Investigating the Impacts of Regular and Substantive Interactions on Students in Asynchronous Community College Courses: A Quantitative Study

Julie A. McCormic

B.S., University of Kansas, 2012

M.Ed., Baker University, 2019

Submitted to the Graduate Department of Faculty of the School of Education of Baker University in partial fulfillment of the requirements for the degree of Doctor of Education in Instructional Design and Performance Technology

Anna J. Dunn

Anna J. Dunn, Ph.D.
Major Advisor

Regena Aye, Ed.D.

Dr. Justin Bogart

Justin Bogart, Ed.D.

Date Defended: February 20, 2025

Abstract

The study aimed to investigate four research questions, all of which related to RSI. Two research questions examined how the forms of RSI impacted social presence and student engagement within the course, while the other two research questions focused on the type of student, traditional or nontraditional, and their perceived frequency and preferred modalities of interactions with instructors. The setting of this research study was a large suburban community college in the Midwest. The sample size for the research included 28 participants enrolled in at least one distance education course piloting Regular and Substantive Interactions (RSI) during the Fall 2024 semester.

A quantitative cross-sectional study was conducted using a survey. The data was collected through SurveyMonkey, an online survey tool. The findings from the study were limited, most likely due to the small sample size of participants. The findings suggest that social presence, specifically the interactive category, was increased between the instructor and student based on the frequency of discussion forums within a month and the promptness of feedback on assignments from the instructor. No statistical significance was found regarding the other three research questions.

The findings from the study were not substantial; therefore, additional research is required to identify if there is a relationship between the different forms of RSI to social presence and student engagement and if the type of student dictates their perceived frequency or preferred modality of interactions with the instructor.

Dedication

I would like to dedicate this dissertation to the following people.

To my parents, Steve and Kathy McCormic, you raised me to follow my dreams and always supported and encouraged me to follow any endeavor my heart desired. Thank you for celebrating my small and big wins and teaching me to learn from my failures. Dad, thank you for always listening, being willing to give advice, and talking through ideas. Mom, thank you for reminding me to keep my chin up, and the sky's the limit. I am blessed to have you as my parents.

To my big sister, Shannon McCormic, I have always looked up to you, and you have supported me in all aspects of my life. The examples you set have helped shape me into who I am today. Your encouragement and support through actions and words helped me through this dissertation process.

To my partner, Lucas Cavlovich, you have stood by my side, made sacrifices, and encouraged me throughout this journey. Your constant support and unconditional love have kept me focused on my dream. I appreciate your patience and willingness to support me in my goals.

To my friends, thank you for your understanding and support through this process. When I made this dissertation my priority, you always understood I would not be available and worked around my timetable, even if I was only available for a short amount of time. I am blessed to have you all as a support system and genuinely thankful for you all in my life.

Acknowledgments

I want to acknowledge my advisor, Dr. Anna Dunn, for your constant support throughout this doctoral journey. Dr. Dunn, you have always given great advice, are a motivator, and celebrated the small victories because they are a big detail. You helped me push through setbacks and always reminded me that you are my biggest supporter. Your willingness to reach out when I was struggling and making time for me helped with my confidence and the ability to complete this dissertation. I am thankful for everything you have done for me throughout this process.

Secondly, I would like to thank Dr. Kyunghwa Cho, my research analyst, for your ability to help me through this dissertation. Your knowledge and willingness to impart wisdom throughout the quantitative study was more than I could ever have dreamed. You were always patient with me and willing to review and answer any questions or concerns I had throughout this journey. I appreciate you taking the time to meet with me and your support.

I want to thank Dr. Regena Aye and Dr. Justin Bogart for serving on my dissertation committee. I know time is valuable, and I appreciate your support.

I was lucky to build friendships with classmates, especially with people willing to meet weekly to talk through and ask questions, but I want to thank Jennifer Reed specifically. You have been my constant classmate and companion throughout this entire journey. I am, first and foremost, appreciative of our friendship. We have spent many hours together and have pushed each other to achieve our goals of completing our dissertations. You were always willing to meet and give encouragement and support through the ups and downs of this process. I am blessed to have had someone to share these emotions with and who knew what I

was going through.

Lastly, I want to thank the team at the community college where I conducted my study because, without their support and willingness to take a chance on me, this study would not have been possible. They put in many hours meeting with me. Thank you, Dr. Ed Lovitt, for your constant communication and help in ensuring the study could occur.

Table of Contents

List of Tables

List of Figures

Chapter 1

Introduction

Modern forms of distance education have continually evolved since the 1980s, and millions of learners have earned certifications and degrees due to the variety of courses available and their flexibility (Lowenthal et al., 2021). As technology and education continually intertwine through different advancements, the ability to communicate with others has become more accessible. In distance education, synchronous and asynchronous courses provide learner-friendly opportunities for students to take control of what is best for their learning needs and have opportunities to interact with other students, instructors, and content (Basko & Hartman, 2017).

The unexpected shift from face-to-face classes to communicating through videoconferencing due to the Coronavirus Disease 2019 (COVID-19) pandemic allowed the primary form of learning to be synchronous learning, allowing opportunities for similar engagement levels as an in-person course; however, asynchronous learning courses were still relevant because they have been a consistent form of distance education for over 30 years (Amponsah et al., 2022; Lowenthal & Moore, 2020; Majewska & Zvobgo, 2023). According to Coffey (2024), higher-level distance education courses skyrocketed during the COVID-19 pandemic and have been declining since the 2021-2022 school year; however, the number of students participating in at least one distance education course is still greater than pre-COVID-19 numbers. The National Center for Education Statistics collects data on enrollment and pulled information from its annual Integrated Postsecondary Education Data System (IPEDS) shows that students enrolled exclusively in distance education

courses went from 17.3% in the 2019-2020 school year to 45.6% in 2020-2021 but fell to 26% in the 2022-2023 school year. On the contrary, Coffey (2023) discusses the Changing Landscapes of Online Education (CHLOE) report. It suggested that online learning is still growing and that institutions should plan accordingly. The report was based on a poll of hundreds of chief online officers in higher education institutions for online and hybrid learning. The researchers reported information on the 2021-2022 academic school year, revealing that the online education spike in 2020 is not necessarily the peak of online learning because the demand has risen. The report notes that enrollment numbers for online and hybrid programs have dropped nationwide, with 81% of chief online officers saying that online and hybrid program enrollment has declined or stagnated, whereas 56% of the chief online officers have reported growth in those programs.

The eighth annual CHLOE report showed that overall, traditional students in community colleges lead other institutions in the percentage of distance learners at 89% in comparison to public and private four-year institutions, 63% and 36%, respectively, because distance education is more widely used in community college settings (Coffey, 2023). Distance education in community colleges allows traditional and nontraditional students opportunities to succeed based on their needs. According to the Community College Research Center (CCRC), in the fall of 2022, roughly 2.6 million students, equating to almost 60% of students, enrolled in a public two-year college in America, took at least one distance education course, and roughly 32% of students were exclusively online (n.d.). Even though the number of students taking distance education courses was on the rise before the COVID-19 pandemic, the number of students taking

distance education courses at public two-year community colleges fell in the fall of 2021 and once again in the fall of 2022 (Community College Research Center, n.d).

This chapter provides information on the background of the study, discusses the problem, and addresses the purpose and significance of the study. An overview of the delimitations and assumptions are mentioned, and the research questions are stated. The chapter concludes with definitions of terms within the paper and a summary of the chapter layouts.

Background

Distance education expectations are changing, and significant factors have contributed to asynchronous courses evolving in higher-level education institutes. During the COVID-19 pandemic, higher education institutions were forced to embrace distance education for all instructors and students, ensuring safe learning conditions were available and allowing the completion of the academic calendar year (Alkhudiry & Alahdal, 2021; Tsevi, 2022). Some instructors chose a passive route with lectures being transferred into the "talking head" format, while others were more active and engaged with students; however, effective social learning environments and student engagement have started to become more of a topic due to the COVID-19 pandemic (Alkhudiry & Alahdal, 2021; Dolenc et al., 2021; Tsevi, 2022).

With the COVID-19 pandemic over, instructors and students are no longer forced to be online, allowing them to choose their teaching and learning modality, respectively (Dolenc et al., 2021). The amount of distance education courses continues to play a crucial role in students attaining their goals given the flexibility (Lowenthal et al., 2021).

Remote and online courses have altered the typical dynamic of sharing the same space and time because there is no set physical location, and depending on the course, the meeting times can vary in frequency if applicable (Ngoyi et al., 2014). If these learning environments are not designed correctly or students lack technological skills, then the students can feel isolated, frustrated, bored, overwhelmed, and have a higher chance of dropping the course due to lack of engagement; however, if the instructor fosters social presence and engagement strategies within distance education courses, students tend to have a deeper understanding of course material and are overall more successful in those online courses (Ngoyi et al., 2014). Social presence has been linked to improved motivation, communication, student unity, and social equality (Ngoyi et al., 2014).

Learning Management Systems (LMS) have improved communication between learners and instructors, learners to learners, and the ability for learners to interact with content to attain their learning goals has become an invaluable aspect of online courses (Tsevi, 2022). Typically, courses consist of lectures, discussions, and group work designed for student interactions and engagement with each other and the course content (Ngoyi et al., 2014). The ability for instructors and students to interact and connect with other individuals within an LMS can build and maintain suitable learning environments and develop multicultural learning communities, enabling learners to have a more positive outlook on distance and online learning due to social networking (Tsevi, 2022). Research has shown that when instructors are more involved with the learner's education, there is a higher chance for intrinsic motivation, which can lead to learning development and an enhanced online learning experience

(Alkhudiry & Alahdal, 202). Learner-to-learner interactions are essential; however, learners perceive their interactions with instructors to have the highest value (Ngoyi, 2014).

Higher education institutions are mandated to have instructors interact with students regularly, and those interactions need to be substantive (Online Learning Consortium et al., 2019). There are various ways for these interactions to be acceptable based on the current definition of regular and substantive interactions from the United States Department of Education (ED) (Piña & Martindale, 2023). Within the Higher Education Act of 1965 (HEA), the government created the definitions of Regular and Substantive Interactions (RSI) to provide a basic framework for how instructors should foster social presence between themselves and students in distance education to help students engage with the material and have more motivation be more successful in the course. Social presence and student engagement are closely tied to each other, and when there is a sense of connectedness, students are more actively involved in their online learning (Ngoyi et al., 2014).

Higher education institutions are trying to figure out best practices for RSI to ensure students are getting the support they need to be successful and to make the distinction between distance and correspondence courses for Title IV financial aid, which is available for distance education courses but not for correspondence courses (Bergeron, 2016; Davis, 2020).

Regular interactions between instructors and students must be predictable and scheduled (Piorkowski, 2021). Examples of regular interactions initiated by the instructors include, but are not limited to, announcements, office hours, timely

responses to emails and a Q&A forum, posting recorded lectures, assignments, and responses to discussions, and posting grades (Piorkowski, 2021). These interactions should help monitor student engagement within the course (Institutional Eligibility, 2024; Kerensky, 2022).

Substantive interactions consist of five criteria, and courses should regularly present at least two of the five criteria (Kerensky, 2022). It is the instructor's discretion to incorporate substantive interactions, allowing instructors autonomy over distance education courses. Substantive interactions include providing direct instruction, giving detailed feedback on assignments, responding to questions about the course or competency, facilitating a group discussion about the course or competency, and the fifth criterion encompasses any other approved instructional activities by the institutions or programs accrediting agency is also acceptable (Institutional Eligibility, 2024; Kerensky, 2022; Piña & Martindale, 2023). Regular interactions and substantive interactions are made of different components. They can be thought of separately, but regular interactions initiated by the instructor throughout the course help with substantive interactions (Kerensky, 2022).

Statement of the Problem

In 2019, the ED clarified the terms 'regular and substantive interactions' originally appearing in the Higher Education Reconciliation Act of 2005 amendment within the HEA (Online Learning Consortium et al., 2019). As of July 1, 2021, mandates for RSI expectations in higher education institutions are effective, and all institutions should abide by the guidelines given by the HEA (The State University of New York, n.d.). The National Council for State Authorization Reciprocity

Agreement (NC-SARA) has partnered with the federal government to ensure institutions offering distance education abide by the mandate and report on RSI for all online programs (NC-SARA, 2024). Higher-level education institutions are beginning to incorporate RSI within distance education courses; however, understanding, interpreting, and implementing RSI is still in progress (The State of New York, n.d.). The State University of New York (SUNY) created an Online Course Quality Review Rubric (OSCQR) to help improve the instructional design aspect of a course to follow RSI guidelines. There are many ways to implement RSI within a distance education course; however, best practices for the frequency and modalities of interactions from the instructor to traditional and nontraditional students and the impacts of those interactions on student engagement and social presence are unknown.

Purpose of the Study

This study investigated whether the different forms of RSI impact social presence and student engagement levels between the instructor and student. It also examined if there was a relationship between the classification of students as traditional or nontraditional and their perceived frequencies and preferred modalities of interactions with their instructor.

Instructors at higher-level institutions need to be predictable with regular interactions involving students, and those interactions should be meaningful and engaging in distance education courses (Online Learning Consortium et al., 2019; Davis, 2020). Even though this is an expectation based on the HEA concerning regular interactions, the extent of those interactions and their impact on student engagement in asynchronous learning is unknown.

Social presence plays a vital role in the interactions between instructors and students, and maintaining the learner's engagement within distance education courses is necessary (Ngoyi, 2014). RSI is relatively new, and researchers must collect more data on its impact on distance education courses. Community colleges tend to be institutions composed of people with diverse backgrounds and demographics; therefore, identifying specific ways instructors can successfully add RSI into courses could help improve inclusivity and promote student engagement and motivation within their asynchronous courses.

Significance of the Study

Higher-level education institutions are at varying levels of implementing RSI in distance education courses and trying to distinguish the best ways to ensure the basic guidelines are met from the HEA, discussed earlier in the background section (The State University of New York, n.d.). Community colleges allow learners to earn associate degrees and transfer to a four-year institution. They consist of dual credit, traditional, and nontraditional students, allowing diverse age ranges to earn credits. Since RSI is regulated, higher education institutions are working towards finding best practices by piloting programs incorporating RSI (The State University of New York, n.d.).

More research is necessary regarding RSI and its impacts on student engagement in asynchronous distance education courses. Engagement levels of students in distance education courses at the community college level is a necessary topic of discussion due to the number of students taking classes and the variety of students enrolled. Student engagement is essential because community college

courses are foundational in attaining an associate's degree and potentially preparing them for a four-year university.

This research will benefit not only the community college participating in the study but is also an opportunity to collect data, showcase aspects of RSI that impact social presence and student engagement, and identify what learners need from their instructors in distance education courses. RSI will eventually become embedded into distance education. The information gathered in this study could identify aspects of RSI to help ensure higher-level education institutions make appropriate policies revolving around expectations of RSI implementation in courses. This study can be a steppingstone to additional research based on RSI efforts.

Delimitations

Delimitations describe the boundaries the researcher creates within a study (Coates & Cosgrove, 2010). The possible delimitations for this study include:

- The study will be delimited to students enrolled in at least one asynchronous distance education course at a large Midwest suburban community college in the fall semester of 2024.
- The study will limit participants to only students in courses piloting RSI at the community college.
- The researcher will delimit the data collected to the individual student's experience within the RSI course.
- The participants must be at least 18 to participate in the study.

