-learner, learner-instructor, learner-content) at a community college to address the gap in current research. By
comparing faculty and student perceptions of interaction in online courses at a community college, this study will guide instructors to leverage those interactions to build learning experiences that are most beneficial to students, increase enjoyment, and remove the feeling of isolation (Zhu et al., 2020).

**Theoretical Context**

Collaborative learning in an online setting is a multifaceted activity that consists of three unique interactions: learner-learner, learner-instructor, and learner content (Moore, 1989). Moore (1989) introduced the concepts of learner-learner, learner-instructor, and learner-content interactions as being important factors of student success in online courses. According to Moore’s framework, learner-learner interaction is any interaction between students, either through discussion or group work and with or without the presence of an instructor (1989). Alternatively, learner-instructor interaction is interaction between students and faculty, either individually or within a group (Moore, 1989). Learner-content interaction is the process of the learner interacting with course content or materials to gain an understanding of the subject matter and effectively apply activities, discussions, or assessments (Moore, 1989). Collectively, interactions within a course keeps the learner engaged and motivated to complete the content and results in better student satisfaction with the course (Castro et al., 2019). The following sections describe how interactions increase learning value for students in online courses, make the courses more enjoyable, and better connects students with their peers and faculty.

**Learner-Learner Interaction**
Advancements in technology have created more avenues for learner-learner interaction in online courses. Many colleges and universities have implemented an institution-wide online environment such as a learning management system (LMS) to facilitate learner-learner interaction in online courses. Students can interact with one another in online courses by using various tools within the LMS such as discussion boards, group work, peer feedback, and web-conferencing. Students can receive immediate feedback from other learners to reflect on their current knowledge of the content (Vlachopoulos & Makri, 2019). Learner-learner interaction encourages students to engage with peers to share ideas, ask questions, and negotiate new knowledge (Tawfik et al., 2018). In doing so, learner-learner interaction provides students with the ability to learn and later internalize what they learned as a result of interacting with other students through such methods as discussion board activities, group work, or web-conferencing (Sato, 2017).

Even though some students have expressed negativity toward these often compulsory activities (Beebe & Masterson, 2003), the strategies that support interaction between peers and peer feedback empower students with solutions and perspectives beyond the scope of a student initiate's limited experience (Roman et al., 2020). According to Gielen and De Wever (2015), learners must have opportunities to practice giving and receiving feedback in order for peer feedback to be beneficial to understanding and conceptualizing the content. Students can see other ways to apply the knowledge through the lens of other peers (Elizondo-Garcia & Gallardo, 2020). Students also benefit from learner-learner interaction because this interaction introduces students to diverse views, develops interpersonal relationships with other students, and allows
students to receive feedback from a variety of student backgrounds and experiences (Demosthenous et al., 2020). Peer feedback is thus a formative assessment critical element of the learning process because it enables students to broaden their ideas when receiving their peers’ opinions on a subject matter.

There are multiple strategies to support learner-learner interactions in online courses. Discussion assignments are usually designed by the instructor to encourage students to explore a particular topic or issue. The discussion assignments should provide students with a deeper understanding of the topic and challenge them to think critically and strategically about their own and their peers’ positions (Richardson & Ice, 2010). In addition, group work is another way to encourage learner-learner interaction. Students can share documents within the discussion board or through email in the LMS to collaborate with one another. Group work has advantages and disadvantages to facilitate learner-learner interaction. However, some students often dislike group work because they feel that some students do more work than others, one group member might try to dominate the project and conversation, and completing a project can take more time than doing it alone (Beebe & Masterson, 2003).

In conclusion, learner-learner interaction influences the degree to which students are able to learn and later internalize their discussions with peers (Sato, 2017). Online course discussions and peer feedback provide students with novel solutions, strategies, and perspectives that give alternative methods of applying knowledge (Elizondo-Garcia & Gallardo, 2020). According to the literature, faculty and students agree that, among potential learner-learner interactions, the most important is ice breaker discussions to create a supportive and friendly atmosphere and the
second most important working collaboratively (Bolliger & Martin, 2018). Studies by Alqurashi (2019) and Butler-Paisley and Clemetsen (2019) found that the quality of learner-learner interaction improves students' learning and satisfaction with online courses. Additionally, research by Belcher et al. (2015) revealed the quality of learner-learner interaction is dependent on the type of learner-learner activities incorporated in the online course by the curriculum designers. Contrastingly, several studies found that students perceive learner-learner interaction as the least effective means of promoting student satisfaction (Alqurashi, 2019; Kuo & Belland, 2016) because the interactions were poor in quality relative to their promotion of engagement (Alqurashi, 2019). The section below profiles specific studies related to each stakeholder.

**Faculty Perceptions of Learner-Learner Interaction**

Faculty can influence student success outcomes by designing learner-learner interaction activities in online courses (Belcher et al., 2015). Even though faculty agree on the benefits of learner-learner interaction, educators and students disagree regarding the benefits of its implementation (Bolliger & Martin, 2018). The following sections will provide an overview of studies conducted to measure the impact of learner-learner interactions in online courses and assess faculty perceptions of learner-learner interactions within their classrooms.

Learner-learner interactions promote engagement, satisfaction, and a sense of belonging among students (Belcher et al., 2015; Bolliger & Martin, 2018; Butler-Paisley & Clemetsen, 2019). A mixed methods study by Belcher et al. (2015) analyzed how 19 faculty behaviors from 91 courses can influence critical thinking within learner-learner interactions and which specific behaviors by faculty (19,595 responses) on a 5-point Likert scale of the Interaction Analysis
Model (IAM) result in the highest level of critical thinking within learner-learner interactions. The study found that there was a correlation between different behaviors and scores on the IAM. For example, when faculty present negative behaviors or are less engaged in learner-learner interactions, such as discussion board activities, students either consciously or unconsciously increase their cognitive engagement with peers. Additional research is needed to determine what specific faculty behaviors promote learner-learner interactions, such as asking challenging questions to verify the reliability of the sources’ findings (Shim & Walczak, 2012) or posting topics in advance to promote student interest (Bolliger & Martin, 2018).

In addition to measuring the impact of learner-learner interaction on student performance, additional studies have analyzed faculty perceptions of learner-learner interactions. Butler-Paisley & Clemetsen (2019) interviewed thirteen faculty members from a community college on their perspectives of how learner-learner interaction promotes student success. When interviewed, faculty reported they felt learner-learner interaction promoted enhanced learning, student growth, and student success. Some of the faculty stated they felt learner-learner interactions help students pay attention to coursework. Additionally, highly interactive students are able to deliver instructive help with course material in ways that the instructors are by providing explanations to peers using more relatable generational terms. Furthermore, the study indicated students, especially those students that commute to school and are not able to spend time on campus, benefit when faculty incorporate learner-learner interactions in the course. The study found that, when learning with their peers, students felt a sense of safety, comfort, and belonging. The study concluded that learner-learner interactions that promote peer collaboration
can enhance learning and understanding of course material while breaking up the monotony of the course work. Although these studies provide insight into faculty members’ perceptions of learner-learner interaction, more research is needed to identify best practices for faculty to increase learner-learner interaction in the classroom. Additionally, while it is important for faculty to increase learner-learner interactions, it is equally important for faculty to understand students’ perceptions of learner-learner interactions.

A study by Bolliger and Martin (2018) documented faculty strategies that foster learner-learner interactions and compared them to students’ perceptions of learner-learner interactions. Similarly, this study examines whether differences exist between faculty and student perceptions of student engagement. To extend the studies by Belcher et al. (2015) and Butler-Paisley & Clemetsen (2019) analyzing faculty from a single university that have interest in improving training and instruction using technology, the study by Bolliger and Martin (2018) participants included faculty members from several universities in the United States who teach online. The study found that faculty rate the following learner-learner interactions in descending order of importance: (a) icebreaker discussions allowing students to introduce themselves to the class, (b) students working collaboratively to complete projects, and (c) students using a virtual lounge to meet informally to share common interests. The data suggests that learner-learner interaction does not happen in isolation; rather, it is driven by targeted strategies that act as the catalyst for meaningful interaction. Faculty and students rated these interaction activities in the same order, but faculty rated learner-learner interaction significantly higher than the students (2018). Therefore, one can conclude that learner-learner interaction can only occur if faculty incorporate
meaningful learner-learner activities and understand what learner-learner activities students perceive are the most beneficial.

The studies by Belcher et al. (2015), Bolliger and Martin (2018), and Butler-Paisley and Clemetsen (2019) show how learner-learner interaction can promote student satisfaction, sense of belonging, critical thinking, and overall student success. But the success of the interaction is dependent upon the embedded activities that serve as the catalyst for learner-learner interaction. The aforementioned research underscores how learner-learner interaction plays a role in supporting critical thinking through asking challenging questions and encouraging students to respond to peer responses (Belcher et al., 2015; Bolliger & Martin, 2018). Some students feel as though learner-learner interaction activities - such as discussion threads, group work, or web conferencing - can be unnecessary or time-consuming (Beebe & Masterson, 2003). Despite the negative perception of these activities, learner-learner interaction introduces students to new views, helps them develop interpersonal relationships, and offers a variety of individually and focused feedback (Demosthenous et al., 2020). Therefore, it is critical that faculty understand their role in increasing learner-learner interactions (Belcher et al., 2015).

**Student Perceptions of Learner-Learner Interaction**

Whether or not students perceive learner-learner interaction as a contributing factor to student success or perceived learning depends on course-related strategies to support learner-learner interaction, such as discussion forums, course length, and course type (Alqurashi, 2019; Kuo & Belland, 2016; Kurucay & Inan, 2017). Several studies have been conducted to analyze student perceptions of learner-learner interactions and their effect on student satisfaction and
success. One study was conducted by Alqurashi (2019) to determine how graduate and undergraduate students (N=167) perceive learner-learner interaction in relation to student satisfaction and perceived learning by rating their level of confidence in online courses. Seventy-one percent of the participants were female and thirty-four percent of participants had no previous experience with online courses. It is also noteworthy that thirty-seven percent of the participants had only taken between one and five online courses. The results of the study showed that when learner-learner interaction was removed the standard error of coefficients was reduced and demonstrated that learner-learner interaction has no effect on student satisfaction with online courses. Alqurashi (2019) felt that learner-learner interaction was not a significant predictor of student satisfaction because, in spite of sufficient levels of student engagement, there was not enough quality interaction between peers. More research is needed to determine if learner-learner interactions of sufficient quality would have a demonstrable impact on student learning and satisfaction. Previous studies have shown that learner-learner interaction can influence student success and satisfaction in online courses, but the study by Alqurashi (2019) highlights the importance for quality learner-learner interactions to achieve student success and satisfaction.

Whereas Alqurashi (2019) focused on how students perceived learner-learner interactions and the quality of learner-learner interactions, others have explored how the instructional design of online tools (such as discussion boards) can impact the learning outcomes for this specific construct. For example, a study by Kuo & Belland (2016) analyzed the perceptions of online adult learners (N=167) from six online undergraduate courses using surveys to determine how learner-learner interactions affected their satisfaction and performance with online courses. Kuo
and Belland (2016) found the design of discussion board activities to be important and learner-learner interactions increased students’ participation; but too many discussion board type activities were found to negatively impact student participation in the course. While learner-learner interactions were shown to have the lowest correlation with internet self-efficacy, the inclusion of collaborative learner-learner activities appears to influence the level of student satisfaction in online courses. However, this study was limited in sample size (minority undergraduate students at a University) and variable assessment (such as how many courses students were taking at one time) making it difficult to generalize the study or apply it to other populations. Although previous studies have shown that the quality of learner-learner interactions can affect student satisfaction and success, the study by Kuo and Belland (2016) also highlighted the importance of balance in online course content; too many learner-learner interactions can negatively influence students’ satisfaction and success in an online course. One might conclude that learner-learner activities prevent students from feeling isolated, but it is important that students see these as valuable in light of all the other course related activities.