Assumptions

Identifying assumptions in research is critical because they can directly or indirectly influence the evidence gathered and conclusions from a study (Nkwake, 2020). According to Merriam-Webster (2023), an assumption is a statement that is thought to be true. The study is based on students' volunteering information regarding their perspectives and experiences through a survey focused on a learning environment where RSI is present. The researcher will make the following assumptions in the quantitative study:

- Participants understand the survey questions.
- Participants will answer honestly based on their personal experiences.
- While answering survey questions, participants will only consider the RSI course.

Research Questions

The following section states the research questions for the study. The data analysis and hypothesis testing for the research questions will be further discussed in Chapter 3.

RQ1

To what extent does the frequency of regular and substantive interactions in asynchronous learning predict social presence levels between instructors and students?

RQ2

To what extent does the frequency of regular and substantive interactions in asynchronous learning impact student engagement levels between instructors and students?

RQ3

What is the relationship between the classification of students as traditional or nontraditional and their perceived frequency of regular and substantive interactions with instructors in a higher education setting?

RQ4

What is the relationship between the classification of students as traditional or nontraditional and their preferred modality of regular and substantive interactions with instructors in a higher education setting?

Definition of Terms

The following definitions aid the reader in terms used within the study.

Asynchronous learning

Asynchronous learning is a form of distance learning centered around student learning. It can occur at different times, places, and at individual paces to help the learner engage with the material when convenient (Majewska & Zvobgo, 2023).

Break-out room

A break-out room consists of a small group setting where students can videoconferencing in a synchronous learning environment that allows students to feel more comfortable sharing and discussing topics than with the entire class.

Bichronous online learning

Bichronous online learning is a blend of synchronous and asynchronous learning where students can participate from anywhere at any time for parts of the course (asynchronous) and join real-time activities (synchronous), allowing flexibility and

opportunities for immediate feedback and community building within the course (Martin et al., 2020).

Cognitive presence

Cognitive is based on one's ability to think critically in higher education and can be impacted by the amount of communication encouraged or restricted within an online learning environment (Garrison et al., 2000).

Communication

Communication is exchanging information between individuals in a common system of symbols, signs, or behaviors (Merriam-Webster, 2024).

Community of Inquiry (CoI)

The CoI is a theoretical framework that creates a deep and meaningful online learning experience through three forms of presence- cognitive, social, and teaching (Lowenthal & Dunlap, 2020).

Competency-based education (CBE)

Competency-based education is a higher education approach that organizes academic content based on student competency levels versus the traditional scheme of education based on courses (Federal Student Aid, 2021).

Computer conferencing

Computer conferring is a messaging system that organizes discussions into specific streams of topics, allowing asynchronous learners to communicate on related messages known as threads (George, 2003).

Correspondence education

Correspondence education typically consists of limited interactions between the student and instructor, where the student is responsible for contacting the instructor when necessary; the interactions are not considered regular or substantive (Piña & Martindale, 2023).

Direct Instruction

Direct instruction can be delivered through different live videoconferencing platforms for synchronous instruction, or if part of an asynchronous course, the video must be interactive and accompanied by a substantive interaction activity (Piña & Martindale, 2023).

Distance education

Distance education uses technology to deliver instruction and support students separated from their instructor through regular and substantive interactions initiated by the instructor in synchronous and asynchronous settings (Piña & Martindale, 2023).

Distance learning

Distance learning has core values of flexibility and access to allow students to learn at their own pace (Lowenthal et al., 2021).

Emoji

An emoji is the updated version of emoticons that depict emotions through pictographs of faces, objects, and symbols (Grannan, 2022).

Engagement

When a student is interested and motivated in their academic learning (Ngoyi et al., 2014).

Higher education

Higher education is beyond the secondary level (Merriam-Webster, 2024).

Highest social presence

Of the three different categories comprising social presence: affective, interactive, and cohesive, the highest level of how people can be perceived as 'real' and feel connected socially and emotionally to others (Lowenthal, 2009).

Learning Management System (LMS)

A Learning Management System is a dashboard or web-based platform where instructors can plan, evaluate, report, and execute learning processes to help support learners (Veluvali & Surisetti, 2022).

Nontraditional student

A student who has delayed post-secondary education enrollment by at least one or more years after attending high school or is considered a part-time student (National Center for Education Statistics, n.d.).

Online course

An online course is in an asynchronous learning format (Lowenthal et al., 2021).

Online learning

Online learning has core values built on constructivist learning approaches to engage students as a community through different modalities in synchronous learning settings (Lowenthal et al., 2021).

Quality of Instruction

The quality of instruction is measured by many things, such as how it is delivered, if it meets the learners' needs, interests, and expectations, and if it aligns with the standards (Sogunro, 2017).

Regular

Regular refers to primarily the instructor's predictable and scheduled interactions in response to students and their inquiries (Piña & Martindale, 2023).

Remote course

A remote course is a synchronous learning format (Lowenthal et al., 2021).

Self-disclosure

Self-disclosure is the ability to share feelings, attitudes, experiences, and interests, which can encourage others to be more forthcoming, thus increasing trust, support, and a sense of belonging to a group (Garrison et al., 2000).

Social presence

Social presence is based on a learner's ability to be socially and emotionally present in online learning environments by being recognized as a real person willing to interact and collaborate with others (Alim et al., 2022).

Substantive Interaction

Substantive interactions engage students with the material through teaching, learning, and assessments, along with consistent discussion content and including at least two of the following five criteria, all of which revolve around the course or competency: direct instruction, feedback, responding to student questions, facilitating group

discussions, or other approved instructional activities from the institution (Piña & Martindale, 2023)

Synchronous learning

Synchronous learning creates online learning opportunities by building a community through engaging live videoconferencing group interactions (Majewska & Zvobgo, 2023).

Teaching presence

Teaching presence pertains to how the instructor designs, instructs, and facilitates interactions within an online learning environment that can ultimately impact cognitive and social presence (Lowenthal et al., 2022).

Text-based communication

Text-based communication is used in asynchronous learning environments, allowing students to interact through written discussion (Lowenthal et al., 2021).

The Coronavirus Disease 2019 (COVID-19) pandemic

The COVID-19 pandemic was a deadly disease that spread around the globe and forced social distancing and learning to move online abruptly.

Traditional Student

A traditional student is enrolled full-time in post-secondary courses immediately after high school (National Center for Education Statistics, n.d.).

Videoconferencing

Videoconferencing is a tool that allows learners and instructors to visually and verbally interact with each other from different places (Händel et al., 2022).

Organization of the Study

The dissertation consists of five chapters, each focusing on specific study aspects. Chapter 1 includes the study's introduction, its problem, purpose, and significance of the study, as well as its delimitations and assumptions. Chapter 2 reviews the literature on distance education, social presence, student engagement, and RSI. Chapter 3 explains the study's methodology, participants, instrument used, reliability, and plans for data collection and analysis. Chapter 4 discusses the results of the study. Chapter 5 summarizes the study, including significant findings relating to the literature review and conclusions, and gives recommendations for future research.

Chapter 2

Review of the Literature

Chapter 2 is the literature review, which focuses on interactions amongst learners and their interactions with content and instructor through synchronous and asynchronous learning. Communication is a vital aspect of distance and online learning and learning management systems (LMS) create opportunities for interaction and engagement. The literature review analyzes research and identifies gaps revolving around the topic. The conceptual framework of mediated environments focuses on the ability of users to communicate and feel a sense of realness from a distance. The theoretical framework, Community of Inquiry, details how crucial teaching and social presence are to ensure RSI in distance education courses occur due to government regulations. An introduction to the HEA, organizations, and institutions working together to understand RSI better is reviewed.

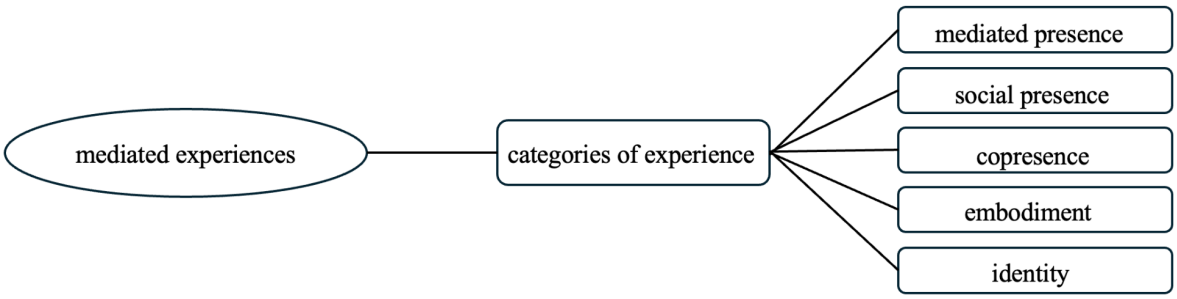
Conceptual Framework

The term "mediated environment" was initially coined by Jonathan Steuer in 1995 in a paper entitled *Defining Virtual Reality: Dimensions Determining Telepresence,* which focused on different forms of communication through technology that creates an experience (Childs, 2008; Steuer, 1995). There are many other ways to define a mediated environment. Still, the conceptual framework focuses on enabling users to interact from a distance simultaneously and the ability to feel a sense of realness ranging from text-only to virtual reality environments (Childs, 2008). The text-only environments are considered computer-mediated communication (CMC), primarily impacting online communication in distance education (Childs, 2008).

Although the term ‘mediated environment’ encompasses a variety of modalities, a significant theme is communication from a distance (Childs, 2008). Figure 1 below shows a small portion of what mediated experiences encompass, as Childs (2008) depicts.

Figure 1

Mediated Experiences Relating to Categories of Experiences



The mediated environments reference model identifies multiple forms of presence (Childs, 2008). There have been some inconsistencies with the term ‘presence’ within different papers since the early 1990s when referring to a mediated environment (Childs, 2008). The term ‘mediated presence’ was created by Childs (2008) based on a paper Sheridan wrote in 1992 discussing virtual presence. Childs (2008) referenced Steuer (1995) and Sheridan’s paper of 1992 to create the phrase ‘mediated presence’ as the combination of telepresence and virtual presence, referring to being present at a remote site and in a virtual world, respectively.

Mediated environments encompass a variety of individual interactions through different modalities (Childs, 2008). Distance education can use various forms of mediated environments for learners to have experiences and relate to each other. Even though asynchronous learning tends to focus more on written responses, there are

varying ways to increase individual interactions (Gasell et al., 2021; Ngoyi et al., 2014).

Theoretical Framework

The Community of Inquiry (CoI) is a theoretical framework developed by Garrison et al. (2000) that encompasses CMC experiences in higher-level education through the interrelationships of three types of presence– cognitive, social, and teaching. Each element of the CoI is interconnected and plays a vital role in the educational experience between the student and teacher by helping to allow learning (Berges et al., 2021). Even though technology has continually evolved since the framework's introduction over two decades ago, the premise of this framework has been used in many ways to help increase learning through different environments via face-to-face, blended, and online, including synchronous and asynchronous avenues (Berges et al., 2021; Lowenthal & Dunlap, 2020).

The CoI framework provides a base for instructors to consider when designing, facilitating, and deciding on using direct instruction in a course; however, the framework needs more guidance on creating an effective social presence (Lowenthal & Dunlap, 2020). Direct instruction is a form of teaching presence linked to helping establish social presence and can ultimately impact cognitive presence (Lowenthal & Dunlap, 2020). Further, demonstrating this is only one avenue that shows how each presence is interconnected.

The CoI framework can be molded and transformed throughout courses based on the instructors' and students' needs. It aims to create a space for deep and meaningful educational opportunities (Lowenthal & Dunlap, 2020). If an instructor

can create an active learning environment through intellectual and emotional connections, it will help foster student interactions and development within the course (Majewska & Zvobgo, 2023).

Even though there are various ways to include each type of presence within an asynchronous classroom, all forms of presence could be considered essential to allow learners an opportunity to be successful because the CoI model "assumes that learning occurs within the Community through the interaction of three core elements" (Garrison et al., 2000, p. 3). These elements can either strengthen or weaken the learners' educational experiences and outcomes (Garrison et al., 2000).

Cognitive Presence

The development of the CoI has enabled researchers to take a deeper look into the relationship between cognitive, social, and teacher presence within online learning. Cognitive presence has four phase indicators: triggering events, exploration, integration, and resolution (Garrison et al., 2000). Identifying a problem, conversing about it, connecting ideas for possible solutions, and applying those ideas allow for critical thinking (Garrison et al., 2000). All are essential to succeed in higher-level education (Garrison et al., 2000). Cognitive presence is primarily tied to social interactions and having a sense of community to exchange ideas with others (Majewska & Zvobgo, 2023).

Social Presence

The definition of social presence has continually been redefined since the initial theory was created by Short, Williams, and Christie (1976); however, the definitions have been slightly changed over the years based on technological advances

(Lowenthal, 2009). Even though researchers continually redefine social presence and there is no clear, agreed-upon definition, there are general similarities among the different definitions since 1995 (Lowenthal, 2009).

Social presence revolves around being included in a community and authentically participating with others, demonstrating genuine human emotion, and being 'real' through any communication medium (Garrison et al., 2000). There are three different categories of social presence: affective, interactive, and cohesive, and the leading indicators of social presence within each of those categories revolve around being supportive through emotional expression, open communication, and group cohesion, respectively (Garrison et al., 2000; Lowenthal, 2009). Each indicator encompasses the ability to create connections, build understanding, and interact with others, thus allowing for a more fulfilling learning experience and ultimately encouraging learner success (Garrison et al., 2000).

Each indicator for social presence plays a vital role in helping construct an inclusive learning environment, allowing individuals to become part of groups that support and enable each other to reach their full academic potential. Emotional expression allows people to convey their feelings confidently through their educational experiences (Garrison et al., 2000). Open communication demonstrates the ability to be respectful of input given and to recognize the contributions of others, which, in turn, can create cohesiveness within a group (Garrison et al., 2000). Social and cognitive presence overlap through the ability to think critically and collaborate through group cohesion within a community setting. According to Garrison et al. (2000), "critical thinking is facilitated by the socio-emotional support of others" (p.

22). Cohesion is essential for students to feel they belong to a group within a course. Collaboration is crucial in social presence because it allows learners to share experiences and creates purpose, conversation, knowledge, and empathy (Garrison et al., 2000).

The cognitive and social aspects of CoI are essential for success in learning, but teaching presence helps support the student's ability to reach their full potential in educational outcomes (Garrison et al., 2000). Teaching presence is the binding element of the CoI, and it can impact the sustainability of cognitive and social presence, which is partly based on the instructor's influence on communication expectations within the course (Garrison et al., 2000).

Teaching Presence

Indicators for teaching presence revolve around instructional management, building understanding, and direct instruction, typically the instructor's responsibility (Garrison et al., 2000). Even though the indicators are present, educators must make inferences when applying these indicators because there is a lack of detail on how to sufficiently incorporate each indicator into a course (Lowenthal & Dunlap, 2020). There are no specific guidelines on best managing and implementing teacher presence within a course for the best outcome, even though teacher presence plays a significant role in impeding or promoting cognitive and social presence (Lowenthal & Dunlap, 2020). When it comes to instructional management, instructors can design and develop all aspects of the course, from learning activities in the form of regulating the content to styles of discussions, group size, expected types and amount of communication amongst peers, to assessments and beyond (Garrison et al., 2000).

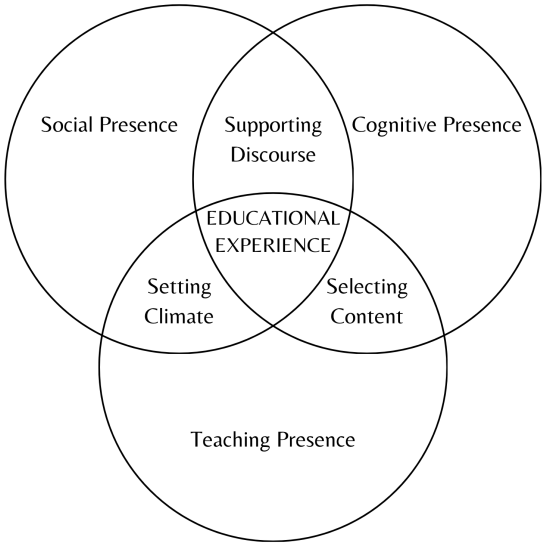
Lowenthal and Dunlap (2020) argue that there is no exact number of discussion expectations for a course or if those discussions should be in small group settings or with the entire class; however, teacher presence largely influences cognitive and social presence and can ultimately influence the learner's ability to be successful.

The instructors are typically responsible for facilitating and guiding students by establishing appropriate cognitive and social presence expectations and building understanding (Garrison et al., 2000). There are, in some instances, in higher education and online learning where some or all students are given opportunities to facilitate learning (Garrison et al., 2000). It is essential to have the instructor set expectations to ensure students have opportunities to learn and engage with each other (Garrison et al., 2000). A lack of leadership from the instructor can disrupt the student's ability to be cognitively and socially present.

According to Garrison et al. (2000), direct instruction can include presenting and guiding discussions, answering questions, and identifying understanding through multiple forms of assessment and feedback. An essential aspect of feedback is being explanatory and able to correct misconceptions through constructive and critical means (Garrison et al., 2000). A study by Tagg and Dickinson (1995) found that students were more successful in learning material when the instructor demonstrated tutoring behavior. This behavior can constructively critique student learning and is "characterized by short messages acknowledging a student's contribution and followed by guidance," which ultimately increases the student's engagement and ability to help facilitate higher-level learning (Garrison et al., 2000, p. 16). Figure 2 illustrates the CoI framework from Garrison et al. (2000).

Figure 2

Community of Inquiry Framework Model



Cognitive, social, and teaching presence are interconnected; each plays an invaluable role in the learner's education. Teaching presence is more centered around the above indicators; however, it cannot address instructors creating their social presence within the course (Lowenthal & Dunlap, 2020). According to Lowenthal et al. (2022), there is a fourth element to consider: the instructor's social presence due to the impact teaching presence can have on social and cognitive presence. It is based on an overlap between teaching and social presence and focuses on the 'live' portions of the course (Lowenthal et al., 2022). Instructor social presence acknowledges that the instructor may interact with students differently than peers based on the language used, level of comfort in the course, and their ability to engage and effectively communicate with students through different mediums (Lowenthal & Dunlap, 2020).

Importance of CoI in Online Learning

Cognitive, social, and teaching presence have allowed students to increase their engagement and ability to think critically and collaborate with others in a classroom environment (Berges et al., 2021). The CoI revolves around high interactions between students, students and instructors, and students to course work, including different online tools tailored for communication (Majewska & Zvobgo, 2023). The Garrison et al. (2000) study compared students learning through face-to-face and computer conferencing environments. Garrison et al. (2000) found that students in face-to-face environments were better at creating new ideas and were more interactive. In contrast, computer-conferencing students were better at linking ideas and critically thinking.

Cognitive presence is necessary for a critical-thinking community; however, it alone is not sustainable because social and emotional aspects need to be present along with commitment and participation to nurture collaboration and higher-order thinking skills (Garrison et al., 2000). Social presence plays an invaluable role in creating a community by allowing self-disclosure, which can build trust (Garrison et al., 2000). Still, teaching presence is typically necessary to help promote a meaningful learning experience that cultivates collaboration (Lowenthal et al., 2022).

Social presence in online learning is the difference between the complex collaboration process within a community versus a simple recollection of information (Garrison et al., 2000). A community of inquiry should push people to reach their full potential. When social and teaching presences are combined, critical inquiry can occur, supporting cognitive presence (Garrison et al., 2000). According to Majewska

and Zvobogo (2023), “For online learning to be successful, there needs to be interaction and teaching support that sustains social and cognitive presence” (p. 316). Social presence plays a crucial role in online learning and remains a focal point in research (Lowenthal & Dunlap, 2011). All three presences impact a student’s ability to learn and be successful in an online learning platform.

Overview of Synchronous and Asynchronous Learning and CoI

Currently, there are many different degrees of online learning; however, synchronous and asynchronous are two primary forms of learning entirely online. These types of learning have continually transformed over the years based on available technology and societal needs. These advancements make it possible to access more courses at a reasonable cost and to reach learners in more diverse areas (MachIntosh, 2001). These advancements have allowed videoconferencing to become a prominent characteristic of synchronous learning.

A sense of community is necessary in remote learning settings because people tend to be more isolated, but fostering positive interactions can help students’ mental health (Berges et al., 2021). Social presence can be created within any online learning environment through constructive dialogue and positively increasing students’ perceptions of learning when taking online courses (Majewska & Zvobgo, 2023). Social presence can influence emotions, course satisfaction, and student perceptions of learning, reflecting how the instructor designed the course (Majewska & Zvobgo, 2023). When instructors provide quality feedback and make themselves available to meet, ask for, and apply feedback given by students, the quality of instruction and course satisfaction increases because the environment allows students to speak their

minds freely (Majewska & Zvobgo, 2023). Students can foster learning that cultivates intrinsically rewarding interactions and critical thinking opportunities (Majewska & Zvobgo, 2023).

Synchronous and CoI

Synchronous learning enables individuals to meet and work with classmates and the instructor in 'real-time' through virtual modalities. Typically, synchronous courses include some form of videoconferencing. According to Knapp (2018), the ability to see and interact with classmates through videoconferencing plays a vital role in student learning. The interactions among students and their instructors can mimic a traditional classroom setting (Basko & Hartman, 2017). This setting can be beneficial because students want opportunities to be part of a learning community and have the instructor(s) present (Basko & Hartman, 2017).

Instructors have a significant role in establishing group atmospheres and observing peer behavior in synchronous learning to make informed decisions on class formatting (Händel et al., 2022). It is the instructor's responsibility to help cultivate an environment where students can engage in open communication and feel comfortable turning on their cameras, even if it is only in break-out rooms (Händel et al., 2022). Communication in synchronous learning can positively impact social presence and interactions; however, the instructor must promote synchronous discussion opportunities to help students maintain regular contact (Majewska & Zvobgo, 2023). The time given in class for small group discussions can give students opportunities to listen, learn, and provide immediate feedback to peers.

Asynchronous and CoI

Asynchronous learning allows individuals to learn together virtually but offers flexibility because there are no meeting times with classmates or the instructor. In the past, asynchronous learning limited the ability to quickly demonstrate emotional expression due to a lack of physical presence and visual cues, which is a social presence indicator; however, currently, emojis have been added to written language and are used to help with self-disclosure and humor (Garrison et al., 2000). Humor allows people to create conversations and connect with other distance learners (Garrison et al., 2000). Adding emojis helps people exchange ideas and adds 'real' human emotions, allowing for better dialogue and more context to tone interpretation. The tone is essential when creating a social presence because written words and emojis give more context to ideas and allow collaboration to flow.

Both synchronous and asynchronous learning have text-based communication opportunities and, in some instances, may be preferred over oral communication because it allows a chance to reflect on written words, which can encourage rigor through critical thinking on complex issues, resulting in meaningful learning (Garrison et al., 2000). Even though written communication allows for opportunities to think critically, students typically feel more isolated (Fondo, 2021). Developing the feeling of a community is necessary for establishing opportunities to collaborate with others and achieve a higher level of thinking (Garrison et al., 2000). Through the construction of sharing worthwhile knowledge, collaboration combines cognitive and social contexts and allows for education to be an experience (Garrison et al., 2000).

Milestones in Distance Education

Distance education has existed since the 1800s, but its methodology has continually changed due to technological advancements (Lowenthal et al., 2021). Distance education initially involved corresponding through the mail, but with the invention of different broadcasting methods, the radio in the 1920s and the television in the 1950s, more people wanting to learn could be reached (Lowenthal et al., 2021). The first online distance education course revolving around text-based communication was in the 1980s (Lowenthal et al., 2021). To this day, it is beneficial because it has helped millions of students learn over the past few decades (Lowenthal et al., 2021). The Internet opened more immediate forms of communication and new opportunities, and by the 1990s, most distance education was online (Lowenthal et al., 2021).

Computer conferencing began a new era in the post-industrial age for distance education because it allows communities of learners to collaborate through streams of messaging in an asynchronous manner (Garrison et al., 2000; George, 2003). The addition of videoconferencing in the form we know today helps students and instructors interact visually and verbally in sync, creating an emotional connectedness if used appropriately (Händel et al., 2022; Valenti et al., 2019). Synchronous and asynchronous education methods have become the most popular online learning forms due to the ease of communication (Lowenthal et al., 2021). Still, instructors need to understand the advantages and challenges of each modality.

Today, different types of courses are available for learners based on their needs, and technological tools in distance education have helped increase its popularity (Basaran & Yalman, 2020; Lowenthal et al., 2021). The COVID-19 pandemic helped differentiate

between remote and online learning while opening different learning avenues because spending hours videoconferencing could cause synchronous learning fatigue (Lowenthal et al., 2021). The COVID-19 pandemic enabled online learning to become a more common mode of learning, and additional forms of learning continue to come about, such as bichronous learning, which has become more prevalent in online learning (Martin et al., 2020). The COVID-19 pandemic created more awareness and opportunities for learning and has pushed different platforms and LMSs to take feedback and make changes for inclusivity in synchronous and asynchronous settings.

Synchronous Learning

Synchronous learning allows for the flexibility of taking online classes while also allowing videoconferencing interactions between students and their instructors. The interactions between the students and instructors are in real-time, typically planned, and include the three major components of classroom, media, and conference, all of which can add value to learners' experiences (Alim et al., 2022). Examples of synchronous learning can range from chat rooms and instant messaging to videoconferencing (Basaran & Yalman, 2020). According to Basko and Hartman (2017), "having visual contact with the instructor allows students to read facial expressions and hear tone of voice," which are often missing in online environments (p. 24). These factors are essential components in synchronous learning and can increase student engagement (Basko & Hartman, 2017). The COVID-19 pandemic allowed synchronous learning to become a primary form of online learning because this type of learning environment can build connections with peers and gain knowledge from others, similar to face-to-face environments (Majewska & Zvobgo, 2023). Due to increased online learning since the COVID-19 pandemic,

institutions focus on higher-level learning needs to ensure the courses are “dynamic, interesting, and interactive” (Majewska & Zvobgo, 2023, p. 319). A study conducted by Camilleri and Camilleri (2022) verified that student perceptions and confidence with interactive technology positively affected learners' thoughts towards remote learning, and they were more likely to participate in either synchronous or asynchronous learning in the future.

Tools and Technologies for Synchronous Learning

Due to technological advances, synchronous learning has many tools to help instructors create online classroom settings that better support student learning and engagement. These technologies allow instructors to monitor and track student interactions and engagement during virtual sessions, enabling the instructor to implement specific strategies to help learning outcomes improve (Camilleri & Camilleri, 2022). While synchronous learning provides opportunities for online users to interact with each other, studies show that students have positive perceptions of interactive technologies and their uses to help improve learning outcomes (Camilleri & Camilleri, 2022).

The number of different types of technology implemented in a synchronous classroom dramatically depends on the instructor and their comfort level with technology. According to MacIntosh (2001), instructors with higher levels of confidence using technology paired with appropriate teaching strategies positively impacted student learning. Additionally, if the instructor spent time in the first class of the course ensuring learners were comfortable with the technology, it helped provide a proper learning environment (MacIntosh, 2001). Engaging students in the virtual experience creates a

greater chance for collaboration, which allows for more social presence within an online learning environment (Camilleri & Camilleri, 2022).

Advantages and Challenges of Synchronous Learning

Synchronous learning uses many different forms of technology to allow students opportunities to reach learning outcomes and be successful; however, a crucial aspect of this type of learning involves opportunities to meet with classmates and the instructor in real-time, which has advantages and challenges. As technology has evolved, so has the virtual experience in synchronous learning. Over the years, many studies have revolved around synchronous learning and its advantages and challenges.

There are many advantages to using videoconferencing if the instructor is adequately trained on the program's capabilities and its use for a synchronous learning environment because it can strengthen bonds between students and their instructor due to the nature of online learning by the potential feeling of separation from others (Kaban & Yataganbaba, 2022). Videoconferencing allows small groups to meet online at mutually convenient times and can encourage collaboration through digital programs to generate products (Knapp, 2018). Synchronous communication through audio or videoconferencing can contribute to learners socializing more due to developing a sense of belonging and creating human connections with others (Barsaran & Yalman, 2020). The development of problem-solving skills can occur due to interactions among classmates, and by cooperating with others, students are more likely to help motivate each other (Basaran & Yalman, 2020).

The time allocated for synchronous meetings must be interactive and engaging for the students as if they were in an in-person class (Majewska & Zvobgo, 2023). Designing and mediating meeting time efficiently and effectively will help students see and feel the benefits of synchronous learning. Time allocated in a synchronous learning setting should benefit students through collaboration with others in small groups with a series of tasks to complete by using a blend of video and group work (Kaban & Yataganbaba, 2022). According to Händel et al. (2022), there is a greater chance of student engagement and learning if the class sizes are smaller and the lecturer encourages students to be visually present. When the students choose to have their web cameras on, it allows instructors to see "facial expressions, hand raises, number of eyebrow raises and head poses can be used as indicators of understanding and attending during learning," along with seeing and understanding the emotional processes regarding the instructors "influence on motivation, attention, and learning" (Händel et al., 2022, p. 10407). Based on a survey, roughly half of the higher education student participants choose not to have their web camera on or actively participate (Händel et al., 2022). Still, the choice not to be seen can limit the advantages synchronous learning offers and can create a ripple effect (Händel et al., 2022). A lack of identification as a 'real person' negatively impacts opportunities for interactivity among classmates and the instructor, the ability to give constructive feedback, collaborative learning, and building a sense of community to improve interactions and collaboration (Händel et al., 2022). Instructors typically feel insecure, helpless, and frustrated when web cameras are off because there is a lack of emotional feedback through non-verbal cues, making it more difficult to give effective feedback, which is an essential part of learning (Händel et al., 2022). Additionally, when students

are not participating, it can lead to the instructor's decreased motivation and limit the positive aspects of synchronous learning with videoconferencing (Basko & Hartman, 2017).