Whereas Kuo and Belland (2016) focused on undergraduate students taking at least one online course and whether learner-learner interactions influenced student satisfaction or success, other studies analyzed how strategic learner-learner interactions (such as working as a group) influenced student success in online courses. For example, a study conducted by Kurucay and Inan (2017) identified the effects of group work learner-learner interactions using a survey to determine students’ (N=77) satisfaction, perceived learning, and achievement in online undergraduate courses. This resulted in a correlation between learner-learner interaction and
achievement for students working within small groups, but learner-learner interaction did not have a significant impact on student satisfaction (2017). While the impact of learner-learner interaction on perceived achievement is noteworthy, the research by Kurucay and Inan (2017) study did not account for the quality or quantity of learner-learner interactions nor the participating student's varying levels of confidence in using technology. Although studies by Alquarashi (2019) and Kuo and Belland (2016) have examined how quantity and quality of learner-learner interactions influence student success and satisfaction, they argue that further research is needed on the design of learner-learner interactions and whether student confidence in using technology plays a significant role in student satisfaction and success. A summary of these studies is presented in Table 1.

The studies by Kuo and Belland (2016) and Kurucay and Inan (2017) focused on threaded discussion topics and group work as learner-learner interactions, but Kuo and Belland (2016) did not state if student perceptions of threaded discussion topics were different from perceptions of group work, nor if students preferred one over the other in terms of learner-learner interaction. However, the study by Kurucay and Inan (2017) did find that students working individually rated learner-learner interaction in terms of perceived learning and satisfaction higher than students working in small groups, but students working in small groups had higher assignment grades than the students working individually. According to Alqurashi (2019), learner-learner interactions can impact student satisfaction depending on the quality rather than the quantity of learner-learner interactions. These studies mentioned how group work was conducted and whether it was asynchronous (email, discussion, chat) or synchronous (web
conferencing), therefore those variables could impact student perceptions of learner-learner interactions. To maximize student satisfaction and success when designing learner-learner interactions for online courses, faculty should consider not only the quality of the learner-learner interaction but (a) the quantity of learner-learner interactions and (b) students’ experience in online courses. Even though the studies by Alqurashi (2019), Kuo and Belland (2016), and Kurucay and Inan (2017) found that learner-learner interaction is the least effective means to promote student satisfaction, it is still important to note that Alqurashi (2019) stated that effective interaction can only occur if learner-learner interactions are an intentional part students' learning.

Table 1

Summary of Learner-Learner Interaction Studies

<table>
<thead>
<tr>
<th>Faculty Perceptions</th>
<th>Author(s) and Year</th>
<th>Method(s)</th>
<th>Participants</th>
<th>Findings</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Belcher et al. (2015)</td>
<td>Quantitative and Qualitative</td>
<td>19,595 peer-to-peer responses</td>
<td>Faculty behaviors were considered to be either positive or negative. Some faculty behaviors had a mild impact on students’ critical thinking skills within threaded discussions.</td>
</tr>
<tr>
<td></td>
<td>Butler-Paisley &amp; Clemetsen (2019)</td>
<td>Qualitative</td>
<td>13 faculty members from a Community College</td>
<td>Social interaction has six positive effects on students: enhanced learning, appealing classroom atmosphere, student growth, membership in a supportive community, student success, and safety and comfort.</td>
</tr>
<tr>
<td></td>
<td>Bolliger &amp; Martin (2018)</td>
<td>Quantitative</td>
<td>161 faculty members</td>
<td>Faculty and students rated learner-learner interaction in this order starting with the most important: Icebreaker discussions, student collaboration projects, and student virtual lounge. Faculty rated each type of interaction slightly higher than students.</td>
</tr>
</tbody>
</table>
### Student Perceptions

<table>
<thead>
<tr>
<th>Reference</th>
<th>Methodology</th>
<th>Sample Description</th>
<th>Findings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alqurashi (2019)</td>
<td>Quantitative</td>
<td>167 graduate and undergraduate online students</td>
<td>Removing learner-learner interaction has no effect on student satisfaction with online courses, not because students did not engage enough, but because there was not enough quality peer interaction.</td>
</tr>
<tr>
<td>Kuo &amp; Belland (2016)</td>
<td>Quantitative</td>
<td>199 students from six undergraduate online courses</td>
<td>Learner-learner interaction alone did not significantly contribute to student satisfaction with online courses, but the number of hours spent in the online course environment did impact satisfaction.</td>
</tr>
<tr>
<td>Kurucay &amp; Inan (2017)</td>
<td>Quantitative and Qualitative</td>
<td>77 students enrolled in an online course</td>
<td>There is a correlation between learner-learner interaction and achievement when students work within small groups, but learner-learner interaction did not have a significant impact on student satisfaction when completing the course individually or within small groups.</td>
</tr>
</tbody>
</table>

### Learner-Instructor Interaction

Learner-instructor interaction can be a significant predictor of student satisfaction in online courses (Kuo et al., 2014). Learner-instructor interaction occurs when the instructor provides guidance, support, evaluation, and encouragement to students in either a synchronous or asynchronous learning environment (Ellefson, 2015). Synchronous interactions are virtual interactions that occur between the instructor and student at specified time on a specific day such as videoconferencing. Asynchronous interactions are interactions between the instructor and student that do not happen in real time and can occur through email correspondence or discussion boards (Bernard et al., 2009).
Each approach provides pedagogical benefits in online learning. Advantages for synchronous learner-instructor interactions are that students receive real-time knowledge and immediate support from the instructor to ask questions (Kuo et al., 2014). Students value videoconferencing and chat sessions to interact with their instructor, and, when utilized, students feel engaged with their instructor and online course (Martin & Bolliger, 2018). Alternatively, asynchronous learner-instructor interaction tools such as discussion boards create a student-centered experience (Covelli, 2017). Instructors can interact with students on discussion boards to provide assessments and confirm that the student understands the course material while also encouraging the student (Hernández-Sellés et al., 2019). The use of multiple communication channels to provide learner-instructor interaction leads to higher student engagement and satisfaction with online courses (Martin & Bolliger, 2018). Additionally, instructor feedback also helps students to develop collaborative skills and regular learning habits (Din et al., 2015). Kang & Im (2013) found learner-instructor interaction to be a significant predictor of student’s satisfaction in online courses, but Kuo et al. (2014) found that the impact of learner-instructor interaction on student satisfaction depends on the intensity and frequency of the interaction. Hernández-Sellés et al. (2019) found that effective learner-instructor interaction should be a combination of quality feedback, support and motivation, and management.

Faculty Perceptions of Learner-instructor Interaction

The incorporation of technology allows instructors to design online courses with a variety of tools to create learner-instructor interaction such as discussion board topics and forums, online assignment submissions, and online asynchronous or synchronous lectures. Students have
reported that interpersonal interaction with their instructors and collaboration through learner-instructor interactions are important in online learning (Chisum, 2020; Covelli, 2017). A study by Chisum (2020) demonstrated that faculty do not always rate levels of learner-instructor interaction the same as students. Therefore, faculty, in addition to providing valuable feedback to their students, need to understand and leverage their students' perspective to identify what aspects of learner-instructor interaction can be improved in their online course design. Previous studies have found that learner-instructor interaction increases student satisfaction in an online course, but learner-instructor interactions must be meaningful to the student (Chisum, 2020; Covelli, 2017). For example, learner-instructor interaction can promote student satisfaction in online courses when faculty incorporate meaningful interactions such as consistent feedback. Indeed, a literature review by Covelli (2017) analyzed best practices and strategies for online learning -specifically for instructors, students, and course design of the discussion board - to promote learner-instructor interaction. Covelli (2017) found that creating learner-instructor interactions using constructivist and student-centered discussions enhances the sense of engagement and creates meaningful relationships. Covelli (2017) concludes by arguing that instructors need to incorporate course design strategies such as audio and visual elements, faculty mentoring, tutorial training, and rules and guidelines in discussion boards to create effective learner-instructor interaction that students find beneficial to their success. Whereas the literature review by Covelli (2017) examined best practices and what should be done to promote learner-instructor interactions in online course, a study by Zheng et al. (2020) examined how specific strategies such as project-based and high-level knowledge activities affect learner-instructor
interactions. Moreover, the study by Zheng et al. (2020) analyzed how self-regulated learning (SRL) activities affect the interaction of online instructors and if emotions play a role in learner-instructor interaction when using a learning analytics (LA) dashboard called HOWARD. While the instructors interacted with the dashboard, HOWARD analyzed their activity by mapping where their cursors moved, identifying their patterns of navigation, and measuring how long they spent in each visualization activity. The results showed that expert online instructors were more likely to use the dashboard and incorporate the whiteboard tool to provide feedback to students about classroom discussions. Given the qualitative nature of the study, it did not consider online course experience by the instructor nor student or background information such as ethnicity and socio-economic status which could influence the type of learner-instructor interactions available in the course. The study highlights how the design of available tools affects what learner-instructor interaction activities are used by faculty in an online course and demonstrates how more experienced faculty better understand what learner-instructor interactions are most valued by students.

The studies by Covelli (2017) and Zheng et al. (2020) examined learner-instructor interaction course design elements and tools that influence student motivation and achievement, whereas some other studies examined the impact of the temporal aspects of learner-instructor interaction during online learning. For example, the study by Chisum (2020) examined student (N=442) and faculty (N=99) perceptions of engagement in a telecommunications course using interviews and a 5-point cross-sectional Likert survey. The questions in the survey were modified for the instructors to focus on instructor’s perceptions. The results showed a
statistically significant difference between student and faculty perceptions on all three factors: dialogic interaction, autonomous interaction, and interpersonal interaction. Students had higher positive perception of learner-instructor interaction delivered using the synchronous modality because it allowed students to have a more interactive approach to interact with faculty (2020). Although the study highlights the role of interactive tools that support learner-instructor interaction, further research is needed to determine if learner-instructor interactions are enhanced when using the other modalities that help learners connect with faculty.

These aforementioned studies found that learner-instructor interactions are enhanced through the use of synchronous meetings, consistent feedback from instructors, and student-centered discussions (Chisum, 2020; Covelli, 2017; Zheng et al., 2020). That said, the results from the studies above highlight the need for further research into the difference between faculty and student perceptions of learner-instructor interaction. Faculty need to be able to determine what learner-instructor tools and related interactions are the most beneficial to students and how they can design their online courses to incorporate these interactions to promote student success. A summary of these studies is presented in Table 2.

**Student Perceptions of Learner-Instructor Interaction**

There are various forms of learner-instructor interaction that include communication and feedback. Students need learner-instructor interaction in the form of feedback in order to know if they are receiving and understanding the content provided in the course. Feedback is achieved by communication with students through the use of discussion boards and synchronous live meetings within online learning contexts or through assessments of submitted work. Constructive
feedback needs to be timely, specific, enhance self-awareness, and bridge theory and practice because it is important to enhance student learning (Kourgiatakis et al., 2018). Research shows that learner-instructor interaction activities such as synchronous meetings, collaboration through discussions, and instructor assessment of projects are significant predictors of student satisfaction and perceived learning in online courses (Hernández-Sellés et al., 2019; Kuo et al., 2014; Kang & Im, 2013). The following studies highlight the importance of learner-instructor interaction and how it can be applied within different online tools to promote student success and satisfaction with online courses.