Overall, there are many advantages to synchronous learning. It is convenient to attend classes from anywhere with an internet connection; learners can receive and give immediate feedback, and it is an adequate substitute for face-to-face learning (Majewska & Zvobgo, 2023). The COVID-19 pandemic catapulted synchronous learning into a necessity for many people to continue learning through different means. Due to this, there were many challenges, and through research, recommendations are helping better synchronous learning. It is essential to have instructors trained on best practices for online learning; instructors could lessen conference time, and the time spent in class should be more interactive and engaging for students to work with partners or in small groups (Majewska & Zvobgo, 2023). Additionally, learners need adequate bandwidth and internet speed to be present in online education (Basaran & Yalman, 2020).

Asynchronous Learning

Asynchronous learning allows people to communicate with each other through text-based avenues, typically in the form of discussions. It is a typical online course because the asynchronous modality has mostly stayed the same over the past 30 years (Lowenthal & Moore, 2020). The model is central to students having flexibility and working at their own pace due to interactions occurring at different times and places, allowing for a lag between discussions in the LMS. Text-based communication enables learners to reflect on posts, which could be a preferred form of interaction compared to oral communication, to attain a higher level of cognitive learning because text-based

communication is connected to critical thinking (Garrison et al., 2000). Written words can impact our thinking and communication by encouraging discipline and rigor around complex issues, resulting in meaningful learning (Garrison et al., 2000).

Tools and Technologies for Asynchronous Learning

There are multiple LMSs available for asynchronous learning because text-based discussion boards are a prevalent part of asynchronous learning; however, additional applications have become more accessible to drive opportunities for video-based discussions. These applications allow users to narrate and record presentations, which are viewable by others later, and give peers opportunities to comment back through video or text (Lowenthal & Moore, 2020).

Learning Management Systems

An LMS reinforces online learning environments because they support inclusivity through academic progress and opportunities to authenticate themselves and collaborate with others through multiple forms of communication among students and their instructors (Bradley, 2021; Veluvali & Surisetti, 2022). An LMS creates engaging opportunities for learners through autonomy, motivation, and independence (Bradley, 2021). Learners can use many aspects of the platform to succeed in their education needs through course registration, tracking grades, progress, achievements, monitoring announcements, and completing assignments and assessments (Bradley, 2021). An LMS provides instructors and students a place to interact with each other with consistent information given to learners on their performance and expectations and opportunities to interact through group chats and discussion forums (Bradley, 2021). Instructors play a vital role in supporting students through media and communication tools, creating

opportunities for learners to interact with each other within the LMS platform, and prompting learner choice (Bradley, 2021).

History

Technology has been an integral part of online learning since the 1990s, and it has undergone transformational changes within the last decade to become a core element in educational delivery essential to 21st-century skills (Bradley, 2021; Veluvali & Surisetti, 2022). Technology supports innovative and student-centered learning environments (Veluvali & Surisetti, 2022). The creation of LMSs is rooted in distance education and was a tool used to manage courses and offer more interaction among instructors and learners, which proved vital in higher education (Veluvali & Surisetti, 2022). Currently, many LMS platforms are widely used in all forms of schooling, from elementary to higher education.

LMS in Synchronous and Asynchronous Courses

Learning Management Systems benefit asynchronous and synchronous learning by providing structure and a place to facilitate learning (Bradley, 2021). LMSs aid asynchronous learning because everything needed for students to be successful is within the platform (Bradley, 2021). Due to asynchronous characteristics, an LMS enables learners to communicate despite distance, and instructors can easily organize all course information in one place, ensuring learners can engage with the material, classmates, and the instructor (Bradley, 2021). A LMS is also beneficial for synchronous learning because it creates an environment to facilitate live interactions between students and the instructor through videoconferencing (Bradley, 2021).

Usage/dropout

Each LMS platform has similarities and differences; however, the core features include administration automation, educational content delivery, the ability to assess learning outcomes, and there could be additional features available on the platform (Veluvali & Surisetti, 2022). A LMS can track student analytics while using the platform, allowing instructors to intervene and give additional feedback to learners who may be struggling (Veluvali & Surisetti, 2022). These LMS analytics have also proven beneficial by "providing pre-emptive insights into potential dropouts based on a variety of predetermined factors" (Veluvali & Surisetti, 2022, p. 113). Instructors who have this information readily available and make the appropriate connections with students could help limit the number of course dropouts.

Types of LMS

There are a variety of LMS platforms, but they all typically fall under two main categories: proprietary and open-source systems (Bradley, 2021). A proprietary system involves the education organization purchasing a subscription to use the LMS features, and limited customization opportunities exist (Bradley, 2021). Blackboard is a well-known LMS in higher education (Bradley, 2021). It is a proprietary system. Open-source systems use free licensing, allowing users to access, use, and customize the LMS (Bradley, 2021). Canvas and Moodle are well-known open-source systems used in K-12 and higher education.

Adopting an LMS can benefit higher education, but some platforms are better suited for different types of institutions based on their needs (Gryshuk, 2024). Blackboard is a popular and interactive LMS for larger institutions offering various advanced

assessments and quizzes (Gryshuk, 2024). The Moodle LMS platform is typically used by medium to larger institutions that support diverse programs because instructors can tailor it to the students and their learning needs (Gryshuk, 2024). Canvas has similarities to Moodle, but it has become a widely used LMS in K-12 and medium to larger higher education institutes because it has advanced course structures, is comprehensive, and has many features, some of which include diverse learning tools and customizable course structure and organization (Gryshuk, 2024). Even though Moodle and Canvas have many capabilities, the platform can be complicated to set up due to the number of advanced settings (Gryshuk, 2024).

Canvas LMS

Canvas has many ways for instructors to collaborate and create a space for a more personalized learning experience for students based on their varying needs. The LMS layout and menu allow for minimal clicks to navigate the platform. Instructors can share course content, monitor student mastery of course objectives through outcomes, and view student performance and activity analytics. Based on student needs, instructors can give specific learners more attempts and extended time on assignments and assessments.

Instructors can design learning modules and decide what files or external tools can be used and uploaded into the LMS for assignments and assessments. Student grades and upcoming assignments and assessments added to modules are visible in the course, allowing students to monitor their progress, due dates, and course completion. Students can also collaborate through course discussions in Canvas or through Google applications.

Instructors have multiple ways to personalize student feedback based on their needs in Canvas. When a student turns in an assignment, a comment area is available where the student and instructor can communicate through different modalities. Instructors can write comments using emojis, and the instructor can also upload video recordings and media or other file attachments in this section. The varying communication methods provide opportunities for personalized feedback and discussions between instructors and students based on their needs.

Advantages and Challenges of Asynchronous Learning

Asynchronous learning has primarily focused on discussion forums and has been at the forefront of online communication for distant learning (Basaran & Yalman, 2020). Asynchronous learning has many advantages, which is why the format has withstood over time; however, challenges have become even more apparent due to the COVID-19 pandemic. Written communication is foundational to asynchronous learning but can facilitate and impede learning (Lowenthal et al., 2022).

Asynchronous learning enables students and instructors to chat and discuss prompts given within a course. The ability to do this has increased student satisfaction with asynchronous learning and has benefited the quality of learning because students in this setting prefer written communication (Basaran & Yalman, 2020). Even though text-based communication allows for more flexibility with response time, other research suggests students can become frustrated by the delay (Lowenthal & Moore, 2020). There is a lack of social presence when only communicating through written form, and it can create social isolation and loneliness if communication and feedback are not effectively given, which can lead to a lack of participation from learners and

the ability to fall behind quickly (Barsaran & Yalman, 2020; Lowenthal et al., 2022). A challenge with asynchronous learning is the lack of social cues through voice inflections and non-verbal gestures, which help people identify context clues on how someone communicates (Lowenthal & Moore, 2020). For these reasons, asynchronous learning might not be as inclusive, impacting learning outcomes (Lowenthal & Moore, 2020). Research has suggested that written "feedback can cause confusion, lack breadth and depth, and evoke negative emotional responses among students" (Lowenthal et al., 2022, p. 266). The ability to effectively communicate through text can be a struggle for students and instructors; due to this, some additional features are starting to show up to help improve communication in the form of pre-recorded videos with an asynchronous course (Lowenthal et al., 2022). Open communication is essential to asynchronous learning (Garrison et al., 2000). Video-based discussions and asynchronous learning can improve social presence among instructors and students (Lowenthal & Moore, 2020).

Communication in Online Learning

Communication is a vital part of society, and it plays a critical role in our ability to interpret, teach, learn, understand, and conceptualize ideas from each other. People have opportunities to continually learn new information and share it with others through different forms of communication. When students can interact and communicate well with each other, social presence and community are strengthened, which can positively impact their success in online courses (Lowenthal & Moore, 2020). The social presence theory discusses varying levels of social presence, and each level can influence how people interact (Lowenthal & Dunlap, 2011). These

interactions are essential for collaboration among learner-to-learner and learner-to-instructor in a virtual environment because they differ from a physical classroom (Händel et al., 2022). Research suggests that students value instructor participation in asynchronous discussion boards, which helps motivate them (Gasell et al., 2021).

Importance of Communication in a Virtual Environment

In 2021, Fondo conducted a study revolving around intercultural communication through visuals in a virtual exchange environment. Researchers found that self-disclosure is essential when communicating through videoconferencing because it helps generate opportunities to bond with others and take a liking to them, especially if others are visually present. The ability to see each other contributed to students feeling more connected and confident in their interactions and communication skills with peers, which could positively impact motivation. Ultimately, videoconferencing, when visually present, allowed for non-verbal cues, and different opportunities arose to communicate through visuals and increased self-disclosure with others even when there were language limitations among individuals within the course.

Communication is a powerful tool; interactions among learner-to-content, learner-to-instructor, and learner-to-learner can impact learning. Moore (1989) discusses the three different types of interactions and the importance of differentiating between them to identify benefits and ways to overcome misunderstandings that may arise. Learner-to-content refers to the interactions between the learner and subject matter and the ability to process the information through intellectually interacting with the content and the learner trying to understand it through ‘internal didactic

conversation' when learners 'talk to themselves' about information or ideas learners have encountered (Moore, 1989). One of education's defining characteristics is learner-to-content (Moore, 1989). Learner-to-instructor interaction is highly desirable because the instructor prepares and presents the material, motivates and supports learners, and provides feedback (Gasell et al., 2021; Moore, 1989). In distance learning, communication gaps between instructors and students can bring challenges, so instructors must increase dialogue with students (Gasell et al., 2021). The last type of interaction is learner-to-learner, a vital resource for learning from and with each other (Gasell et al., 2021; Moore, 1989).

The three types of interactions allow instructors to be more conscious of constructing online courses (Gasell et al., 2021). Hong (2002) conducted a study (as cited in Gasell et al., 2021) that identified the interaction between instructor and learner as the most important because it contributes to a higher satisfaction rate in online courses. Researchers found that when instructors actively participated, student participation and learning increased (Gasell et al., 2021). Instructor participation through checking email and posting on discussion boards is vital to students (Gasell et al., 2021). Instructors should prioritize their interactions and frequency to be regularly present in online courses to help make expectations clear to students and ensure social learning opportunities (Dennen et al., 2007; Gasell et al., 2021).

Types of Communication Tools

Communication tools are essential to remote and online courses. Huang and Hsiao (2009) mentioned (as cited in Gasell et al., 2021) that seven communication tools enable interactions in synchronous and asynchronous learning environments. The tools are

"email, discussion boards, announcements, blogs, streaming audio/video, chat, and web-conferencing" (Gasell et al., 2021, p. 3439). Although there are seven, how the course runs, depends on the instructor, and not all these communication tools are necessarily within a remote or online course.

Discussion boards are a staple in distance and online learning because they ensure students and instructors interact. Participants in discussion boards can start feeds by posting about a topic and responding to others, typically within a reasonable timeframe. Currently, there is no set or magic number of times an instructor should be posting. Still, research suggests that the involvement of instructors in discussion boards impacts students' perceived learning, satisfaction, and engagement (Gasell et al., 2021). Discussion boards contribute to collaborative, knowledge-sharing, and social interaction opportunities, and the more involved the instructor is within a discussion board, the greater the learning and sense of community among students and their instructor (Gasell et al., 2021). Instructors need to facilitate the discussion boards and incorporate audio and video in discussions while offering opportunities for learners to discuss in small groups and with the whole class to help build a community (Gasell et al., 2021).

Video-based learning has continually gained popularity for entertainment and academic purposes due to its ability to cater to people's needs (Valenti et al., 2019). As technology continues to change, instructors must feel confident in their ability to include audio and visuals because there is a correlation between instructors' beliefs about video technology and their willingness to integrate it into courses (Valenti et al., 2019). Instructors prefer using third-party videos, like YouTube, but students have positive feelings toward instructor-created content (Valenti et al., 2019). Weekly personalized

videos positively impact learner-to-instructor relationships because the students feel more connected to their instructors, have a more positive viewpoint of instructors, and feel more comfortable in the course (Valenti et al., 2019).

Videoconferencing has become a vital aspect of synchronous learning. Zoom, a videoconferencing platform, has multimodal communication settings to benefit learners in a synchronous learning environment (Bailey et al., 2022). A study by Bailey et al. (2022) found that instructors' and students' perceived usefulness of Zoom entails their behavioral intention. The technology was easy to use, positively affecting learners' attitudes towards Zoom. The ability to easily communicate with others contributed to learners' attitudes improving towards the platform.

Regular and Substantive Interaction

The definition of regular and substantive interaction (RSI) was a topic of discussion for over a decade before clarifying terms were given by the U.S. Department of Education (ED) in 2019, and discussions on implementation continue today (Davis, 2020). Instructors need to have RSI with students in distance education settings, and various acceptable interactions are considered regular and substantive (Davis, 2020).

The ED Office of Inspector General (OIG) has four criteria for RSI. According to Poulin and Davis (2016), the requirements are:

(1) "Interactions must be initiated by the instructor.

(2) Interaction must be 'regular' and probably somewhat frequent.

(3) Interaction must be 'substantive,' of an academic nature.

(4) Interaction must be with an instructor who meets accrediting agency standards."

Institutions are making strides to update courses and identify ways to ensure distance courses contain RSI components. The State University of New York (SUNY) has developed a rubric to help support faculty, instructional designers, departments, and institutions to help modify and create courses based on RSI expectations (The State University of New York, n.d.).

OSCQR Rubric

SUNY initially created the SUNY Online Course Quality Rubric (OSCQR Rubric) for the State University of New York (SUNY), the most extensive comprehensive university system in America (Piorkowski, 2021; The State University of New York, n.d.). The OSCQR Rubric consists of 50 standards that are flexible and can be used to review instructional design on a variety of online courses and the development of new online courses to ensure effective practices, including and beyond RSI, are present (Piorkowski, 2021; The State University of New York, n.d.). The OSCQR Rubric is based on the CoI model to help reviewers and designers of courses improve cognitive, social, and teaching presence opportunities (The State University of New York, n.d.). The OSCQR Rubric comprises six groups: overview and information, content and activities, technology and tools, interaction, design and layout, and assessment and feedback. The OSCQR Rubric addresses RSI in standards 2, 3, 29, 38, 41, and 43. In contrast, standards 1, 6, 9, 10, 19, 30, 31, 40, 44-47, and in general, institutions and instructors can use the rubric to support the instructional design aspects of a course (The State University of New York, n.d.).