Hernández-Sellés et al. (2019) administered a survey to students (N=106) in five online courses to analyze the influence of learner-instructor interaction and understand the key factors that affect online collaborative learning (Hernández-Sellés et al., 2019). Learner-instructor interaction was evaluated on four items: (a) teachers guided their students in collaborative work groups, (b) teachers accompanied students in a way to favor learning, (c) teachers guided students to develop teamwork skills, and (d) teachers contributed to developing links within the learning community formed by each work team. The study showed that instructors that interact with students prevent feelings of loneliness, improve student teaching perceptions, and promote significant interaction during collaboration (2019). These findings indicate learner-instructor interactions are a byproduct of effective instructor guidance on projects and assignments that need to be implemented effectively to increase student success and decrease feelings of loneliness. The authors further concluded that faculty training on learner-instructor interaction is necessary to gain skills in teaching presence, social presence, and cognitive presence which
influences the types of learner-instructor interactions in an online course (Hernández-Sellés et al., 2019). Similar to Hernández-Sellés et al. (2019) and Covelli (2017), the study by Zheng et al. (2020) shows that faculty play a critical role in facilitating the online learning experience and learner-instructor interactions in ways that support meaningful learning experiences.

Whereas the study by Hernández-Sellés et al. (2019) examined learner-instructor interaction by collaborative groups and feedback, the study by Kuo et al. (2014) focused on the use of increased immediacy (synchronous meetings) to promote learner-instructor interactions. Participants in this study included 57 students with more than six years of computer experience from three sections in the Industrial Technology departments. Participants in the study completed a questionnaire on their perceptions of learner-instructor interaction and student satisfaction based on their use of a web conferencing tool called Interwise to have synchronous meetings. The study found a significant correlation between learner-instructor interaction and student satisfaction and shows that, as levels of interaction increases, student satisfaction also increases. While the findings provide important insights as to student perceptions of student-faculty interaction, this study had some limitations: the sample size was limited to one university, students were asked to only evaluate one course from their overall course load without accounting for dissimilarities in student proficiency or subject, and neither the quantity or quality of learner-instructor interaction was examined. Whereas both studies by Hernández-Sellés et al. (2019) and Kuo et al. (2014) found a positive relationship between learner-instructor interaction and student satisfaction in online courses, future research should include a more diverse population to include multiple disciplines and demographics.
Studies by Hernández-Sellés et al. (2019) and Kuo et al. (2014) examined the delivery of learner-instructor interactions in online courses, and studies building off of their research examined how faculty influence perceptions of learner-instructor interactions. For example, Kang and Im (2013) completed a study using a survey that examined what factors of learner-instructor interaction can predict student outcomes (N=654) in online courses. Questions focused on learner-instructor interaction and were measured based on five factors: guidance and facilitating learning, social intimacy, instructional communication (Q&A), presence of instructor, and instructional support. They found that factors relating to instructional interaction had a greater positive effect on perceived learning and satisfaction than social interactions. Faculty’s cultural characteristics in the course design may influence instructional interactions, and more research may be needed to explore different geographical areas with dissimilar cultural contexts. While technology can assist in the facilitation of learner-instructor interaction, the role of the instructor and his/her facilitation is a key element in a student's perception of value in the online learning experience.

The studies cited above focused on both learner-instructor and learner-learner interaction, and the commonality among study results are the student assignation of greater value to learner-instructor interaction more than learner-learner interaction. It is difficult to determine if learner-instructor interactions are perceived as more important than learner-learner interaction due to the design of the course or due to the quantity and quality of learner-instructor interaction provided. Therefore, faculty need to be able to determine what type of learner-instructor interactions are
the most beneficial to students and how they can design their online courses to incorporate these interactions to promote student success.

Table 2

Summary of Learner-Instructor Interaction Studies

<table>
<thead>
<tr>
<th>Faculty Perceptions</th>
<th>Author(s) and Year</th>
<th>Method(s)</th>
<th>Participants</th>
<th>Findings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Covelli (2017)</td>
<td>Qualitative</td>
<td>Research articles</td>
<td>Instructors should create discussion boards that create an environment for learning, pose meaningful questions, provide a specific grade for the discussion, and provide frequent and constant feedback. Instructors need to incorporate course design strategies such as audio and visual elements, faculty mentoring, tutorial training, and rules and guidelines to create effective learner-instructor interactions.</td>
<td></td>
</tr>
<tr>
<td>Zheng et al. (2020)</td>
<td>Qualitative</td>
<td>6 expert online instructors and 4 novice online instructors</td>
<td>Expert online instructors were more likely to use the dashboard and incorporate the whiteboard tool to provide feedback to students concerning their discussion content. They were also more likely to refer to their own personal teaching experience.</td>
<td></td>
</tr>
<tr>
<td>Chisum (2020)</td>
<td>Quantitative and Qualitative</td>
<td>442 students and 99 faculty with previous ITV experience</td>
<td>A statistically significant difference between student and faculty perceptions on all three factors of learner-instructor interaction are dialogic, autonomous, and interpersonal interactions.</td>
<td></td>
</tr>
</tbody>
</table>
**Student Perceptions**

<table>
<thead>
<tr>
<th>Study</th>
<th>Methodology</th>
<th>Sample Size</th>
<th>Findings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hernández-Sellés et al. (2019)</td>
<td>Quantitative</td>
<td>106 students from five online subjects</td>
<td>Instructors who interact with students prevent feelings of loneliness, improve student perceptions, and promote significant interaction during collaboration.</td>
</tr>
<tr>
<td>Kuo et al. (2014)</td>
<td>Quantitative</td>
<td>57 students from three sections in Industrial Technology departments</td>
<td>There is a significant correlation between learner-instructor interaction and student satisfaction, and, as levels of interaction increases, student satisfaction also increases.</td>
</tr>
<tr>
<td>Kang &amp; Im (2013)</td>
<td>Quantitative</td>
<td>654 students at K Online University</td>
<td>Learner-instructor interaction contributes more to student perceived learning outcomes and satisfaction with online courses than does social interaction.</td>
</tr>
</tbody>
</table>

**Learner-Content Interaction**

Learner-content interaction is the learner interacting with the course or course materials to gain an understanding and knowledge of the content. Learner-content interaction includes activities, reading, and media such as educational videos or tutorials (Vlachopoulos & Makri, 2019). Learner-content interaction is especially important in online courses because, since there isn’t an accompanying live classroom environment, students need to interact with the material in a way that keeps them motivated and engaged in learning. For example, incorporating media such as educational videos or tutorials is an effective way for instructors to incorporate learner-content interaction in online courses. Video lectures or tutorials are considered more beneficial than text in achieving student learning outcomes because the media affords more engagement...
when compared with a static approach (Vlachopoulos & Makri, 2019). Instructors can also make PowerPoint presentations interactive by recording a screen-share video showing the presentation, providing a narration of the text on screen, and then requiring students to answer questions based on the video lecture (Moore, 2016). These methods not only engage students in the content but also help students transfer the course material into working memory.

**Faculty Perceptions of Learner-Content Interaction**

Learner-content interaction in online courses allows students to be actively involved in knowledgeable retention of content, to reflect on the content, and to develop their understanding of the content (Moore, 1989; Owusu-Agyeman & Larbi-Siaw, 2018). The quality of the content interaction, however, is important for successful learning (Din et al., 2015). Learner-content interaction should incorporate content and related activities that are relevant to the intended learning objectives (Din et al., 2015; Murray et al., 2013). Students who interact with course content are given the capability to demonstrate their understanding of the content and to receive feedback from digital learning resources that reinforce their understanding of the content (Owusu-Agyeman & Larbi-Siaw, 2018).

It is important for faculty to be aware of their perspectives on interactions in online courses and be trained on how to properly incorporate learner-content interactions using an LMS (Clark & Webster, 2021; Schoenfeld-Tacher & Persichitte, 2000). For example, a study by Clark & Webster (2021) evaluated faculty perceptions of all three types of interactions in an online medical education context using the Online Engagement Strategies Questionnaire (OESQ). Although Clark & Webster (2021) explored all interaction, they notably found that faculty
perceived the most important method of learner-content interaction was the application of course material to real life scenarios.

Whereas studies by Clark & Webster (2021) analyzed the impact of faculty training on learner-content interactions, other studies analyzed how the design of the course and learner-content interactions can impact students. For example, a study completed by Ginda et al. (2019) used modular and transition measurements to evaluate themes in learner engagement by identifying how course design impacts learners' interaction with course content, activities, and assessments in online courses. The modular themes include the total number of events, dwell times for module usage, and the total number of learners active within a module at a time. The transitional themes include the proportion of learners transitioning between modules, time between transitions, and designed course paths. The results showed a disparity between instructors' estimates of course module completion times, based on their analysis of prior test runs and learner's expertise, versus the time actually taken by each learner within a module.

When utilizing videos as a learner-content interaction activity, instructors need to consider (a) the length of the video, (b) the degree of control students have over the video playback (speed up, pause, rewind, stop, etc.), and (c) the possibility of recording where students manipulate video (i.e. pausing and rewinding at a certain point) to determine if additional resource or clarification of that section is required. Instructors should also consider using assessments such as a pre-test and post-test to determine, after learners view a content video, if there are similarities in questions missed by all learners (2019). When creating learner-content interactions, instructors should consider (a) the quality of the activity, (b) the quantity of the
activity, (c) the time necessary to complete the activity, and (d) the type of activity. A summary of these studies is presented in Table 3.

**Student Perceptions of Learner-Content Interaction**

Learner-content interactions is viewed as a central component of online learning and involves interactions such as web conferencing, virtual meetings, and educational games to understand and transfer course content into working memory (Moore, 1989; Vlachopoulos & Makri, 2019). As more courses move to an online format, instructors must incorporate learner-content interactions in their courses (Din et al., 2015; Murray et al., 2013). The following studies highlight the importance of learner-content interaction and how it improves student satisfaction and perceived learning.

A research study by Din et al. (2015) focused on the three types of interaction (learner-learner, learner-instructor, and learner-content) and how it affects the students’ level of satisfaction with their online course. This study analyzed the importance of creating and providing learner-content interactions using a questionnaire given to students (N=71) at the University Technology MARA Distance Learning Program and determined that students not only want to review the course material, but also have a desire to understand the course material. They concluded that learner-learner interaction is more static, when compared with other constructs of interaction such as learner-content (Din et al., 2015). In terms of implications, students must be able to understand and learn the material provided by reading and interacting with the content.
Whereas previous studies evaluated the importance of learner-content interaction, other studies have evaluated what factors should be present in learner-content interactions. For example, Owusu-Agyeman and Larbi-Siaw (2018) analyzed 500 second- and third-year student responses to a survey and interview that focused on two questions to determine what factors promote effective learner-content interaction and how learner-content interaction can stimulate the development of knowledge and skills of students enrolled in online courses. The survey and interviews were based on design features of learner-content interaction of communality and redundancy, mediation effect, relation to real-life scenarios, and perceived importance of learner-content interaction. Using a structural equation model approach to analysis, the results showed a positive and significant relationship between a technology-mediated learning environment and learner-content interaction. More specifically, providing digital learning content in a technology-mediated learning environment increases learner-content interaction and increases student satisfaction with online courses (Owusu-Agyeman & Larbi-Siaw, 2018). Moreover, using various forms of technological tools to deliver learner-content interactions promotes students’ development of knowledge and skills when taking online courses. This provides additional evidence that learner-content interaction that is facilitated through mediated technology allows students to interact with the content, develop critical thinking skills, and develop their own understanding of practical theories related to the content (2018).