NC-SARA

The National Council for State Authorization Reciprocity Agreements (NC-SARA) is a private nonprofit organization that collaboratively partners with the federal government, states, and accreditors by providing educational opportunities for students and helping improve the quality of distance education programs by ensuring the regulations are more efficient, consistent, and effective through multiple avenues in higher education within the United States (NC-SARA, 2024). To help with this, NC-SARA has created a professional community to support distance educators through mentorships and resources (NC-SARA, 2024). NC-SARA coordinates the four regional areas on implementation of the State Authorization Reciprocity Agreement (SARA), a set agreement among institutions spanning throughout 49 states, and the District of Columbia, Puerto Rico, and the U.S Virgin Islands to ensure "comparable national standards and streamlines regulation, fees, and approvals for institutions offering interstate distance education programs" (NC-SARA, 2024). The work of SARA ensures streamlining distance education regulations among participating institutions, and states acknowledge the work done by other states revolving around distance education to support those students better (NC-SARA, 2024). SARA allows higher education institutes to operate across state lines in the United States (NC-SARA, 2024). At the same time, NC-SARA focuses on enhancing the quality and protection of postsecondary distance education consumers by collecting and analyzing data taken from more than 2,300 institutions participating in SARA (NC-SARA, 2024). By doing so, NC-SARA can provide access to higher education opportunities, increase the quality and value of distance education, and

ensure students are being served well due to rapid changes in education's landscape (NC-SARA, 2024).

Compliance with Regular and Substantive Interaction Requirements

The Higher Education Act of 1965 and Amendments

The Higher Education Act of 1965 (HEA) was introduced as a public law (Pub. L.) to help individuals in lower socio-economic communities have opportunities to continue their education after high school by providing resources through federal grants and loan programs (Mirzoyan, 2020). The HEA aimed to create equality in higher education by bridging the gap for low-income communities to help break the cycle and allow individuals to attain higher education and build careers with better-paying jobs (Mirzoyan, 2020). Due to the slow evolution of schooling, the HEA has endured multiple amendments over the past few decades to help modify specific aspects of the Act and ensure it is still relevant to the higher education system.

In 1992, Congress and the ED began to realize students were learning in different ways besides the traditional face-to-face classroom setting, and there was concern about fraudulent activity revolving around students taking correspondence courses while using Title IV financial aid funds (Online Learning Consortium et al., 2019). The U.S. Government Accountability Office discovered that correspondence schools were twice as likely to default on student loans as other educational institutions (Toppo, 2018). There was no distinction between correspondence and distance education courses at the time, and students taking these courses did not qualify for Title IV financial aid (Online Learning Consortium et al., 2019). The Higher Education Amendments of 1992 (Pub. L. 102-325) created a regulation on institutions (Online Learning Consortium et al., 2019).

If more than 50 percent of their students were enrolled in correspondence courses or more than 50 percent of the courses offered were considered correspondence education, then the Title IV financial aid programs would not be available (Kerensky, 2022; Online Learning Consortium et al., 2019).

The Higher Education Amendments of 1998 (Pub. L. 105-244) authorized the creation of the Distance Education Demonstration Program due to the emerging field of distance education and its growth (Online Learning Consortium et al., 2019). Institutions involved in the program were exempt from different restrictions, including the 50 percent rule, and students were eligible for Title IV financial aid (Online Learning Consortium et al., 2019).

In 2002, an additional amendment eliminated the 12-hour rule, allowing students to engage with the material and instructors differently (Online Learning Consortium et al., 2019). Instead of 12 hours of instruction per week, only one day was required, permitting students to spend longer chunks of time with the material on their own time (Online Learning Consortium et al., 2019).

The Higher Education Reconciliation Act of 2005 (Pub. L. 109-171) rescinded the 50 percent rule towards distance education and, by doing so, re-defined correspondence and distance education (Online Learning Consortium et al., 2019). The new definition of distance education, found in the Code of Federal Regulations (C.F.R), Title 34, and Education section 600.2 (34 C.F.R. §600.2) includes the terms ‘regular and substantive interactions’ occurring between instructors and students; however, at the time, ‘regular and substantive interactions’ was not defined by the statute or ED (Online Learning Consortium et al., 2019; Skiba, 2018). Additionally, the Act allowed students to use Title

IV financial aid on direct assessment programs approved by the ED, which is discussed in 34 C.F.R. §668.10 (Online Learning Consortium et al., 2019).

Distance versus Correspondence Education

The federal regulations found in 34 C.F.R. §600.2 uses explicitly the term regular and substantive interaction in the correspondence and distance education definitions. The correspondence course definition has three parts as defined by Institutional Eligibility (2024) and Online Learning Consortium et al. (2019) under the amended HEA:

(1) "A course provided by an institution under which the institution provides instructional materials, by mail or electronic transmission, including examinations on the materials, to students who are separated from the instructors. Interaction between instructors and students in a correspondence course is limited, is not regular and substantive, and is primarily initiated by the student.

(2) If a course is part correspondence and part residential training, the Secretary considers the course to be a correspondence course.

(3) A correspondence course is not distance education."

Distance Education is defined by Institutional Eligibility (2024), also cited by Online Learning Consortium et al. (2019), Skiba (2018), Poulin & Davis (2016), and Davis (2020) under the amended HEA:

(1) "Education that uses one or more of the technologies listed in paragraphs (2)(i) through (iv) of this definition to deliver instruction to students who are separated from the instructor or instructors and to support regular and substantive interaction between the students and the instructor or instructors, either synchronously or asynchronously.

(2) The technologies that may be used to offer distance education include—

(i) The internet;

(ii) One-way and two-way transmissions through open broadcast, closed circuit, cable, microwave, broadband lines, fiber optics, satellite, or wireless communications devices;

(iii) Audio conference; or

(iv) Other media used in a course in conjunction with any of the technologies listed in paragraphs (2)(i) through (iii) of this definition.

(3) For purposes of this definition, an instructor is an individual responsible for delivering course content and who meets the qualifications for instruction established by an institution's accrediting agency."

Correspondence courses are known to be student-driven with limited interactions between the instructor and student, in which the student typically initiates contact by asking questions and completing assignments and assessments, and course completion is on the student's schedule, which can be irregular in comparison to a traditional classroom with a specific timeline (Poulin & Davis, 2016; Toppo, 2018). Within the C.F.R, correspondence courses are typically considered self-paced (Sec. 484 (l); 34 C.F.R 600.2) and do not contain regular and substantive interactions (Garn, 2016; Institutional Eligibility, 2024; Online Learning Consortium et al., 2019). To differentiate between correspondence and distance education courses, the term 'regular and substantive interaction' was used to reiterate that if it was present, then the course was considered distance, but if it was not present, then it was a correspondence course (Poulin & Davis, 2016; Institutional Eligibility, 2024). Within the code, the distinction between

correspondence reiterates that there are limited interactions, and students initiate those interactions (Evans & Kinoti, 2023; Institutional Eligibility, 2024). Traditional distance courses are guided by instructors with learning activities and lectures given in a specific timeline, along with supporting RSI between the student and the instructor, with the instructor reaching out to students (Evans & Kinoti, 2023; Poulin & Davis, 2016).

Financial Aid

The HEA has placed limitations on correspondence programs, so determining whether a program is considered correspondence or distance based on RSI is critical for financial aid purposes (Bergeron, 2016). Correspondence courses are ineligible for Title IV aid if a student is seeking a certificate; however, if RSI is present, then the course is considered distance, and Title IV financial aid is available (Bergeron, 2016; Garn, 2016; Online Learning Consortium et al., 2019; Piña & Martindale, 2023). Students enrolled in correspondence programs are eligible for a half-time Federal Pell Grant, authorized by Title IV funding under the HEA, if they are degree-seeking (Bergeron, 2016). Additionally, the HEA has limited the cost of correspondence courses due to the limited financial aid available for students enrolled in these courses (Bergeron, 2016).

Ensuring Compliance with Regular and Substantive Interaction Requirements

Within the last decade, the ED has added additional regulatory actions to distance education courses to ensure high standards for the institutions offering these courses (Piña & Martindale, 2023). According to Piña & Martindale (2023), some of these regulatory actions include:

(1) Modifying the definition of student eligibility for financial aid by expecting students to submit assignments, tests, or posts on discussion boards instead of only logging into the course.
(2) Requiring attendance based on student engagement from participating in course activities and tracking student activity.
(3) Modifying the clock and credit hours definitions for distance education courses.
(4) Review relationships between online program management and higher education institutes in federal hearings.
(5) Regular and substantive interactions are occurring.

The meaning of RSI needed to be clarified from its initial introduction in 2005 within the HEA (Online Learning Consortium et al., 2019). There were many years of confusion regarding expectations for what those interactions should look like in online education until 2019 (Online Learning Consortium et al., 2019). Institutions were left to interpret it to the best of their ability, which had lasting impacts and ultimately allowed for clarification on RSI in 2019 (Davis, 2020; Piña & Martindale, 2023).

The ED OIG audits of Saint Mary-of-the-Woods College (St. Mary's) in 2012 and Western Governors University (WGU) in 2016 are examples of how RSI was not interpreted correctly based on the ED OIG expectations even though the meaning of the term was not well understood (Piña & Martindale, 2023). The ED OIG audits found that these institutions were supposed to offer distance education courses, but they were technically correspondence (Davis, 2020; Piña & Martindale, 2023). In these cases, the OIG did not agree with the institutions' interpretations of RSI and recommended St.

Mary's and WGU return 42 million dollars and $712,670,616, respectively, in Title IV aid to the government (Davis, 2020; Piña & Martindale, 2023).

Both cases were adjudicated through the courts, but the ED eventually dropped the cases because the HEA had not clearly defined the term RSI, and since there was a lack of guidance, the institutions did not owe back the financial aid initially given by the government under Title IV; however, these audits by the federal government indicated that learning through the internet is not enough to differentiate between a correspondence and distance education course and there are consequences for faculty and academic leadership for not following the guidelines from 34 C.F.R. §600.2 (Evans & Kinoti, 2023; Piña & Martindale, 2023).

Introduction to Regular Interactions and Non-Substantive Interactions

In 2014, the Acting Assistant Secretary for Postsecondary Education issued a letter addressing the overwhelming confusion around RSI, focusing on competency-based education (CBE), with a section on what is not considered RSI (Online Learning Consortium et al., 2019). CBE programs fall under distance education (Federal Student Aid, 2021). The letter addressed the question, "What are the required conditions for regular and substantive interaction between students and instructors for CBE programs, including direct assessment?" (Online Learning Consortium et al., 2019, p. 3). The letter confirmed that students initiating contact with instructors and students only receiving instruction upon request do not fall under RSI; however, the letter also discussed activities that could be considered academically engaging in CBE, but vaguely noted with no clarification that even if the activity is engaging, that does not mean it fulfills the RSI requirement (Online Learning Consortium et al., 2019). The public could consider the

letter as a step towards defining regular interactions by discussing the engagement pieces (Online Learning Consortium et al., 2019). According to the Department of Education (2014), academic engagement pieces could include:

- "Participating in regularly scheduled learning sessions (where there is an opportunity for direct interaction between the student and the faculty member); Submitting an academic assignment;
- Taking an exam, an interactive tutorial, or computer-assisted instruction;
- Attending a study group that is assigned by the institution;
- Participating in an online discussion about academic matters;
- Consultations with a faculty mentor to discuss academic course content; and
- Participation in faculty-guided independent study (as defined in 34 CFR 668.10(a)(3)(iii)."

Within the WGU audit in 2016, the OIG went on to precisely define what is not considered substantive interaction. According to the Office of the Inspector General, U.S. Department of Education (2017), also cited in the Online Learning Consortium et al. (2019), the following are not considered to be substantive interactions because they did not exhibit characteristics of synchronous or asynchronous interactions:

- Instructors use computer-generated feedback on objective assessments given to students.
- Course design materials such as recorded webinars, videos, and reading material do not require students to engage with course material and interact with the instructor.

- Students contact mentor staff instead of instructors because mentors are not responsible for the course subject matter.

The audit also defined regular interactions as "occurring with some reasonable frequency considering the school-suggested length of the course" (OIG, 2017, p. 15). Still, the report did not further explain the meaning of the term reasonable frequency (Online Learning Consortium et al., 2019). Further, it recommended that an academic year consist of at least 30 weeks of instructional time and that at least one day each week should have regularly scheduled instruction or examinations (Online Learning Consortium et al., 2019).

In 2018, the ED was under pressure on the meaning of regular and substantive interactions due to confusion around the St. Mary's and WGU audits (Davis, 2020). The department asked for public comments addressing distance education regulations regarding state authorization and RSI (Davis, 2020). The information gathered was substantial enough for the ED to engage in a sizable rulemaking process in early 2019, covering various regulations, including distance education (Davis, 2020). By April 2019, the ED had reached a consensus on language revolving around different rules and was proposed to the public for comment (Davis, 2020). Final regulations were released by the end of 2019 and implemented in July 2020 (Davis, 2020). This process allowed for the terms 'instructor,' 'regular,' and 'substantive' to be defined in the HEA to ensure no more confusion on the expectations for RSI in distance education (Davis, 2020).

Understanding Regular Interactions

Although it has taken time for the term ‘regular’ to be defined in RSI, the expectation for institutions offering distance education courses should have a better idea of expectations. Now, it is time to identify what methods of regular interactions are best suited for learners and what they will look like moving forward.

Definition and Characteristics of Regular Interactions

Regular interaction is defined by Institutional Eligibility (2024) and cited in Kerensky (2022) under the amended HEA 34 C.F.R §600.2 as follows:

(1) “An institution ensures regular interaction between a student and an instructor or instructors by, prior to the student's completion of a course or competency—

(i) Providing the opportunity for substantive interactions with the student on a predictable and scheduled basis commensurate with the length of time and the amount of content in the course or competency; and

(ii) Monitoring the student's academic engagement and success and ensuring that an instructor is responsible for promptly and proactively engaging in substantive interaction with the student when needed on the basis of such monitoring, or upon request by the student.”

Types of Regular Interactions

Regular interactions can occur between learner-to-content, learner-to-instructor, learner-to-learner. Regular interactions must be predictable and scheduled for the students (Piorkowski, 2021). The instructor must be direct and follow these guidelines to ensure students understand the communication timelines between content, students, and the instructor.

Learner-Content

Learner-to-content interactions through an LMS should be regular to ensure students are actively engaged in their learning (Piorkowski, 2021). As stated earlier, learners can regularly engage with the content through live lectures, webinars, interactive tutorials, completing assignments or exams, participating in discussion boards, and meetings with other students or the instructor (Department of Education, 2014).

Learner-Instructor

Regular learner-to-instructor interactions allow students to easily reach their instructors as needed (Piorkowski, 2021). It can occur through office hours, with the instructor always available during specific times of the week, either in an office or through an online videoconferencing tool (Kerensky, 2022; Piorkowski, 2021). According to the Department of Education (2014), even if students do not attend office hours, the instructor is still regularly available each week to meet if needed, and it fulfills part of the regular interaction requirements (Kerensky, 2022). The instructor is responsible for informing learners how long it will take for
an email response, if the instructor is available on the weekends, when feedback on assignments should be posted, how often weekly announcements will occur, etcetera (Piorkowski, 2021). These instances are examples of predictable intervals for communication between the instructor and learners, and if it is explicitly stated and shown by the instructor, it can count as RSI (Piorkowski, 2021).

Learner-Learner

Instructors play a vital role in creating opportunities for learners to interact with each other. In asynchronous settings, the discussion board is the only place students “see”

each other, and there are many ways an instructor can build different forums for debates and small group discussions on topics (Piorkowski, 2021). Instructors should create prompts for students but not necessarily engage in the conversation to allow students more opportunities to interact with each other (Piorkowski, 2021).

Understanding Substantive Interactions

Substantive interactions consist of five criteria, and at least two of the five aspects should regularly be present within a course for it to be RSI (Kerensky, 2022). Instructors dictate how substantive interactions will occur within their courses, and due to the criteria, there are opportunities to make courses unique, which will also ensure substantive interactions occur between content, students, and instructors.

Definition and Characteristics

Substantive interaction is defined by Institutional Eligibility (2024) and cited in Kerensky (2022) and Piña and Martindale (2023) under the amended HEA 34 C.F.R §600.2 as follows:

(i) "For purposes of this definition, substantive interaction is engaging students in teaching, learning, and assessment, consistent with the content under discussion, and also includes at least two of the following—

(ii) Providing direct instruction;

(iii) Assessing or providing feedback on a student's coursework;

(iv) Providing information or responding to questions about the content of a course or competency;

(v) Facilitating a group discussion regarding the content of a course or competency; or

(vi) Other instructional activities approved by the institution's or program's accrediting agency."

Examples of Substantive Interactions

Recorded video lectures can add value to asynchronous courses; however, they do not fall under direct instruction, so they cannot count towards an RSI requirement (Kerensky, 2022). That said, asynchronous courses can still have RSI in other ways, be considered distance education, and receive federal financial aid (Kerensky, 2022). Instructors providing detailed feedback on assignments and exams or responding to posts on a discussion board can add value to the student's learning and help fulfill substantive interaction criteria (Piña & Martindale, 2023). Additionally, creating opportunities for students to interact with each other through collaborative projects or group discussions also allows for substantive interactions to occur (Piña & Martindale, 2023).

Table 1 summarizes substantive activities to ensure institutions abide by at least two of the five criteria stated in the amended HEA 34 C.F.R. §600.2 for distance education courses. Table 1, shown below, was modified from Piña and Martindale (2023).

Table 1

Regular and Substantive Interaction Activities

Activity	Substantive Interaction Criterion
Providing scheduled synchronous instructional sessions.	Providing direct instruction
Recording a synchronous instructional session requires students to watch and complete a specific assignment.	Assessing or providing feedback on a student's coursework.

Instructor providing feedback to assignments via audio, video, or text.	Assessing or providing feedback on a student's coursework.
Instructors participate in discussion boards and give feedback to individual students while grading the discussion assignment.	Assessing or providing feedback on a student's coursework.
Providing regularly scheduled office hours (on campus and/or virtually).	Providing information or responding to questions about the content of a course or competency.
Creating a dedicated Q&A forum where the instructor can provide and address course-related questions.	Providing information or responding to questions about the content of a course or competency.
Instructors post announcements through audio, video, or text, and students respond via audio, video, or text.	Facilitating a group discussion regarding the content of a course or competency.
The instructor provides discussion forums containing audio, video, or text-based, and students can respond via audio, video, or text.	Facilitating a group discussion regarding the content of a course or competency.
Facilitating online discussion forums by posting responses and summarizing questions and observations within the forum.	Facilitating a group discussion regarding the content of a course or competency.
Engaging in other activities approved by the university.	Could apply to all five criteria

Importance of Regular and Substantive Interactions in Online Education

It is important to remember that the creation of RSI regulations was meant to differentiate between distance and correspondence courses for financial aid purposes (The State University of New York, n.d.). Although this is the case, institutions still must abide by guidelines to offer distance education courses. With the expectation of institutions offering RSI, it "is still in the process of being understood, interpreted, and

implemented" into institutions, which is why it is essential to understand what forms of RSI benefit students and their learning and how often regular and substantive interactions should occur within a week (The State University of New York, n.d.).

The format of RSI could influence the social presence between an instructor and students. Social presence helps connect learners and their instructors, potentially leading to increased learning (Ngoyi et al., 2014). Social presence encompasses multiple dimensions, including intimacy and immediacy; communication levels can increase these levels (Ngoyi et al., 2014). Online communities can flourish through personal involvement with others and learning academic content together through multiple avenues because there are opportunities to be productive as a team (Ngoyi et al., 2014).

It is becoming crucial for instructors to move from solely focusing on content to considering the entire student and their needs; RSI could assist with this transition (Ngoyi et al., 2014). In higher-level education courses, several studies have identified that students taking online courses have a higher dropout rate than in-person classes (Alkhudiry & Alahdal, 2021; Ngoyi et al., 2014). Dropout rates can be due to students feeling more isolated, needing more motivation, and unfamiliar with the technology (Alkhudiry & Alahdal, 2021).

Social presence and student engagement are closely aligned because when students are connected, they are more likely to be more actively engaged and willing to collaborate in online learning and less isolated (Ngoyi et al., 2014). Due to this, students can have a deeper understanding of course material and be more successful in an online course (Ngoyi et al., 2014).

A study conducted by Evans and Kinoti (2023) focused on engagement between faculty and students in a private Catholic Jesuit institution. The research identified ways faculty actively engaged with students through different modalities. Based on the survey collected from students, the faculty regularly replied on discussion boards to students, and faculty being present in the course through discussions, announcements, or emails were the main ways students felt their instructors were engaging with students' multiple times a week. Additionally, the researcher gave an informal survey to students regarding the number of times per week they felt instructors should engage in the course. They found that interactions between the instructor and students were needed more than twice a week, but six to seven times a week was unnecessary.

Student engagement is a driving force for students to be interested in the course material and motivated to learn, which can be impacted by the instructor's presence within the course through personal connections and cultivating a learning environment where peers can interact (Ngoyi et al., 2014). Instructors can use RSI as a tool to help foster learner-to-instructor interactions and increase engagement within a course. According to Ngoyi et al. (2014), "institutions and instructors must focus their efforts on how to produce increased engagement and a sense of community, which in turn would result in enhanced student satisfaction and persistence in online programs" (p. 245). When developing learning activities focused on student engagement, instructors should give specific feedback extending past whether answers are correct or incorrect; instead, detailed suggestions for improvement should be provided (Ngoyi et al., 2014).

There are multiple ways instructors can increase student engagement within an online setting. Instructors should support and acknowledge all points of view by

understanding that students have diverse beliefs and prejudices that impact others while helping cultivate a learning community (Ngoyi et al., 2014). By doing this, instructors will validate students' perceptions, allowing for a safer learning environment where students can become more engaged and feel interconnected with the instructor and peers (Ngoyi et al., 2014).

Due to the COVID-19 pandemic, current traditional students attending higher-level education institutions will likely be more familiar with online and remote courses (Tsevi, 2022). These students have grown-up with the internet and mainstreaming of artificial intelligence, and the pandemic allowed traditional students to be even more savvy with digital skills (Tsevi, 2022). Additionally, it is possible that traditional and some nontraditional students were introduced to LMSs while in K-12 schooling due to the COVID-19 pandemic and are more aware of how they operate.

Traditional students attend higher-level education institutions directly after graduating high school (National Center for Education Statistics, n.d.). In contrast, nontraditional students have taken at least a one-year gap between high school graduation and college enrollment (National Center for Education Statistics, n.d.). Nontraditional students return to school later than traditional students, which can impact motivational attitudes toward learning (Eppler & Harju, 1997). A study by Shields (1993) found that nontraditional students have a different motivation for attending college versus traditional students due to being in various stages of adult development (Eppler & Harju, 1997). Nontraditional students are adult learners who choose to return to school after engaging in adult role activities and are more likely to be firmly committed to learning (Eppler & Harju, 1997). A study performed by Eppler and Harju (1997) identified that older

nontraditional students were more intrinsically motivated and more concerned with acquiring knowledge and developing skills than traditional students who were extrinsically motivated and more orientated towards forming social relationships and living up to others' expectations.

This chapter discussed the conceptual and theoretical frameworks for the study and highlighted different studies that revolve around the research questions. The information included was meant to provide background on the research already conducted and relate it to the research questions.

Chapter 3

Methods

Regular and Substantive Interactions (RSI) is a federal mandate discussed in the Higher Education Act of 1965 (HEA) to ensure instructors regularly interact with students and those interactions are substantive (Online Learning Consortium et al., 2019). This study aims to help a large suburban community college in the Midwest begin implementing RSI into its asynchronous courses and identify possible ways to support its students through RSI efforts. The researcher investigated (a) how RSI influences different categories of social presence between instructors and students, (b) the impact of RSI on student engagement between instructors and students, (c) if there is a relationship between the type of student and the student's perceived number of interactions with their instructor revolving around RSI and (d) if there is a relationship between the type of student and the student's preferred modality of interactions with their instructor regarding RSI.

The chapter provides details on the methodologies for the current study. First, the research design and selection of participants will be discussed, followed by how the survey instruments helped measure the research questions. The data collection and analysis plan are explained in detail, then the limitations and chapter summary are presented.

Research Design

Quantitative research differs from qualitative research in multiple ways. The main difference is that quantitative research is numerically driven and needs more participants (Creswell & Creswell, 2018). In contrast, qualitative research investigates

deeper meaning by interviewing participants and gathering descriptions of experiences in a verbal or textual format (Creswell & Creswell, 2018). Quantitative research originated from the postpositive worldview initially found in psychology, requiring a hypothesis and deductive reasoning to conclude (Creswell & Creswell, 2018). Quantitative research comprises survey and experimental designs (Creswell & Creswell, 2018). Both forms of research focus on identifying and measuring relationships with numerical data as the outcome. However, survey research studies a small portion of the population to make inferences about an entire population, whereas experimental research looks at specific treatments and their influence on outcomes (Creswell & Creswell, 2018).

Through a cross-sectional study, the researcher chose a survey design approach to identify social presence levels, student engagement levels, and preferred frequencies and modalities of an asynchronous community college student population (Creswell & Creswell, 2018). Cross-sectional studies allow for a rapid turnaround of data collection because a survey is given once, whereas longitudinal data is collected over time (Creswell & Creswell, 2018). Survey designs encompass three types of questions; however, one question is more focused on longitudinal studies (Creswell & Creswell, 2018). The cross-sectional questions pertain to descriptive questions and questions based on relationships between variables (Creswell & Creswell, 2018). Through a survey, students could indicate the most valuable aspects of the course revolving around RSI.

The current study aimed to examine the frequency of different forms of RSI on social presence and student engagement between the instructor and student, and

identify the perceived frequencies and preferred modalities of RSI for traditional students who are enrolled full-time in post-secondary courses immediately after high school and nontraditional students (people who do not fit the traditional student criteria) within an asynchronous setting. For RQ1, the variables were frequencies of regular and substantive interactions and social presence levels. RQ2's variables were frequencies of regular and substantive interactions and student engagement levels. The variables for RQ3 were traditional and nontraditional students and perceived frequencies of interactions relating to regular and substantive interactions, and for RQ4, the variables were traditional and nontraditional students and preferred modalities of interactions relating to regular and substantive interactions. The information gathered through the RSI pilot program and the study will help inform the community college on better serving their students through RSI efforts.

Selection of Participants

The setting is virtual through asynchronous classes at a large community college (enrollment of 17,000) in a midwestern suburb. Even though the students are taking classes at the community college in the Midwest, they do not necessarily live close to the school or within the Midwest area.

The community college was selected using convenience purposive sampling for multiple reasons: the researcher's prior knowledge of the college, the college's willingness to be open to a study being conducted, the college's resources to continually innovate, and a large student population consisting of traditional, nontraditional, and dual-credit students.

Potential participants in the study were students choosing classes for the fall

semester of 2024, but these students were unaware that their instructors would be implementing RSI when signing up for classes. The instructors implementing RSI volunteered to use it in their courses or were specifically asked by the community college to participate in the RSI pilot program. A convenience purposive sampling method was used when the community college selected instructors to implement RSI for the pilot program, but the researcher was not involved in selecting instructors for the RSI pilot program.

After the instructors were selected, the student participants were included through non-purposive sampling because the instructors decided if the survey for this study would be available to their students. This process limited bias through student participant selection. Student participation in the survey was voluntary, and the participants were anonymous. The survey was available during the last two weeks of the semester leading up to finals. The researcher chose an asynchronous setting because RSI revolves around interactions between instructors and students involved in distance education.

Measurement

The researcher created the instrumentation for this study to collect data about the research questions. The survey consisted of multiple choice and 5-point Likert scales. Likert scales are beneficial when measuring opinions or attitudes.

The survey was conducted through SurveyMonkey, an online software company specializing in surveys. The survey given to participants has multiple sections based on the research questions. The initial question allowed students to identify what course they would consider while completing the survey. This helps

ensure students are actively thinking of the course they are taking the survey on, and if students are enrolled in multiple asynchronous courses and participating in the pilot RSI program, one of the courses will be chosen. If a participant had two or more asynchronous RSI piloting courses in the fall semester of 2024, the informed consent statement at the beginning of the survey informed students to choose a class for the survey that was participating in the RSI pilot.

The researcher created some of the questions and statements in the survey, whereas others were used with permission from other creators. Aside from the questions about the course and demographics, all other questions and statements revolved around RSI to encompass aspects such as social presence, student engagement, perceived frequency, and preferred modality.

The first portion of the survey took data on demographics through multiple-choice questions. The questions covered what sex the student identifies as, ethnicity/race, residence by region, age range, and level of education completed. Each question had a “prefer not to say” option for inclusivity.

There were six multiple-choice questions based on the different forms of RSI and how frequently those forms were utilized within the course. Two of the six had an emphasis on discussion boards. RQ1 and RQ2 had the same independent variable, and the researcher used the information gathered from the forms of RSI multiple-choice questions for both research questions. There were no validated or reliable surveys about RSI available because the topic of study is still new; therefore, the researcher created the questions for this portion of the survey.

The social presence survey questions for RQ1 were based on a level of agreement 5-point Likert scale taken from the Community of Inquiry (CoI) Questionnaire, an open resource under the Creative Common license (Arbaugh et al., 2008). Social presence indicators were organized into three categories: affective, interactive, and cohesive (Lowenthal, 2009). The leading indicators within each category are expression of emotion, open communication, and group cohesion (Lowenthal, 2009). Under the Creative Common license, the questionnaire for CoI could be adapted as needed; therefore, some of the questions were modified to fit the needs of the study. Under the interactive and cohesive categories, statements 9c and 10b, respectively, the wording 'other course participants' was changed to 'instructor' because RQ1 focuses on the social presence between the instructor and student.