Studies have expanded on the research of the role learner-content interactions play in student success in online courses. For example, Murray et al. (2013) completed a study on students enrolled in eight sections of digital literacy courses that compares student’s patterns of
access to course content, what types of content were accessed, and how often students interacted with the content to determine what contributed to student success. The course was designed for students to complete weekly modular assignments that required reading, links to online tutorials and instructional videos, related material on the Web, and other instructor-prepared documents. Students were required to complete an assignment and quiz each week. They analyzed student data by reviewing the progress report provided within the LMS for each student. Four sections in the course were analyzed: course materials, direct support, indirect support, and ancillary materials. They found that most students in both hybrid and online courses accessed course materials including the syllabus, course schedule, and training program instructions, but most students did not access the course netiquette statement. Results showed that access rates for online students were higher than hybrid students, but there was only a slight marginal difference between students in both sections. The study concluded that the more resources a student can access in a course, then the more likely they are to receive a higher grade in the course. Students were also sent a survey and asked to report how often they accessed the course material and describe their motivations for doing so. Online students reported a higher access rate of course content than did hybrid students. However, online students reported they accessed indirect materials more than what the LMS reported. The majority of students reported they did not access materials that were not tied to an assessment (2013). This study highlighted the need for designing online courses with meaningful learner-content interactions.

Research from the aforementioned studies shows that, in online courses, students assign a high value on accessibility to multiple media formats and examples of realistic scenarios for
effective learner-content interactions (Bolliger & Martin, 2018). The studies by Din et al. (2015), Murray et al. (2013), and Owusu-Agyeman and Larbi-Siaw (2018) show that there is a significant relationship between student satisfaction and success rates associated with learner-content interaction. Instructors should consider incorporating interactive lessons that require learners to answer questions or take assessments based on the course material provided in the lesson (Ginda et al., 2019; Yusoff et al., 2018). When choosing interaction activities, instructors should also consider the time required to complete activities, associate activities with real-life scenarios, and offer assessment-based activities (Din et al., 2015; Murray et al., 2013; Owusu-Agyeman & Larbi-Siaw, 2018). Instructors also need support from course designers to effectively evaluate whether the educational games they choose will support learning outcomes and to ease discourse when incorporating learner-content interaction in an online learning environment (Sánchez-Mena et al., 2019; Yusoff et al., 2018). A summary of these studies is presented in Table 3.

Table 3

Summary of Learner-Content Interaction Studies

<table>
<thead>
<tr>
<th>Faculty Perceptions</th>
<th>Author(s) and Year</th>
<th>Method(s)</th>
<th>Participants</th>
<th>Findings</th>
</tr>
</thead>
</table>

36
<table>
<thead>
<tr>
<th>Study</th>
<th>Methodology</th>
<th>Study Details</th>
<th>Findings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clark and Webster (2021)</td>
<td>Quantitative</td>
<td>178 faculty at a University teaching magnetic resonance, medical dosimetry,</td>
<td>Learner-instructor interactions to be perceived as the most important by faculty Learner-content interactions were perceived as more important than learner-learner interactions. The most important concept for learner-content interactions was applying course material to real life scenarios.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>radiation therapy, and radiography programs</td>
<td></td>
</tr>
<tr>
<td>Schoenfeld-Tacher and Persichitte (2000)</td>
<td>Qualitative</td>
<td>Six faculty members teaching online courses at a Doctoral institution</td>
<td>Prior levels of technology experience did not influence their perceptions of teaching online courses, but prior knowledge of online education theories did influence their perceptions. Instructors felt they needed more training on pedagogical skills to effectively interact/communicate and teach with multimedia to incorporate learner-content interactions.</td>
</tr>
<tr>
<td>Ginda et al. (2019)</td>
<td>Qualitative</td>
<td>1,565 engineers registered for MITxPro Course</td>
<td>Instructors reported different time estimates, based on test runs and learner’s expertise, from the time taken by each learner within a module. Video length is another factor that should be considered, and whether they should allow learners to speed up videos, pause, rewind and stop the video in order to record where these actions take place.</td>
</tr>
<tr>
<td>Study</td>
<td>Methodology</td>
<td>Sample Description</td>
<td>Findings</td>
</tr>
<tr>
<td>-----------------------------------</td>
<td>-------------</td>
<td>------------------------------------------------------------------------------------</td>
<td>---------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Din et al. (2015)</td>
<td>Quantitative</td>
<td>150 students in the University Technology MARA Distance Learning Program</td>
<td>Learners rated learner-content interaction resulting in the highest level of satisfaction with the course, but learner-content interaction was still 20 points below the mean, so there is a need for improvement in learner-content interaction.</td>
</tr>
<tr>
<td>Owusu-Agyeman &amp; Larbi-Siaw (2018)</td>
<td>Quantitative and Qualitative</td>
<td>Second- and third-year students enrolled in reading courses through FTF and online learning</td>
<td>A positive and significant relationship between mediation and learner-content interaction, mediating technology and digital learning content, and learner-content interaction has a direct relationship with digital learning content.</td>
</tr>
<tr>
<td>Murray et al. (2013)</td>
<td>Qualitative</td>
<td>Students enrolled in eight sections of hybrid and online digital literacy courses</td>
<td>Access rates for online students were higher than hybrid students. Online access rates were higher than the hybrid access rates. The more resources students access in a course, the more likely they are to receive a higher grade in the course.</td>
</tr>
</tbody>
</table>

**Summary/ Solution**

Much of the research that examined how interaction influenced student satisfaction in online courses followed Moore’s (1989) three types of interaction framework. Moore stated that distance-learning courses need to incorporate learner-learner, learner-instructor, and learner-content interactions. Studies have consistently found that learner-instructor and learner-content interaction were positively correlated with student satisfaction and perceived learning while learner-learner interaction had the lowest influence on student satisfaction (Kuo & Belland,
Online students can benefit from Moore’s (1989) three types of interactions within the course by connecting with their instructors, other students, and the content. These interactions among the learner, instructor, and content are primary factors in effective online courses and can be critical factors in shaping students’ continuance and satisfaction with online learning courses (Zhu et al., 2020). Indeed, studies have shown the strength of interaction and the relationship between cognitive and social interaction was associated with increased achievement outcomes (Bernard et al., 2009; Hernández-Sellés et al., 2020).

The studies above also underscore that instructors and students may not always perceive interactions in online courses the same, so further research is needed to determine if there are differing perceptions between instructors and students when it comes to interactions within an online course. Further research is needed on students’ and instructors’ perceptions of interactions in online learning (Zhu et al., 2020) to identify misalignment and provide a way for instructors to improve interactions within their online courses.

**CHAPTER THREE: METHODOLOGY**

**Introduction**

Because higher education institutions have continually offered more online courses since 2019, it is important to understand how faculty and students view interactions in online courses at a community college. Students have expressed lacking a sense of belonging, connectedness, and engagement in online courses - all factors that lead to dissatisfaction and a decrease in motivation (Xie et al., 2020). Michael G. Moore (1989) suggested that instructors should focus
on three types of interactions in online courses: learner-content interaction, learner-learner interaction, and learner-instructor interaction. The purpose of this study is to compare the difference between faculty and student perceptions about interactions (learner-content, learner-instructor, and learner-learner) in online courses at a community college.

**The Investigation Plan**

This problem of practice will be evaluated using a quantitative, descriptive and inferential design. A descriptive design will be used to describe faculty and student responses to each type of interaction based on the mean of responses of each interaction scale. An inferential independent sample t-test is necessary to determine if faculty and student perceptions of interactions (learner-learner, learner-instructor, learner-content) differ in online courses by comparing the means of responses. This statistical design is appropriate because the difference of perceptions is being compared between two unrelated groups - faculty and students. Studies examining online interactions have used descriptive designs (Zhu, Zhang, Au, and Yates, 2020; Hernández-Sellés, Muñoz-Carril, and González-Sanmamed, 2019; Lin, Zheng, and Zhang, 2017).

The instrument for this quantitative study will be in the form of a survey using a 5-point Likert scale. The survey will be disseminated to all faculty teaching online courses and all students taking at least one online course to generate a convenient sample population. Participants will be conveniently selected from the groups of faculty and students. Participants from the population will only be eliminated if they did not select a response for every question.
Conveniently selecting from faculty teaching at least one online course and students taking at least one online course will eliminate any bias from the study and ensure validity of the study.

**Participants/ Learner Characteristics**

According to Creswell (2020), a good sample size represents ten percent of the population (p. 173). The participant sample will be selected using a convenience sampling method. All faculty teaching online courses and students taking online courses will be surveyed to achieve a ten percent representation of the online faculty and student population at X community college. The population consists of faculty teaching online courses and students taking online courses at a small community college. The sample will consist of faculty who teach online courses and students who are currently enrolled in online courses during the Fall 2023 semester. In the fall semester, there are seventy-five full-time and adjunct faculty teaching online courses with a maximum of twenty-five students enrolled in each course section. The interactive class schedule will be analyzed and then verified by the deans through email correspondence confirming which faculty are teaching online courses during the Fall 2023 semester. Faculty participants teaching online will be contacted by intercampus communication via email correspondence to inform them of the study and request their participation in the study.

Following Creswell’s (2020) method for convenience sampling, faculty members will be chosen based on their convenience and availability. To identify and select student participants, I will run an Argos report to determine which students are currently enrolled in online courses. Students identified as enrolled in online courses will be contacted by inter-campus communication via email correspondence to inform them of the study. The survey will be sent to all students taking
online courses to achieve a sample size of ten percent of the online student population. Since this community college has a significant dual enrollment population, the student population will consist of high school students taking online courses in the dual enrollment program and traditional age students. To increase student participation, faculty will be asked to post the survey link in their courses for students to take the survey online, and faculty will be asked to encourage students to complete the survey. This study will follow a descriptive, inferential design.

**Setting**

The setting is X community college located in a midsize urban area in the southeastern United States. Online courses make up roughly 30% of the total course offerings in a semester, and the demand for online courses has increased (Seaman et al., 2018). The setting of a community college will provide further research in faculty and student perceptions of the interactions. There is a gap in the research to determine whether faculty and students have different perceptions about interactions in online courses at a community college. The majority of previous research has focused on the student role with interactions at the university level or only focused on one or two types of interactions from Moore’s interaction theory.

**Instrumentation/ Data Collection Methods**

A validated and reliable instrument from a recent research study by Zhu, Zhang, Au, and Yates (2020) will be used to identify if faculty and students have different perceptions of online course interactions (learner-learner, learner-instructor, learner-content) in an online course at a community college to answer each research question. The same survey instrument will be sent to both online faculty and online students at X community college to increase the reliability and
construct validity of the results. In the survey sent to faculty and students, participants will be asked to share their demographics. Faculty will be asked to share sex, race, education level, and prior experience with teaching or developing online courses. Students will be asked to share sex, race, age, academic year, and prior experience with online courses. Surveys will be administered using Qualtrics with a link to the survey emailed to faculty and students.

Survey question items will be generated from three scales (learner-learner interaction, learner-instructor interaction, and learner-content interaction) using nineteen items adopted from a study by Zhu et al. (2020). I received permission to use the instrument by emailing the lead author. Yue Zhu provided all indexed items from the instrument concerning perceived importance of online interaction that were not included in the article.