For RQ2, the researcher was permitted by Dixson (2015) to use the Online Student Engagement (OSE) scale to determine student engagement within the course. The statements from Dixson (2015) are based on a characteristic 5-point Likert scale. All 19 statements from the OSE were used in the survey. Additionally, the researcher created one multiple-choice question to ask the participants about their overall engagement due to interactions with their instructor.

Both RQ3 and RQ4 revolved around traditional and nontraditional students; therefore, the survey had one multiple-choice question for participants to identify themselves as a traditional or nontraditional student; the definition for each was given to allow participants to self-identify. RQ3 used a level of agreement 5-point Likert scale revolving around the perceived frequency of RSI, consisting of six statements. Additionally, there was one multiple-choice question on the frequency of interacting

with their instructor in a given week. RQ4 consisted of 5-point level of agreement Likert scale questions regarding preferred modalities of RSI with an instructor; there were six statements in total.

Reliability involves the instrument's ability to be consistent and used repeatedly over time (Creswell & Creswell, 2018). The instruments used for the study can be found in Appendix A. It consists of categorical and ordinal scale questions. The survey questions and statements created by the researcher regarding forms of RSI for RQ1 and RQ2, along with the questions and statements for RQ3 and RQ4, were reviewed by multiple people but were not tested on anyone before being made available to students in the pilot program. The researcher could assess internal consistency through Cronbach's alpha after the data was collected from the survey. RQ1 statements for social presence were taken from the CoI questionnaire, which was already tested for reliability. RQ2 statements about student engagement levels were taken from the OSE scale, which has been tested for reliability in research papers.

The validity of the instruments was essential because it demonstrated that what was supposed to be measured was truly being measured (Roberts & Hyatt, 2019). There were multiple forms of validity within the study. The survey demonstrated validity through each question or statement because it aimed to gain insight and answer the research questions. The researcher checked content validity by using research questions covering all aspects of regular and substantive interactions and the expectations and implementation of it in distance education set forth by the amended Higher Education Act of 1965 (HEA). Predictive validity was demonstrated through the survey because students were able to identify if certain forms and frequencies of

RSI efforts impacted their perceptions of social presence and student engagement. Additionally, the student's perceptions of the frequency and modalities of RSI were measured based on their viewpoints of being a traditional or nontraditional student and if those specific outcomes were due to the RSI efforts made by the instructor.

Construct validity was applied to the research because a new scale was designed by the researcher for the independent variable, forms of RSI for RQ1 and RQ2, and the researcher created all the questions and statements for RQ3 and RQ4. The questions and statements created by the researcher aimed to measure how the RSI efforts made by the instructors could impact students through social presence and what aspects of RSI were most important to students and their ability to be successful. Construct validity has become the overriding form of validity to determine if the data collected serves a purpose and is useful (Creswell & Creswell, 2018). Due to the study revolving around an RSI pilot program, it was a small-scale and short-term experiment, so it was essential to have a doctoral research analyst review the survey. In addition, a person with an Advanced Learning Certificate in Program Evaluation from Washington University in St. Louis, the Director of Assessments, Evaluation, and Institutional Outcomes at the community college, and a peer also in the Instructional Design and Technology Doctoral Program at Baker previewed the survey to ensure it would accurately measure the research questions. The statements used for the dependent variables of RQ1 and RQ2, social presence and student engagement, were from sources already validated through multiple research papers. Statements from the Community of Inquiry (CoI) questionnaire were used in RQ1 under open resource licensing (Arbaugh et al., 2008), and the OSE scale was used in RQ2 with the

permission of Dixson (2015). The data collected from the study has a valuable purpose to help track RSI and its potential impacts on asynchronous learning.

Data Collection Procedure

Before the study could begin, the researcher completed five training modules from the U.S. Department of Health and Human Services to demonstrate an understanding of the IRB's role in human research and the ethical conduct expected when researching humans. As of January 1, 2024, Baker University requires researchers to complete these training modules with certification proof demonstrating their knowledge of expectations for research. Once the training and correct forms were submitted to the chairperson representing the IRB at Baker University and received the completed IRB form and certifications from the training, the board met to determine if the proposed research was safe for participants. The researcher received approval from the Institutional Review Board (IRB) at Baker University on October 22, 2024 (Appendix B). After the IRB approval at Baker University, the researcher needed additional approval from the Community College's Executive Director of Institutional Effectiveness, Research, and Planning. This approval occurred on November 14, 2024 (Appendix C).

The Canvas announcement (Appendix D) containing the SurveyMonkey link was available for students to voluntarily participate from November 25, 2024, to December 9, 2024. The Director of Educational Technology and Distance Learning at the Community College posted the Canvas announcement to the participating courses on November 25 and once again on December 4 as a reminder. Finals at the community college started on December 10, so the survey link was no longer

available beginning on December 10 because it is assumed students would be more focused on finals rather than participating in a survey. The survey was given at the end of the semester, allowing students to reflect on the entire semester regarding their experiences in a course with instructors implementing RSI.

If students chose to click on the link from the Canvas announcement, the initial page of the survey was the Informed Consent Statement (Appendix E). The student voluntarily participated in the study if the "Next" button was clicked. The survey had four main sections related to the research questions and one demographic section. The initial question in the survey asked the participant what asynchronous course they would be taking the survey for to help ensure the participant was actively thinking about this asynchronous course only while answering questions.

The Director of Educational Technology and Distance Learning at the community college informed instructors of the RSI pilot program of the survey, and the instructors were given access to the survey to decide if they would be willing to have it available in their RSI courses. It was essential for the instructors participating in the pilot program not to feel the survey was invasive into their online classroom and that the information gathered would not impact their jobs. Instructors still had autonomy over their classroom and how they wanted to implement RSI. The instructors participated in the research by implementing RSI into their asynchronous classes; however, all the data collected was from optional student participation in the survey, based on instructors choosing to have the survey made available. The instructors were given resources from the Community College on RSI.

Based on ethical conduct, all research requires voluntary participation.

Participants are allowed to withdraw from the study at any time. Ethical research requires informed consent (Bird, 2023). When signing up for classes, the student participants were unaware it would be an RSI pilot asynchronous course. The student participants were informed of their rights (Appendix E) about taking the survey to ensure no confusion on the information obtained for the study. Student participants' identification was anonymous to the institution and researcher. The survey questions were free of bias, discrimination, and offensive language.

Data Analysis and Hypothesis Testing

The data was placed into the IBM Statistical Package for the Social Sciences (SPSS) to help organize and analyze the data to answer the research questions. According to Creswell and Creswell (2018), there are six steps in presenting data analysis in quantitative research.

Step 1: Identify the number of participants

Step 2: Response bias

Step 3: Descriptive analysis

Step 4: Scale evaluation

Step 5: Statistical tests

Step 6: Report results

The researcher discovered that four instructors were willing to participate and that 189 students would be given access to the survey. For step 1, the community college recorded the total number of students within each RSI pilot course, and the college administration gave the numbers to the researcher. The researcher used a table

to compare the total number of students within the pilot RSI courses to the number of participants in the survey labeled as respondents and nonrespondents (Creswell & Creswell, 2018).

For step 2, the researcher asked the Director of Educational Technology and Distance Learning of the Community College to post the Canvas announcement to the instructors who volunteered to provide the survey for their students, who could then voluntarily participate. This helped combat response bias.

In step 3, the researcher analyzed the data based on a descriptive statistical analysis of the independent and dependent variables for each question within the study (Creswell & Creswell, 2018). The data analysis included means, standard deviation, and ranges for each variable (Creswell & Creswell, 2018). The data analysis stage included looking for missing data from the survey questions that participants either forgot to answer or chose not to respond (Creswell & Creswell, 2018).

In step 4, the multi-item scales used within the survey were based on levels of agreement and frequency to make it simple for the participants (Creswell & Creswell, 2018). There are no negatively worded items, so reverse scoring was not applicable. If data is missing, imputation was used, and the mean, median, and mode answers were placed in the corresponding columns; however, this could introduce bias if done repeatedly. The statistical tests in step 5 were run through the IBM SPSS Statistics 29 program to help simplify the process. More details on Steps 5 and 6 are below, each specifically tailored to the research question and hypothesis.

RQ1

To what extent does the frequency of regular and substantive interactions in asynchronous learning predict social presence levels between instructors and students?

H1. There is a relationship between the frequency of regular and substantive interactions in asynchronous learning and the social presence levels between instructors and students.

H0. There is no relationship between the frequency of regular and substantive interactions in asynchronous learning and the social presence levels between instructors and students.

The researcher conducted a multivariate regression analysis to address RQ1. A multivariate regression analysis was chosen because one independent variable, frequency of regular and substantive interactions (RSI), can be broken down into different types of interactions. Three continuous dependent variables of social presence are shown through affective, interactive, and cohesive categories. The multivariate regression analysis can identify the relationships between each form of RSI frequency and each category of social presence. The significance level was at .05.

RQ2

To what extent does the frequency of regular and substantive interactions in asynchronous learning impact the student engagement levels between instructors and students?

H2. There is a relationship between the frequency of regular and substantive interactions in asynchronous learning and the student engagement levels between instructors and students.

H0. There is no relationship between the frequency of regular and substantive interactions in asynchronous learning and the student engagement levels between instructors and students.

The researcher conducted a simple linear regression analysis to address RQ2. Simple linear regression was chosen for the hypothesis testing because it examines the prediction or explanation of the dependent variable, student engagement from the independent variable, regular and substantive interactions ("Guidelines and Examples," 2022). Both variables were continuous. The significance level was at .05 ("Guidelines and Examples," 2022). If appropriate, an effect size, R^2, is reported ("Guidelines and Examples," 2022).

RQ3

What is the relationship between the classification of students as traditional or nontraditional and their perceived frequency of regular and substantive interactions with instructors in a higher education setting?

H3. There is a relationship between the classification of students as traditional or nontraditional and their perceived frequency of regular and substantive interactions with their instructors.

H0. There is no relationship between the classification of students as traditional or nontraditional and their perceived frequency of regular and substantive interactions with their instructors.

The researcher conducted an independent-samples *t*-test to address RQ3. The two-sample means were compared ("Guidelines and Examples," 2022). An independent-samples *t*-test was chosen for the hypothesis testing because the hypothesis test involves the examination of the mean difference between two mutually exclusive independent groups, the type of student, and the perceived frequency of interactions with an instructor ("Guidelines and Examples," 2022). The significance level was at .05 ("Guidelines and Examples," 2022). If appropriate, an effect size measure by Cohen's *d* is reported ("Guidelines and Examples," 2022).

RQ4

What is the relationship between the classification of students as traditional or nontraditional and their preferred modality of regular and substantive interactions with instructors in a higher education setting?

H4. There is a relationship between the classification of students as traditional or nontraditional and their preferred modality of regular and substantive interactions with their instructors.

H0. There is no relationship between the classification of students as traditional or nontraditional and their preferred modality of regular and substantive interactions with their instructors.

The researcher conducted an independent-samples *t*-test to address RQ4. The two-sample means were compared ("Guidelines and Examples," 2022). An independent-samples *t*-test was chosen for the hypothesis testing because the hypothesis test involves the examination of the mean difference between two mutually exclusive independent groups, the type of student, and the preferred modality of

interactions with an instructor ("Guidelines and Examples," 2022). The significance level was at .05 ("Guidelines and Examples," 2022). If appropriate, an effect size measure by Cohen's *d* is reported ("Guidelines and Examples," 2022).

Limitations

There were multiple limiting factors within the study. First, the researcher had limited access to courses implementing RSI to ensure instructors had autonomy. The study was limited to a specific time frame based on the courses being part of a pilot program for the community college. Some instructors asked the administrative team to participate in the RSI pilot program; however, the administrative team asked other instructors if they would be interested in participating. Intrinsic and extrinsic motivation for instructors participating in the pilot could impact their motivation, even though RSI is mandated nationally for all distance education courses, and this community college is in the early stages of implementation. The researcher had no control over how the instructor's executed RSI in their asynchronous courses.

The number of instructors participating can impact the number of possible participants in the study because there are typically 18 students per asynchronous course; this could affect the sample size. Four instructors were willing to make the survey available, and each instructor taught between one and four RSI courses. The courses taught by these instructors included business, computer desktop publishing, and computer drafting. A total of 189 students were given access to the optional survey. The participants answered questions based on their experience with the asynchronous course regarding RSI, which the instructor could influence. Participants needed to answer honestly and only consider the RSI pilot course when answering

questions. Additionally, students could have technical issues while taking the online survey.

Summary

With RSI being a newer mandate in the higher education sector, there needs to be more studies on best practices based on student needs and if RSI efforts are making a difference in social presence and student engagement and how it impacts students enrolled in distance education courses. Many discussions revolve around RSI; however, there are no studies on students' perceptions of RSI regarding social presence, student engagement, and their perceived frequencies and preferred modalities of interactions between themselves and their instructors.

The quantitative study focused on survey research to identify social presence, student engagement, and perceived frequencies and preferred modalities in asynchronous courses piloting RSI at a community college in the Midwest. The survey given to the participants aimed to investigate (a) how the frequency of RSI forms could influence social presence between the instructor and student, (b) if the frequency of RSI forms impacted student engagement between the instructor and student, (c) if there is a perceived and preferred frequency of RSI between the instructor and students based on the type of student, traditional or nontraditional and (d) if there are preferred modalities of RSI between the instructor and students based on the type of student, traditional or nontraditional. The researcher ran the following analyses: (a) multivariate regression analysis, (b) simple linear regression**,** (c) independent-samples *t*-test, and (d) independent-samples *t*-test. The researcher discussed multiple

limitations due to wanting instructors to have autonomy over courses while implementing RSI. Descriptive statistics for continuous variables and the results of the tested hypotheses are presented in Chapter 4.

Chapter 4

Results

Data was collected through an optional survey made available by a Canvas announcement to students unknowingly participating in a pilot program at a community college, where instructors consciously tried implementing RSI into their asynchronous courses. The study examined the frequency influence of different forms of RSI between instructors and students on social presence and student engagement. It also identified if there is a relationship between the classification of students as traditional or nontraditional and their perceived frequencies and preferred modalities of interactions with their instructor. This chapter discusses the hypothesis testing for each research question.

Descriptive Statistics

There were 28 total participants out of 189 students given access to the survey. Four of the 28 participants started the survey but only completed the sections asking about the course. Two participants skipped one question each, one did not answer six questions, and one only answered questions regarding the course name, demographics, and RQ1. The mean imputation technique, which replaces missing values with the mean of the non-missing values for the items, was used for all the missing data. The imputed means were rounded to the closest whole number.

The participants who did not identify as either traditional or nontraditional due to not answering or choosing the “prefer not to say” option were not included in the statistical analysis for RQ3 and RQ4. For RQ3, a multiple-choice question asked the participants, “How many times in a week would you prefer to hear from and/or

interact with your instructor?" One of the options was "other (please specify)," and two participants gave different responses. The researcher placed the mean for the response "seems about right," and the given option of "3-4 times a week" was chosen for the participant's response of "2-4" times a week.

The initial question in the survey asked participants to identify which course they would focus on while completing the survey. Each course option provided was part of the RSI pilot program, and each course's instructors had permitted the survey to be made available on their Canvas course through an announcement. The percent and percentage are discussed in Tables 2 and 3. The percent was calculated based on the total number of participants, including missing data and valid responses, whereas the percentage was calculated using only valid responses. Table 2 details the courses and the number of participants in each course.