Zhu et al. (2020) indexed the three interaction scales on a 5-point Likert-type scale with 1 indicating not important at all and 5 indicating extremely important. An example item on Zhu et al. (2020) instrument includes, “I have frequent communication with the other students in my class or tutorial group.” See Appendix A for additional instrument items from the Zhu et al. (2020) study.

The instrument is proven to be valid and reliable based on the Cronbach Alpha scores for each subscale Zhu et al. (2020). Learner-content interaction items had a Cronbach’s alpha of .95, learner-instructor interaction items had a Cronbach’s alpha of .94, and learner-learner interaction items had a Cronbach’s alpha of .92. The instrument was developed from subscales from Kuo et al. (2014), Moore (1993), and Moore and Kearsley (2011) and those instruments have been widely used and developed for measuring perceived course interactions. The instrument was
used in the study by Zhu et al. (2020) to measure students’ perceptions of learner-learner, learner-instructor, and learner-content interactions in online courses.

One limitation to the study is the location of the study as it is a small community college with a student FTE of 2,400, however, most of the location's faculty and student population teach or take at least one online course during any given semester. Another limitation is that technology is not being considered in this study. The variable of technology is not being considered because not all faculty and students use the same devices or have the same access to high-speed internet. Eliminating the variable of technology will increase the validity of the study because participants will only evaluate the interaction itself and not reliability of technology.

Table 4

*Instrument for faculty and students*

<table>
<thead>
<tr>
<th>Subscale</th>
<th>Statement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Learner-Content</td>
<td>The learning objectives or goals are clearly indicated in the online course.</td>
</tr>
<tr>
<td>Learner-Content</td>
<td>The learning objectives or goals are reasonable in the online course.</td>
</tr>
<tr>
<td>Learner-Content</td>
<td>The course information (instruction, discussion, assignment, etc.) or materials are clear in the online course.</td>
</tr>
<tr>
<td>Learner-Content</td>
<td>The schedule of the course is reasonable and fair in the online course.</td>
</tr>
<tr>
<td>Learner-Content</td>
<td>The assessment for the course is reasonable and fair in the online course.</td>
</tr>
<tr>
<td>Learner-Content</td>
<td>The course content is clearly presented on the web pages in the online course.</td>
</tr>
<tr>
<td>Learner-Content</td>
<td>The course content is comprehensive and updated frequently in the online course.</td>
</tr>
</tbody>
</table>
There is frequent communication between faculty and students in the online course.

There are timely responses from the instructor and students inquires in the online course.

The responses between instructor and students are always helpful in the online course.

The instructor frequently encourages students to be engaged in online contributions for discussion in the online course.

The instructions or feedback from the instructor are clear in the online course.

The instructor is quite capable to help me with my problems of computer and the Internet use in the online course.

A good relationship can be kept between the instructor and student through online communication in the online course.

There is frequent communication between students in the online course.

Timely responses are given from other students when communicating with other students, e.g. writing them via email, participating in online discussion) in the online course.

The responses from other students are always helpful in the online course.

Good relationships can be kept between students through online communication in the online course.

Data Collection/Procedures

I will secure Institutional Review Board (IRB) approval and submit required documentation to IRB X community college where I am conducting my study and collecting
data. I will also submit required documentation to the IRB at the university where I am obtaining my Ed.D. Approval will be obtained from each dean at X community college as the acting supervisors over the online faculty members, from faculty members to participate in the study, and from students taking online courses. Faculty and students will sign a permission form stating that they are willing to participate in the research study. The IRB approval documentation forms will include a detailed statement explaining the purpose of the study, how participants will be selected, and copies of the survey instrument that will be distributed.

Faculty and student names will be removed from the data report and replaced with pseudonyms to protect confidential information and adhere to FERPA policies and procedures. I will coordinate with our IRB department along with the Information Technology (IT) department to ensure that our data storage policy is followed concerning storing confidential information that includes protected data under FERPA. I was raised to treat others as I would want to be treated, so I feel it my duty to protect faculty and student identifying information that will be obtained in this study (name, age, race, sex, etc.) in the same manner I would want my privacy protected.

Table 5

<table>
<thead>
<tr>
<th>Tasks and procedures for collecting data</th>
</tr>
</thead>
<tbody>
<tr>
<td>Week</td>
</tr>
<tr>
<td>------</td>
</tr>
<tr>
<td>2</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
</tbody>
</table>

46
An independent samples $t$ test will be run for faculty and students for each subscale (learner-learner, learner-instructor, learner-content).

Compare means of faculty and student responses for each subscale.

**Analysis**

Descriptive and inferential statistics of an independent sample $t$-test will be used to describe and analyze the data obtained for Research Question One. Descriptive statistics will be used to analyze the mean responses by faculty and students for each interaction scale. Inferential statistics are typically used to compare the means of two unrelated groups (Creswell, 2020). Data from the survey will be analyzed based on the mean of responses to the Likert-type scale survey to determine if faculty and students’ perceptions of interactions (learner-learner, learner-instructor, learner-content) differ in an online course. A normality test will be conducted for each scale to establish normality of the data. After normality of the data is established, an independent sample $t$-test will be used to analyze whether the mean results are significantly greater or less than the $p$ value of 0.05. To achieve a ten percent representation of the population for the sample size for a descriptive and inferential statistics analysis, at least six faculty members and fifty students will be surveyed to answer Research Question One.
CHAPTER FOUR: RESULTS

Introduction

The purpose of this quantitative, survey-based research is to determine if faculty and student perceptions of interactions in online courses differ. Faculty and students were surveyed to determine their perception of importance of learner-content, learner-instructor, and learner-learner interactions in online courses. Research Question 1. To what extent, if any, do students’ perceptions and faculty perceptions at a community college differ regarding interactions (learner-content, learner-instructor, learner-learner) in online courses?

a) To what extent, if any, do students’ perceptions and faculty perceptions at a community college differ regarding learner-content interactions?

b) To what extent, if any, do students’ perceptions and faculty perceptions at a community college differ regarding learner-instructor interactions?

c) To what extent, if any, do students’ perceptions and faculty perceptions at a community college differ regarding learner-learner interactions?

Data was collected in Qualtrics and analyzed in SPSS. Variable names and codes were listed in SPSS to compare the means of responses between faculty and students for each subscale of interactions (learner-content, learner-instructor, learner-learner). The data was split into two groups based on their status of either faculty or student at the college. Descriptive statistics were run on the data in SPSS to determine the frequency and mean responses for each subscale of interactions (learner-content, learner-instructor, learner-learner). An independent samples t-test was used to test for equality of means and effect sizes.
Instrument Validity and Reliability

Instrument validity was analyzed using correlations to determine the relevance of the questions. Validity is established for learner-content (Q10) and learner-instructor (Q11) with a correlation between .15 and .50. Validity is questionable for learner-learner (Q12) due to a higher than .50 correlation (See Table 1.1, 1.2, and 1.3).

Table 1.1 Learner-content correlation matrix

<table>
<thead>
<tr>
<th></th>
<th>Q10_1</th>
<th>Q10_2</th>
<th>Q10_3</th>
<th>Q10_4</th>
<th>Q10_5</th>
<th>Q10_6</th>
<th>Q10_7</th>
</tr>
</thead>
<tbody>
<tr>
<td>Q10_1</td>
<td>1.000</td>
<td>.525</td>
<td>.307</td>
<td>.308</td>
<td>.144</td>
<td>.301</td>
<td>.317</td>
</tr>
<tr>
<td>Q10_2</td>
<td>.525</td>
<td>1.000</td>
<td>.391</td>
<td>.421</td>
<td>.331</td>
<td>.267</td>
<td>.353</td>
</tr>
<tr>
<td>Q10_3</td>
<td>.307</td>
<td>.391</td>
<td>1.000</td>
<td>.676</td>
<td>.568</td>
<td>.487</td>
<td>.358</td>
</tr>
<tr>
<td>Q10_4</td>
<td>.308</td>
<td>.421</td>
<td>.676</td>
<td>1.000</td>
<td>.438</td>
<td>.297</td>
<td>.425</td>
</tr>
<tr>
<td>Q10_5</td>
<td>.144</td>
<td>.331</td>
<td>.568</td>
<td>.438</td>
<td>1.000</td>
<td>.624</td>
<td>.550</td>
</tr>
<tr>
<td>Q10_6</td>
<td>.301</td>
<td>.267</td>
<td>.487</td>
<td>.297</td>
<td>.624</td>
<td>1.000</td>
<td>.584</td>
</tr>
<tr>
<td>Q10_7</td>
<td>.317</td>
<td>.353</td>
<td>.358</td>
<td>.425</td>
<td>.550</td>
<td>.584</td>
<td>1.000</td>
</tr>
</tbody>
</table>

Table 1.2 Learner-instructor correlation matrix

<table>
<thead>
<tr>
<th></th>
<th>Q11_1</th>
<th>Q11_2</th>
<th>Q11_3</th>
<th>Q11_4</th>
<th>Q11_5</th>
<th>Q11_6</th>
<th>Q11_7</th>
</tr>
</thead>
<tbody>
<tr>
<td>Q11_1</td>
<td>1.000</td>
<td>.439</td>
<td>.487</td>
<td>.464</td>
<td>.426</td>
<td>.541</td>
<td>.397</td>
</tr>
<tr>
<td>Q11_2</td>
<td>.439</td>
<td>1.000</td>
<td>.352</td>
<td>.164</td>
<td>.545</td>
<td>.275</td>
<td>.389</td>
</tr>
<tr>
<td>Q11_3</td>
<td>.487</td>
<td>.352</td>
<td>1.000</td>
<td>.573</td>
<td>.458</td>
<td>.400</td>
<td>.378</td>
</tr>
<tr>
<td>Q11_4</td>
<td>.464</td>
<td>.164</td>
<td>.573</td>
<td>1.000</td>
<td>.441</td>
<td>.550</td>
<td>.428</td>
</tr>
<tr>
<td>Q11_5</td>
<td>.426</td>
<td>.545</td>
<td>.458</td>
<td>.441</td>
<td>1.000</td>
<td>.353</td>
<td>.376</td>
</tr>
<tr>
<td>Q11_6</td>
<td>.541</td>
<td>.275</td>
<td>.400</td>
<td>.550</td>
<td>.353</td>
<td>1.000</td>
<td>.400</td>
</tr>
<tr>
<td>Q11_7</td>
<td>.397</td>
<td>.389</td>
<td>.378</td>
<td>.428</td>
<td>.376</td>
<td>.400</td>
<td>1.000</td>
</tr>
</tbody>
</table>
The assumption of equality was determined using the Levene’s Test for Equality. Equality was not achieved for the learner-content subscale \((p=.010)\), but it was for learner-instructor \((p=.379)\) and learner-learner \((p=.155)\) subscales. When equality was violated, the equal variances not assumed values were used for the learner-content subscales. A summary of the equality test for variance is provided in Table 2.

<table>
<thead>
<tr>
<th></th>
<th>Equal variances assumed</th>
<th>Equal variances not assumed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Learner-content</td>
<td></td>
<td></td>
</tr>
<tr>
<td>interactions</td>
<td>6.926 (F)</td>
<td>.010 (p)</td>
</tr>
<tr>
<td></td>
<td>2.289 (t)</td>
<td></td>
</tr>
<tr>
<td>Learner-instructor</td>
<td>.781 (F)</td>
<td>.379 (p)</td>
</tr>
<tr>
<td>interactions</td>
<td>1.505 (t)</td>
<td></td>
</tr>
<tr>
<td>Learner-learner</td>
<td>2.053 (F)</td>
<td>.155 (p)</td>
</tr>
<tr>
<td>interactions</td>
<td>.319 (t)</td>
<td></td>
</tr>
</tbody>
</table>

Reliability statistics were analyzed to determine instrument reliability. Instruments that have a Cronbach’s alpha of greater than .70 are considered reliable (Taber, 2017). Instrument reliability is achieved with all items on this instrument having a Cronbach’s alpha score greater than .80. Table 3 provides the statistical analysis for the survey instrument reliability.

<table>
<thead>
<tr>
<th></th>
<th>Cronbach’s Alpha</th>
<th>Cronbach’s Alpha</th>
<th>N of Items</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Based on Standardized Items</td>
<td>Alpha</td>
<td></td>
</tr>
<tr>
<td>Learner-content</td>
<td>.821</td>
<td>.831</td>
<td>7</td>
</tr>
<tr>
<td>Learner-instructor</td>
<td>.824</td>
<td>.836</td>
<td>7</td>
</tr>
<tr>
<td>Learner-learner</td>
<td>.889</td>
<td>.890</td>
<td>4</td>
</tr>
</tbody>
</table>
**Demographics**

Participants (N=108) were made up of faculty (N=56) and students (N=52) with the majority females (N=83). The majority of the participants were between 18-24 years old (N=28) and 46-55 years old (N=23) with one to two years’ experience teaching or taking online courses (N=51). (See Tables 4.1, 4.2, 4.3, 4.4, 4.5, and 4.6).

<table>
<thead>
<tr>
<th>Table 4.1 Status demographics</th>
<th>Frequency</th>
<th>Percent</th>
<th>Valid Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Faculty</td>
<td>56</td>
<td>48.3</td>
<td>51.9</td>
</tr>
<tr>
<td>Student</td>
<td>52</td>
<td>44.8</td>
<td>48.1</td>
</tr>
<tr>
<td>Total</td>
<td>108</td>
<td>93.1</td>
<td>100.0</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Table 4.2 Gender demographics</th>
<th>Frequency</th>
<th>Percent</th>
<th>Valid Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Faculty</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>43</td>
<td>37.0</td>
<td>39.8</td>
</tr>
<tr>
<td>Male</td>
<td>12</td>
<td>10.2</td>
<td>11.1</td>
</tr>
<tr>
<td>Prefer Not to Say</td>
<td>1</td>
<td>.9</td>
<td>.9</td>
</tr>
<tr>
<td>Student</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>41</td>
<td>37.0</td>
<td>38.0</td>
</tr>
<tr>
<td>Male</td>
<td>10</td>
<td>6.5</td>
<td>9.3</td>
</tr>
<tr>
<td>No Response</td>
<td>1</td>
<td>.9</td>
<td>.9</td>
</tr>
<tr>
<td>Total</td>
<td>108</td>
<td>92.5</td>
<td>100.0</td>
</tr>
</tbody>
</table>
### Table 4.3 Age demographics

<table>
<thead>
<tr>
<th></th>
<th>Frequency</th>
<th>Percent</th>
<th>Valid Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Faculty</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>25-35</td>
<td>7</td>
<td>5.6</td>
<td>6.5</td>
</tr>
<tr>
<td>36-45</td>
<td>12</td>
<td>11.1</td>
<td>11.1</td>
</tr>
<tr>
<td>46-55</td>
<td>17</td>
<td>13.9</td>
<td>15.7</td>
</tr>
<tr>
<td>56-65</td>
<td>11</td>
<td>10.2</td>
<td>10.2</td>
</tr>
<tr>
<td>66 and older</td>
<td>6</td>
<td>5.6</td>
<td>5.6</td>
</tr>
<tr>
<td>Prefer Not to Say</td>
<td>3</td>
<td>2.8</td>
<td>2.8</td>
</tr>
<tr>
<td>Students</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>18-24</td>
<td>28</td>
<td>24.1</td>
<td>25.9</td>
</tr>
<tr>
<td>25-35</td>
<td>8</td>
<td>6.5</td>
<td>7.4</td>
</tr>
<tr>
<td>36-45</td>
<td>1</td>
<td>0.0</td>
<td>.9</td>
</tr>
<tr>
<td>46-55</td>
<td>6</td>
<td>5.6</td>
<td>5.6</td>
</tr>
<tr>
<td>66 and older</td>
<td>1</td>
<td>.9</td>
<td>.9</td>
</tr>
<tr>
<td>Prefer Not to Say</td>
<td>8</td>
<td>7.4</td>
<td>7.4</td>
</tr>
<tr>
<td>Total</td>
<td>108</td>
<td>93.7</td>
<td>100.0</td>
</tr>
</tbody>
</table>

### Table 4.4 Race demographics

<table>
<thead>
<tr>
<th></th>
<th>Frequency</th>
<th>Percent</th>
<th>Valid Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Faculty</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>White</td>
<td>43</td>
<td>37.0</td>
<td>39.8</td>
</tr>
<tr>
<td>Black or African American</td>
<td>6</td>
<td>5.6</td>
<td>5.6</td>
</tr>
<tr>
<td>Hispanic, Latino, or Spanish Origin</td>
<td>3</td>
<td>1.9</td>
<td>2.8</td>
</tr>
<tr>
<td>Middle Eastern/North African &amp; White</td>
<td>1</td>
<td>.9</td>
<td>.9</td>
</tr>
<tr>
<td>American Indian/Alaska Native &amp; White</td>
<td>1</td>
<td>.9</td>
<td>.9</td>
</tr>
<tr>
<td>Prefer Not to Say</td>
<td>2</td>
<td>1.9</td>
<td>1.9</td>
</tr>
<tr>
<td>Students</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>White</td>
<td>36</td>
<td>30.6</td>
<td>33.3</td>
</tr>
<tr>
<td>Black or African American</td>
<td>12</td>
<td>10.2</td>
<td>11.1</td>
</tr>
<tr>
<td>Asian</td>
<td>1</td>
<td>.9</td>
<td>.9</td>
</tr>
<tr>
<td>Asian &amp; White</td>
<td>1</td>
<td>.9</td>
<td>.9</td>
</tr>
<tr>
<td>American Indian/Alaska Native &amp; White</td>
<td>2</td>
<td>1.9</td>
<td>1.9</td>
</tr>
<tr>
<td>Total</td>
<td>108</td>
<td>92.7</td>
<td>100.0</td>
</tr>
</tbody>
</table>
Table 4.5 Education level demographics

<table>
<thead>
<tr>
<th>Faculty</th>
<th>Frequency</th>
<th>Percent</th>
<th>Valid Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bachelor’s Degree</td>
<td>4</td>
<td>3.7</td>
<td>3.7</td>
</tr>
<tr>
<td>Some Post Undergraduate</td>
<td>1</td>
<td>.9</td>
<td>.9</td>
</tr>
<tr>
<td>Master’s Degree</td>
<td>37</td>
<td>31.5</td>
<td>34.3</td>
</tr>
<tr>
<td>Specialist Degree</td>
<td>2</td>
<td>1.9</td>
<td>1.9</td>
</tr>
<tr>
<td>Doctorate Degree</td>
<td>9</td>
<td>7.4</td>
<td>8.3</td>
</tr>
<tr>
<td>Applied Professional Doctorate</td>
<td>2</td>
<td>1.9</td>
<td>1.9</td>
</tr>
<tr>
<td>No Response</td>
<td>1</td>
<td>.9</td>
<td>.9</td>
</tr>
<tr>
<td>Total</td>
<td>108</td>
<td>93.5</td>
<td>100.0</td>
</tr>
</tbody>
</table>

Table 4.6 Experience demographics

<table>
<thead>
<tr>
<th>Faculty</th>
<th>Frequency</th>
<th>Percent</th>
<th>Valid Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-2 Years</td>
<td>9</td>
<td>6.5</td>
<td>8.3</td>
</tr>
<tr>
<td>3-5 Years</td>
<td>11</td>
<td>9.3</td>
<td>10.2</td>
</tr>
<tr>
<td>6-10 Years</td>
<td>10</td>
<td>9.3</td>
<td>9.3</td>
</tr>
<tr>
<td>11 Years or More</td>
<td>26</td>
<td>23.1</td>
<td>24.1</td>
</tr>
<tr>
<td>Total</td>
<td>108</td>
<td>92.6</td>
<td>100.0</td>
</tr>
</tbody>
</table>

53
Results

Research Question 1. To what extent, if any, do students’ perceptions and faculty perceptions at a community college differ regarding interactions (learner-content, learner-instructor, learner-learner) in online courses?

a. To what extent, if any, do students’ perceptions and faculty perceptions at a community college differ regarding learner-content interactions?

Question 1 (a) attempts to determine to what extent faculty and student perceptions of learner-content interactions differ in online courses. Descriptive statistics (See Table 5) reveal faculty (M=4.66, SD=.406) perceptions of learner-content interactions are very similar to student (M=4.41, SD=.613) perceptions of learner-content interactions in online courses.

<table>
<thead>
<tr>
<th>Table 5 Learner-content interaction scores</th>
<th>N</th>
<th>Mean</th>
<th>Std. Deviation</th>
<th>Std. Error Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>Faculty</td>
<td>49</td>
<td>4.6618</td>
<td>.40689</td>
<td>.05813</td>
</tr>
<tr>
<td>Students</td>
<td>47</td>
<td>4.4195</td>
<td>.61366</td>
<td>.08951</td>
</tr>
</tbody>
</table>

An independent samples t-test was ran for Question 1(a) and results were statistically significant (t=2.289, DF=94, p=.024) and the null hypothesis is rejected for learner-content interactions. Results (see table 6) revealed significant differences in average mean scores between faculty and students for learner-content interactions.

<table>
<thead>
<tr>
<th>Table 6 Learner-content equality of means</th>
<th>t</th>
<th>df</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Learner-Content Interactions</td>
<td>2.271</td>
<td>94</td>
<td>.024</td>
</tr>
</tbody>
</table>

To what extent, if any, do students’ perceptions and faculty perceptions at a community college differ regarding learner-instructor interactions?
Research Question 1 (b) attempts to determine to what extent faculty and student perceptions of learner-instructor interactions differ in online courses. Descriptive statistics (See Table 7) reveal faculty (M=4.27, SD=.544) perceptions of learner-instructor interactions are very similar to student (M=4.09, SD=.631) perceptions of learner-instructor interactions in online courses.

<table>
<thead>
<tr>
<th>Table 7 Learner-instructor interaction scores</th>
</tr>
</thead>
<tbody>
<tr>
<td>N</td>
</tr>
<tr>
<td>Faculty</td>
</tr>
<tr>
<td>Students</td>
</tr>
</tbody>
</table>

While Question 1 (a) was found to be statistically significant, results from an independent samples t-test show Question 1(b) was found not be statistically significant (t=1.505, DF=89, p=.139) The null hypothesis is retained for learner-instructor interactions. Results below (see table 8) did not reveal a significant difference in average mean scores between faculty and students for learner-instructor interactions.

<table>
<thead>
<tr>
<th>Table 8 Learner-Instructor equality of means</th>
</tr>
</thead>
<tbody>
<tr>
<td>t</td>
</tr>
<tr>
<td>Learner-Instructor Interactions</td>
</tr>
</tbody>
</table>

To what extent, if any, do students’ perceptions and faculty perceptions at a community college differ regarding learner-learner interactions?

Question 1 (c) attempts to determine to what extent faculty and student perceptions of learner-learner interactions differ in online courses. Descriptive statistics (See Table 9) reveal faculty (M=3.64, SD=.834) perceptions of learner-learner interactions are very similar to student
perceptions of learner-learner interactions in online courses. Learner-learner interactions had the lowest average mean for both faculty and students indicating faculty and students perceive learner-learner interactions as the least important.

Similar to Question 1(b), the independent samples t-test found Question 1(c) to not be statistically significant (t=.319, DF=86, p=.753) and the null hypothesis is retained for learner-learner interactions. Results below (see table 10) did not reveal a significant difference in average mean scores between faculty and students for learner-instructor interactions.

<table>
<thead>
<tr>
<th>Table 9 Learner-learner interaction scores</th>
</tr>
</thead>
<tbody>
<tr>
<td>N</td>
</tr>
<tr>
<td>Faculty</td>
</tr>
<tr>
<td>Students</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Learner-Learner Equality of Means</th>
</tr>
</thead>
<tbody>
<tr>
<td>t</td>
</tr>
<tr>
<td>Learner-Learner Interactions</td>
</tr>
</tbody>
</table>

**Summary**

This study examined the difference in perceptions between faculty and students in regards to learner-content, learner-instructor, and learner-learner interactions in online courses. Populations consisted of faculty (N=49) and students (N=47) for the learner-content interaction subscale, faculty (N=52) and students (N=46) for the learner-instructor subscale, and faculty (N=51) and students (N=46) for the learner-learner subscale. The average mean responses from faculty and students were similar for each subscale interaction, learner-content, learner-instructor, and learner-learner interactions.
CHAPTER FIVE: DISCUSSION AND CONCLUSIONS

Discussion

Online course delivery has significantly increased over the past decade in higher education highlighting the need to understand perceived importance of interactions in online courses (Seaman et al., 2018). When Moore (1989) originally suggested the three main types of interactions – Learner Content Interaction, Learner-Instructor Interaction, and Learner-Learner Interaction – courses were largely delivered face-to-face. The use of learning management systems (LMS) has proven to be a powerful method of delivering and facilitating online courses in higher education allowing for faculty and students to engage with the content, instructor, and peers (Vlachopoulos & Makri, 2019). Understanding faculty and student perceptions of online interactions (learner-content, learner-instructor, and learner-learner) are important to promote faculty and student satisfaction within online courses. The majority of previous studies focused either on faculty or student perceptions of interactions in online courses, while this study analyzes both faculty and student perceptions of interactions in online courses and how they may differ at community colleges. This gap is important because it will help faculty design better quality online courses that promote student satisfaction by incorporating interactions that students perceive to be important in online courses at a community college. Based on the gap, the following questions were proffered:

The research question for this study is:
Research Question 1. To what extent, if any, do students’ perceptions and faculty perceptions at a community college differ regarding interactions (learner-content, learner-instructor, learner-learner) in online courses?

d) To what extent, if any, do students’ perceptions and faculty perceptions at a community college differ regarding learner-content interactions?

e) To what extent, if any, do students’ perceptions and faculty perceptions at a community college differ regarding learner-instructor interactions?

f) To what extent, if any, do students’ perceptions and faculty perceptions at a community college differ regarding learner-learner interactions?

To further add to the research of perceptions of interactions in online courses, this study sought to investigate to what extent faculty perceptions and students’ perceptions at a community college differ regarding interactions during online learning. The instrument used in this study was adapted from a study by Zhu et al. (2020). The instrument consists of three subscales – Learner-Content, Learner-Instructor, Learner-Learner – to measure perceptions of interactions in online courses at a community college. The results of the study showed similar responses from faculty and students in regards to learner-instructor and learner-learner interactions, but differences emerged for learner-content interactions. Specifically, significantly significant differences were found for faculty and student perceptions of learner-content interactions. Below is a summary and interpretation of the data previously presented in Chapter 4 followed by potential limitations of the study.

Summary of Findings
Data Collection Procedures

The data collection for this study occurred at a small community college in a midsize urban area in the southeastern United States. Participants were contacted by email and participation in the study was completely voluntary. All faculty currently teaching at least one online course and all students taking at least one online course were asked to participate in the study. Faculty and students completed the same survey with the items indexed based on three subscales from the instrument adapted by Zhu et al. (2020) (learner-content interaction, learner-instructor interaction, and learner-learner interaction). There were 108 participants of faculty (N=56) and students (N=52) with the majority females (N=83). The majority of the participants were between 18-24 years old (N=28) and 46-55 years old (N=23) with one to two years’ experience teaching or taking online courses (N=51).

Research Question 1(a) Findings

Research Question 1(a). To what extent, if any, do students’ perceptions and faculty perceptions at a community college differ regarding learner-content interactions?

Question 1(a) was focused on perceived importance of learner-content interactions in online courses. Faculty and students rated their perceived importance of learner-content interactions based on four items of the survey subscale (See Appendix A). The learner-content interaction scale is indexed on a 5-point Likert-type scale with 1 indicating not important at all and 5 indicating extremely important.

Although the average mean score was similar for faculty (M=4.66) and students (M=4.41), the results did find a statistically significant difference for faculty and student
perceptions of learner-content interactions \( t=2.289, \text{DF}=94, p=.024 \). The statistically significant differences for learner-content interactions is largely related to the perception of the interaction with content, such as digital resources and course structure.

There may be several reasons that attribute to the statistically significant results at this community college including (a) how content is delivered to the student and (b) professional development opportunities for faculty. In terms of the flexibility of how course content is delivered, the community college is a mix of a prescribed format and content flexibility. In terms of a prescribed format, the course homepage and navigation bar are locked and cannot be changed. All courses are required to use a Getting Started module as the first module in course content that includes all information necessary for the student to begin working in the course. This ensures all online courses are consistent, navigation is the same, and students can find their syllabus, course map, welcome video, and assignment list in the same place in all of their online courses. Furthermore, faculty are encouraged to chunk their course material either modular or weekly, but some faculty include additional modules for project assignments instead of including it in the module when the work is due. This can impact students’ ability to properly navigate the course and find necessary course material for completing assignments if the course material is not easily found in the module or week the assignment is to be completed. In addition, faculty are not dictated in regards to the type or amount of content they provide. Faculty may choose their own content materials and the delivery of content. This means faculty could have content that is heavily text-based with little to no engagement or lock modules after a specified period of time preventing students from reviewing past content modules. Faculty that does not allow
students to have some flexibility in the way they interact with content are preventing the necessary students from developing behavioral patterns that leads to cognitive retrieval of the content.

As noted earlier, at this institution professional development for faculty has not focused on learner-content interactions and mainly focused on learner-instructor and learner-learner interactions. Faculty may not thus consider any imbalance that can occur between learner-content interactions and the need for a strong pedagogical base, motivation and engagement, and variety of learning experiences. Faculty may need more training on the importance of allowing students flexibility when interacting with content and how to design content that aids students in developing behavioral patterns that are conducive to cognitive retrieval. The lack of professional development opportunities may result in faculty providing course content that they find beneficial, but may not provide the learning experience that students need. It is important to understand why there is a significant difference in faculty and student perceptions of learner-content interactions and how faculty professional development can provide best practices for incorporating learner-content interactions in online courses to enhance student satisfaction and perceptions of learner-content interactions.

Research Question 1(b) Findings

Research Question 1(b). To what extent, if any, do students’ perceptions and faculty perceptions at a community college differ regarding learner-instructor interactions?

Question 1(b) focused on perceived importance of learner-instructor interactions in online courses. Faculty and students rated their perceived importance of learner-instructor interactions
based on seven items of the survey subscale (See Appendix A). The learner-instructor interaction scale is indexed on a 5-point Likert-type scale with 1 indicating *not important at all* and 5 indicating *extremely important*. The average mean score for faculty (M=4.27) perceptions are similar to the average mean score for student (M=4.09) perceptions of learner-instructor interactions. However, the results of this study differed from results of other studies with learner-instructor interactions not being statistically significant.

There may be several reasons that results of this study were not statistically significant including (a) how learner-instructor interactions are provided to students and (b) professional development opportunities for faculty. Faculty at this community college are encouraged to have synchronous meetings, provide timely feedback, and post regular announcements. Previous studies by Chisum (2020), Covelli (2017), and Zheng et al. (2020) found students rated learner-instructor interactions more positively than faculty and level of importance depended on the quality and quantity of learner-instructor interactions. In these studies, students rated learner-instructor interactions higher than faculty because students reported learner-instructor interactions increase student satisfaction and students need regular interaction with their instructor to feel supported and scaffolded during their online learning. Within the context of the current study, synchronous meetings between faculty and students occur as both lectures and/or office hours and faculty are encouraged to post regular course announcements that communicate upcoming due dates or changes within the course. Faculty are also required to provide timely feedback whether that is grading feedback or feedback through email communication to address
students’ questions or concerns. Students have regular and frequent opportunities for learner-instructor interactions that previous and current research has found meaningful for students.

Faculty have the opportunity to engage in regular professional development opportunities, and specifically learner-instructor interaction training, which is known to lead to the relevance and application of knowledge and skills (Bragg, 2023). All faculty at this community college have continuous opportunities for professional development through trainings offered from their Distance Education and Teaching and Learning Center (TLC) departments. Learner-instructor training included using the News tool to provide regular announcements, Intelligent Agents for communication and weekly updates, rubric training for targeted feedback, and faculty were enrolled in the Association of College and University Educators (ACUE) training course titled *Effective Online Teaching Practices*. For example, ACUE’s Module 7 of Learner Engagement focuses on best practices for learner-instructor interaction by offering individualized feedback, targeted and actionable feedback, and using video or audio recordings as feedback. Faculty training through ACUE has had a positive effect on how faculty perceive the importance of learner-instructor interactions. The results of this study indicate that faculty have been incorporating specific learner-instructor interactions that align with learner-instructor interactions that students perceive to be important in online courses.

*Research Question 1(c) Findings*

**Research Question 1(c).** To what extent, if any, do students’ perceptions and faculty perceptions at a community college differ regarding learner-learner interactions?
Question 1(c) focused on perceived importance of learner-learner interactions in online courses. Faculty and students rated their perceived importance of learner-learner interactions based on seven items of the survey subscale (See Appendix A). The learner-learner interaction scale is indexed on a 5-point Likert-type scale with 1 indicating not important at all and 5 indicating extremely important. The average mean scores for faculty (M=3.64) perceptions are similar to the average mean score for student (M=3.58) perceptions of learner-learner interactions. The results were not statistically significant indicating faculty and student response scores were closer together which differs from previous research.

Some factors that may attribute to the results of learner-learner interactions at this community college are (a) students already know one another and have established relationships and (b) professional development opportunities for learner-learner interactions. Community colleges typically require students to commute to school and students already know some of their classmates. It is common for community colleges to have student populations made up of high school students taking online courses for college credit. Dual enrollment students have opportunities to interact with each other outside of the online course environment. Since students have established relationships with fellow peers, there may not be as much of a need for learner-learner interactions within an online learning setting. Furthermore, research by Borup et al. (2020) found dual enrollment students believe collaborative projects are helpful, but often avoid participation in them due to the difficulty to arrange meeting times in asynchronous learning environments. While some faculty at this community college require students to complete
collaborative projects, the results from this study indicate faculty may not provide guidelines or resources that indicate how students can collaborate with each other to complete the project.

In terms of how professional development may have impacted the results at this community college, faculty have access to frequent training opportunities on learner-learner interaction that is conducted by the Distance Education department and the Teaching and Learning Center. For example, learner-learner interaction training sessions include how to effectively use the discussion board tool, providing learner-learner interaction guidelines, and creating a peer community. Faculty taking the ACUE training course have additional resources and training opportunities for learner-learner interactions in online courses. Faculty at this community college are required to incorporate learner-learner interactions in all online courses. In terms of outlining learner-learner expectations, students are provided with guidelines on discussion requirements such as, the minimum word count for the initial post, must reply to two other students post, and what days and times the initial post and reply posts should be submitted. Faculty are also encouraged to provide a student Question and Answer discussion board topic in their online course to allow student to post general questions to be answered by the instructor or other peers. The Q&A discussion board facilitates peer communication and peer support creating a student community within the course. In doing so, these explicit directions inform students that learner-learner interactions are an important component of the online learning experience while also outlining clear expectations of what elements are important to learner-learner interactions.

In relation to previous research, the results of this study build on recent discourse regarding learner-learner interaction. Alqurashi (2019), Kuo and Belland (2016), and Kurucay
and Inan (2017) found learner-learner interactions depended on the quality and quantity of learner-learner interactions and whether or not students found the learner-learner interactions meaningful. More specifically, these studies concluded that students perceive learner-learner interactions as more important when learner-learner activities are meaningful, foster collaboration among peers, and provide focused feedback. Martin et al. (2020) expanded on the research by Alquarashi, Kuo and Belland, and Kurucay and Inan stating creating a student community through collaborative projects, discussion forums, and peer reviews are key elements in student perceptions of learner-learner interactions. Results indicate that faculty and students are rating learner-learner interactions as the least important type of interaction in an online course despite previous research that community college students need learner-learner interaction to create a sense of belonging at the college and with their peers in the online course.

Discussion

Implications

Moore’s (1989) theory of three interactions (learner-content, learner-instructor, learner-learner) states that in order to be an effective course the course must incorporate all three types of learner interactions. Studies by Bolliger & Martin (2018), Hernández-Sellés et al. (2019), and Kuo & Belland (2016), as well as many others, have shown the importance of these interactions is still an important factor in online courses with regards to student satisfaction and success. It is therefore important for instructional designers and educators to promote learner-content, learner-instructor, and learner-learner interactions in online courses that are meaningful, provide
effective feedback, provide quality interactions, and use appropriate quantity of learner interactions.

While results of this study was consistent with learner-learner interaction perceptions from faculty and students, results differed between faculty and student perceptions of learner-content and learner-instructor interactions. Faculty at this community college have gone through online course training provided by ACUE facilitated by the college’s Teaching and Learning Center (TLC). In addition to ACUE, the Distance Education department provides training opportunities for faculty in online course best practices and pedagogy. Faculty also receive training on available online technology and how to best incorporate interactions in online courses to increase engagement and student satisfaction. Based on the results of this study, faculty should have access to professional development opportunities for utilizing best practices for interactions in online courses.

Learner-Content Interaction Implications

When designing for learner-content interactions, faculty should ensure a strong pedagogical base, motivate and engage students, provide a variety of learning experiences, and allow students to have some flexibility when interacting with course content. Faculty can achieve strong learner-content interactions by posting a variety of course material types, keep content open and available, and relate course material to real-life scenarios when possible. Faculty should have a balance of content types that do not focus solely on text or video. Course content should be scaffolded to prevent students from feeling overwhelmed with the amount of course material to complete. Students should have clear guidelines on what is required to read or watch
that week and what content is supplemental. Faculty should also design content consistently and keep frequently reviewed documents in a getting started module that contains the syllabus, assignment list, and course navigation. Each module should be designed in a consistent manner with material to view at the top and assessments at the bottom in the order they are due. Content modules should remain open allowing students to go back and review course material as needed while also providing opportunities to practice mastery of course content before high stakes exams.

*Learner-Instructor*

Faculty should incorporate elements of learner-instructor interaction such as regular announcements, timely feedback, and synchronous meetings. Faculty need training on how to effectivity and efficiently post regular course announcements. Faculty should post announcements if any content has changed, important information for upcoming assignments, and upcoming due dates. In addition, research has also shown the importance of feedback in conjunction with announcements. Faculty should provide students with timely feedback on assignments that is relevant to the assignment, provide guiding feedback, and be disseminated to the student in a timely manner. One way to ensure relevant and timely feedback is through the use of rubrics. Providing rubrics to students not only prepares the student for what is expected on the assignment, but also provides faculty a convenient way to provide focused and timely feedback. Research also highlighted the importance of synchronous meetings to build faculty and student relationships promoting instructor presence and availability. Faculty should also conduct synchronous meetings with students either to provide a lecture or office hours. Elements of
course design, such as synchronous meetings have shown to have a positive correlation with online student perceptions of interactions and satisfaction with online courses (Wang & Wang, 2020). Synchronous meetings are similar to in class interactions and students consider this learner-instructor interaction to be important for learning (Amir et al., 2020).

Learner-learner interactions

Faculty should consider incorporating learner-learner interactions that facilitate collaboration and sense of community between students. Students at a community college generally know other students personally from attending high school with them, but it is still important for faculty to incorporate learner-learner interactions and build a larger community amongst peers in online courses. Faculty should incorporate discussion boards that relate to the course content and encourage peer collaboration focusing on the quality of the discussions and how they relate to course material more than the quantity of discussions. Students should also be provided with discussion guidelines informing them of when their initial post and reply is due, how long their initial post should be, and how to appropriately respond to other students. Faculty that requires students to complete collaborative projects should provide resources and tools to students providing ways they can meet synchronously in a virtual setting or asynchronously using mobile chat features.

Limitations and Future Studies

Although the findings represent promising data in regards to learner interactions (learner-content, learner-instructor, learner-learner), there are limitations to consider. The first limitation stems from the population size, which may have played a role in the Levene’s assumption of
equal variance and other statistics. Moreover, the majority of previous research was conducted at four-year institutions with large sample size populations (Li et al., 2021). Alternatively, this study was completed at a small community college located in a midsize urban area in the southeastern United States. While the sample size was sufficient for this study, more research is needed on larger community colleges with a larger sample size.

The second limitation are the demographics of the sample population. All eligible students and faculty taking or teaching at least one online course at the community college were sent the survey instrument to complete. In this study, faculty and student responses were not necessarily about the same course and their responses could have been focused toward one or more online courses. More research is needed to determine if the same results are achieved with specific demographics such as age, race, socioeconomic status, and digital literacy rates. It would also be noteworthy to determine if results differed when faculty and students are rating perceived importance of interactions based on one specific online course they are taking or teaching.

The third limitation is the age of the population since the survey was sent to all faculty and students at the college. More research is needed to look at specific populations such as high school students, non-traditional students, and adult learners. It would be relevant to discuss implications of interactions on different age groups to determine what type of interactions they find most important to online learning. Johnson et al. (2023) states prepared educators and students’ self-regulated learning skills are foundational to high school students being successful in online courses. Additionally, online courses should be designed using evidence-based course organization and design, individualization, active learning, and real-time assessment. In contrast,
Sutherland et al. (2023) found adult learners want consistency, relevance, and effectiveness in online courses with a preference for lecture recordings and video resources to supplement learning.

The fourth limitation is this study was it is quantitative, as are most previous research studies on interactions in online courses. A qualitative study would provide specific insight on opinions of learner interactions from faculty and students. Faculty and students could give directed responses on what type of interactions they like best and what interactions aided in facilitating learning. Informed research would be achieved because faculty and students can describe which techniques they prefer for each type of learner interaction such as open content, synchronous meetings, discussion boards, or others.

While results from this study were consistent with previous studies findings in regards to learner-learner interactions being rated as the least important, findings differed in regards to learner-content being statistically significantly different, and learner-instructor interactions not being statistically significantly different which is not consistent with other studies. The results of this study have practical implications for professional development in the area of learner interactions in online courses. More research is needed to compare faculty and student perceptions of learner-content, learner-instructor, and learner-learner interactions in online courses and how faculty professional development affects faculty and student perceptions of online courses. Furthermore, additional research is needed to examine faculty and student perceptions of interactions at community colleges with varying demographic and socioeconomic statuses.
Conclusion

Researchers have documented the importance of learner interactions (learner-content, learner-instructor, learner-learner) in online courses to promote student success, motivation, and completion. This study builds upon previous research of faculty and student perceptions of the importance of learner interactions. This study specifically analyzed the difference in faculty and student perceptions of the importance of interactions in online courses, and while similar results were found, it also highlights a need for more research in the area of learner-content and learner-instructor interactions. These findings should encourage future research to determine if demographics including socioeconomic status and faculty professional development play a role in faculty and student perceptions of learner interactions in online courses at community colleges.
REFERENCES

https://doi.org/10.1080/01587919.2018.1553562


https://doi.org/10.5539/hes.v2n2p125


https://doi.org/10.3102/0034654309333844


https://doi.org/10.33235/jarna.22.2.27-30


https://doi.org/10.24059/olj.v24i2.2015

https://doi.org/10.1002/cc.20563


https://doi.org/10.7821/naer.2019.1.327

https://doi.org/10.19173/irrodl.v14i5.1336

https://doi.org/10.1371/journal.pone.0220388

https://doi.org/10.1080/08923647.2019.1704205


https://doi.org/10.1080/07377363.2017.1274616


https://jolt.merlot.org/vol10no2/croxton_0614.pdf

https://doi.org/10.46328/ijtes.v4i2.43


https://doi.org/10.1609/aimag.v34i4.2488


https://doi.org/10.24059/olj.v25i3.2362

https://doi.org/10.1111/bjet.12457


https://doi.org/10.1016/j.compedu.2020.104009


Roman, T. A., Callison, M., Myers, R. D., & Berry, A. H. (2020). Facilitating authentic learning experiences in distance education: Embedding research-based practices into an online


Sutherland, K., Brock, G., Scheepers, M. J. de V., Millear, P. M., Norman, S., Strohfeldt, T., Downer, T., Masters, N., & Black, A. L. (2023). Non-traditional students’ preferences for
learning technologies and impacts on academic self-efficacy. *Journal of Computing in Higher Education.* [https://doi.org/10.1007/s12528-023-09354-5](https://doi.org/10.1007/s12528-023-09354-5)


https://doi.org/10.1007/s10639-017-9610-5


https://doi.org/10.1016/j.compedu.2020.103851


https://doi.org/10.1007/s11423-020-09753-w
**APPENDIX A**

*Instrument Items Zhu et al. (2020)*

| LCI                              | The learning objectives or goals are clearly indicated.  
|                                  | The learning objectives or goals are reasonable.  
|                                  | The course information (instruction, discussion, assignment, etc.) or materials are clear.  
|                                  | The schedule of the course is reasonable and fair.  
|                                  | The assessment for the course is reasonable and fair.  
|                                  | The course content is clearly presented on the web pages.  
|                                  | The course content is comprehensive and updated frequently.  
| LII                              | I have frequent communication with my teacher/tutor online.  
|                                  | I always get timely responses from my teacher/tutor online when I have inquiries.  
|                                  | The responses from my teacher/tutor are always helpful.  
|                                  | My teacher/tutor frequently encourages the students to be engaged in online contributions for discussion, communications or collaborations with their peers.  
|                                  | The teacher's/tutor’s instructions or feedbacks online are clear.  
|                                  | The teacher/tutor is quite capable to help me with my problems of computer and the Internet use.  
|                                  | I can keep a good relationship with my teacher/tutor through online communication.  
| LLI                              | I have frequent communication with the other students in my class or tutorial group.  
|                                  | I always get timely responses from the other students when I communicate with them online, e.g., writing to them via email, participating in online discussion.  
|                                  | The responses from the other students are always helpful.  
|                                  | I can keep a good relationship with my classmates through online communication.  