Table 2

Frequency of Participants in Courses

Courses	Frequency	Percent/ Percentage
BUS 121	6	20.7/ 21.4
BUS 123	5	17.2/ 17.9
CDTP 155	7	24.1/ 25.0
DRAF 125	5	17.2/ 17.9
DRAF 135	5	17.2/ 17.9

Note. N= 28

Demographic information was taken from the survey to give insight into the students taking asynchronous courses, which also happened to be part of the RSI pilot

program. Table 3 below gives frequencies of the demographic variables based on questions asked in the survey.

Table 3

Frequency of Participant Demographic Variables

Variables	Frequency	Percent/ Valid Percent
Gender		
Female	10	34.5/ 41.7
Male	14	48.3/ 58.3
Ethnicity/ Race		
Hispanic or Latino	3	10.3/ 13.0
White	18	62.1/ 78.3
Prefer not to say	1	3.4/ 4.3
Other	1	3.4/ 4.3
Place of Residence		
Midwest	20	69.0/ 83.3
South	1	3.4/ 4.2
Southwest	1	3.4/ 4.2
Prefer not to say	2	6.9/ 8.3
Age Range		
18-24	10	34.5/ 41.7
25-34	10	34.5/ 41.7
35-44	1	3.4/ 4.2
45-54	1	3.4/ 4.2

Prefer not to say	2	6.9/ 8.3
Highest Level of Education		
High School Diploma or Equivalent	3	10.3/ 12.5
Some College, No Degree	13	44.8/ 54.2
Associate's Degree	2	6.9/ 8.3
Bachelor's Degree	4	13.8/ 16.7
Graduate or Professional Degree	1	3.4/ 4.2
Prefer not to say	1	3.4/ 4.2

Hypothesis Testing

The four research questions and the results from the statistical tests are discussed below.

RQ1

To what extent does the frequency of regular and substantive interactions in asynchronous learning predict social presence levels between instructors and students?

H1. There is a relationship between the frequency of regular and substantive interactions in asynchronous learning and the social presence levels between instructors and students.

H0. There is no relationship between the frequency of regular and substantive interactions in asynchronous learning and the social presence levels between instructors and students.

The information has been organized by the independent variable, forms of RSI versus the social presence score. Social presence was organized into three different

categories: affective (AFF), interactive (INT), and cohesive (COH). The following results from the statistical tests are organized based on the frequency forms of RSI questions.

RSI Form 1: Email

A multivariate regression test was calculated to indicate whether an instructor's email frequency predicts the social presence score of AFF, INT, and COH categories. The multivariate tests did not show a statistically significant effect on the combined categories, F (3,24) = 1.185, p = .336.

The relationship between the scores of the social presence categories, AFF, INT, and COH, was individually tested against the average number of weekly emails students received from their instructors. Each category was not statistically significant, as shown in Table 4 below. The null hypothesis was upheld, indicating no significant difference was found.

Table 4

Multivariate Regression for Email on Social Presence

Dependent Variable	Sum of Squares	df	Mean Square	F	Sig.	R^2
AFF	.084	1	.084	.095	.761	.004
INT	.113	1	.113	.378	.544	.014
COH	.119	1	.119	.292	.593	.011

RSI Form 2: Announcements

A multivariate regression test was calculated to indicate whether instructors' weekly announcement frequency predicts the social presence score of AFF, INT, and COH categories. The multivariate tests did not show a statistically significant effect on the combined categories, F (3,24) = .994, p = .412.

The relationship between the scores of the social presence categories, AFF, INT, and COH, was individually tested against the average number of weekly announcements posted by the instructor. Each category was not statistically significant, as shown in Table 5 below. The null hypothesis was upheld, indicating no significant difference was found.

Table 5

Multivariate Regression for Weekly Announcements on Social Presence

Dependent Variable	Sum of Squares	df	Mean Square	F	Sig.	R^2
AFF	.350	1	.350	.397	.534	.015
INT	.047	1	.047	.155	.697	.006
COH	.163	1	.163	.401	.532	.015

RSI Form 3: Virtual Hours

A multivariate regression test was calculated to indicate whether the frequency of students attending virtual hours or meetings with their instructor monthly predicts the social presence score of AFF, INT, and COH categories. The multivariate tests did not show a statistically significant effect on the combined categories, F (3,24) = .387, p = .764.

The relationship between the scores of the social presence categories, AFF, INT, and COH, was individually tested against the average number of virtual hours or meetings attended with their instructor monthly. Each category was not statistically significant, as shown in Table 6 below. The null hypothesis was upheld, indicating no significant difference was found.

Table 6

Multivariate Regression for Virtual Office Hours on Social Presence

Dependent Variable	Sum of Squares	df	Mean Square	F	Sig.	R^2
AFF	.963	1	.963	1.124	.299	.041
INT	.090	1	.090	.301	.588	.011
COH	.278	1	.278	.691	.413	.026

RSI Form 4: Discussion Forums

A multivariate regression test was calculated to indicate whether the monthly frequency of discussion forums predicts the social presence score of AFF, INT, and COH categories. The multivariate tests did not show a statistically significant effect on the combined categories, F (3,24) = 2.443, p = .089.

The relationship between the scores of the social presence categories, AFF, INT, and COH, was individually tested against the average number of discussion forums per month. The INT category was statistically significant; however, the AFF and COH categories were insignificant. The frequency of discussion forums per month was 2-3 times. Each category is shown in Table 7 below. Despite the overall model being non-significant, finding one significant dependent variable (INT)

suggests that the independent variable (frequency of discussion forums) might impact the INT category, but the effect may not be strong enough across all dependent variables to influence the overall test.

Table 7

Multivariate Regression for Discussion Forum on Social Presence

Dependent Variable	Sum of Squares	df	Mean Square	F	Sig.	R^2
AFF	.776	1	.776	.886	.355	.033
INT	1.165	1	1.165	4.505	.043	.148
COH	.202	1	.202	.498	.487	.019

RSI Form 5: Student Participation in Discussion Forums

A multivariate regression test was calculated to indicate whether the monthly frequency of students posting in discussion forums predicts the social presence score of AFF, INT, and COH categories. The multivariate tests did not show a statistically significant effect on the combined categories, F (3,24) = .821, p = .495.

The relationship between the scores of the social presence categories, AFF, INT, and COH, was individually tested against the average frequency of posts in a discussion forum. Each category was not statistically significant, as shown in Table 8 below. The null hypothesis was upheld, indicating no significant difference was found.

Table 8

Multivariate Regression for Student Participation in Discussion on Social Presence

Dependent Variable	Sum of Squares	df	Mean Square	F	Sig.	R^2
AFF	.557	1	.557	.638	.432	.024
INT	.175	1	.175	.590	.449	.022
COH	<0.001	1	6.726E-S	.000	.990	.000

RSI Form 6: Feedback

A multivariate regression test was calculated to indicate whether the instructor's frequency of feedback promptness predicts the social presence score of AFF, INT, and COH categories. The multivariate tests did not show a statistically significant effect on the combined categories, F (3,24) = 2.641, p = .072.

The relationship between the scores of the social presence categories, AFF, INT, and COH, was individually tested against the average rate of time from assignments being turned in to when the instructor gave feedback. The INT category was statistically significant; however, the AFF and COH categories were insignificant. The frequency of instructor feedback promptness was within 2-3 days if the assignment was submitted by the deadline. Each category is shown in Table 9 below. Despite the overall model being non-significant, finding one significant dependent variable (INT) suggests that the independent variable (the instructor's frequency of feedback promptness) might have an impact on the INT, but the effect may not be strong enough across all dependent variables to influence the overall test.

Table 9

Multivariate Regression for Feedback Promptness on Social Presence

Dependent Variable	Sum of Squares	df	Mean Square	F	Sig.	R^2
AFF	.341	1	.341	.387	.539	.015
INT	1.643	1	1.643	6.841	.015	.208
COH	.761	1	.761	1.981	.171	.071

RQ2

To what extent does the frequency of regular and substantive interactions in asynchronous learning impact the student engagement levels between instructors and students?

H2. There is a relationship between the frequency of regular and substantive interactions in asynchronous learning and the student engagement levels between instructors and students.

H0. There is no relationship between the frequency of regular and substantive interactions in asynchronous learning and the student engagement levels between instructors and students.

The information was organized by the independent variable, forms of RSI, against the dependent variable, the student engagement level score. The mean score was taken, which included the Likert scale and multiple-choice questions on student engagement. The following results from the statistical tests are organized based on the frequency forms of RSI questions.

RSI Form 1: Email

A simple linear regression was calculated to indicate whether the frequency of receiving emails from an instructor predicts the student engagement level score. The regression equation found F (1, 26) = .038, p = .847, with an R^2 of .001. The simple linear regression results showed that the frequency of emails from an instructor does not predict the mean student engagement level, B = .033, t (26) = .195, p = .847. The result was insignificant, suggesting that the average number of additional emails received would increase the student engagement level score by .033. The null hypothesis was upheld, indicating no significant difference was found.

RSI Form 2: Announcements

A simple linear regression was calculated to indicate whether instructors' weekly announcement frequency predicts the student engagement level score. The regression equation found F (1, 26) = .024, p = .879, with an R^2 of .001. The simple linear regression results showed that the frequency of instructors posting weekly announcements does not predict the student engagement level score, B = -.027, t (26) = -.154, p = .879. The result was not significant. The null hypothesis was upheld, indicating no significant difference was found.

RSI Form 3: Virtual Hours

A simple linear regression was calculated to indicate whether the frequency of students attending virtual hours or meetings with their instructor monthly predicts the student engagement level score. The regression equation found F (1, 26) = .303, p = .587, with an R^2 of .012. The simple linear regression results showed that the

frequency of students attending virtual hours or meetings with their instructor monthly does not predict the student engagement level score, $B = .067$, $t\ (26) = .551$, $p = .587$. The result was not significant and suggests that the number of every additional virtual hour or meeting attended in a month, on average, the student engagement level score would increase by .067. The null hypothesis was upheld, indicating no significant difference was found.

RSI Form 4: Discussion Forums

A simple linear regression was calculated to indicate whether the monthly frequency of discussion forums predicts the student engagement level score. The regression equation found $F\ (1, 26) = 1.264$, $p = .271$, with an R^2 of .046. The simple linear regression results showed that the monthly frequency of discussion forums does not predict the student engagement level score, $B = -.094$, $t\ (26) = -1.124$, $p = .271$. The result was not significant. The null hypothesis was upheld, indicating no significant difference was found.

RSI Form 5: Student Participation in Discussion Forums

A simple linear regression was calculated to indicate whether the frequency of students posting in each discussion forum predicts the student engagement level score. The regression equation found $F\ (1, 26) = .010$, $p = .920$, with an R^2 of .000. The simple linear regression results showed that the frequency of students posting in each discussion forum does not predict the student engagement level score, $B = -.015$, $t\ (26) = -.101$, $p = .920$. The result was not significant. The null hypothesis was upheld, indicating no significant difference was found.

RSI Form 6: Feedback

A simple linear regression was calculated to indicate whether the frequency of feedback promptness by the instructor predicts the student engagement level score. The regression equation found F (1, 26) = .354, p = .557, with an R^2 of .013. The simple linear regression results showed that the frequency of feedback promptness by the instructor does not predict the student engagement level score, B = .083, t (26) = .595, p = .557. The result was not significant. The null hypothesis was upheld, indicating no significant difference was found.

RQ3

What is the relationship between the classification of students as traditional or nontraditional and their perceived frequency of regular and substantive interactions with instructors in a higher education setting?

H3. There is a relationship between the classification of students as traditional or nontraditional and their perceived frequency of regular and substantive interactions with their instructors.

H0. There is no relationship between the classification of students as traditional or nontraditional and their perceived frequency of regular and substantive interactions with their instructors.

Two independent-samples *t*-tests were performed for this research question. Both *t*-tests involved the independent variable, the type of student. One of the *t*-tests used the mean value from the Likert scale question revolving around the perceived frequency of RSI, while the other *t*-test focused on the multiple-choice question

identifying the students' preferred number of interactions with their instructor weekly. The results from the two statistical tests are discussed below.

Perceived Frequency of RSI

Levene's test for equality of variances indicated that the assumption of homogeneity of variance was met, F (1,17) = .550, p = .468. The independent samples t-test assumed equal variance, and the results indicated there was no statistically significant difference in the perceived frequency of interactions with an instructor between traditional students (M = 4.21, SD = .792) and nontraditional students (M = 4.00, SD = .725), t = .601, df = 17, p = .555. The mean difference was .214. The p-value was greater than .05; therefore, the null hypothesis is upheld, indicating no significant difference was found. Cohen's d was .749, indicating a large effect size.

Preferred Number of Interactions

Levene's test for equality of variances indicated that the assumption of homogeneity of variance was met, F (1,17) = 7.829, p = .012. The independent samples t-test assumed equal variance, and the results indicated there was no statistically significant difference in the preferred weekly number of interactions with the instructor between traditional students (M = 1.00, SD = .000) and nontraditional students (M = 1.17, SD = .389), t = -1.119, df = 17, p = .279. The mean difference was -.167. The p-value was greater than .05; therefore, the null hypothesis is upheld, indicating no significant difference was found. Cohen's d was .313, indicating a small to medium effect size.

RQ4

What is the relationship between the classification of students as traditional or nontraditional and their preferred modality of regular and substantive interactions with instructors in a higher education setting?

H4. There is a relationship between the classification of students as traditional or nontraditional and their preferred modality of regular and substantive interactions with their instructors.

H0. There is no relationship between the classification of students as traditional or nontraditional and their preferred modality of regular and substantive interactions with their instructors.

The researcher conducted an independent-samples *t*-test to compare the two-sample means: the type of student and the student-preferred modality of interactions with an instructor. The survey focused on six modalities of RSI: emails, announcements, virtual office hours, discussion forums, assignment feedback, and recorded lectures.

Emails

Levene's test for equality of variances indicated that the assumption of homogeneity of variance was met, F (1,17) = .555, p = .466. The independent samples *t*-test assumed equal variance, and the results indicated there was no statistically significant difference in preferred modalities of interactions through email communication with the instructor between traditional students (M = 3.43, SD = .976) and nontraditional students (M = 3.25, SD = .754), t = .448, df = 17, p = .330. The

mean difference was .179. The *p*-value was greater than .05; therefore, the null hypothesis is upheld, indicating no significant difference was found.

Announcement

Levene's test for equality of variances indicated that the assumption of homogeneity of variance was met, F (1,17) = .625, p = .440. The independent samples *t*-test assumed equal variance, and the results indicated there was no statistically significant difference in preferred modalities of interactions through Canvas announcements from the instructor to traditional students (M = 4.00, SD = .816) and nontraditional students (M = 3.33, SD = .985), t = 1.509, df = 17, p = .150. The mean difference was .667. The *p*-value was greater than .05; therefore, the null hypothesis is upheld, indicating no significant difference was found.

Virtual Office Hours

Levene's test for equality of variances indicated that the assumption of homogeneity of variance was met, F (1,17) = .105, p = .750. The independent samples *t*-test assumed equal variance, and the results indicated there was no statistically significant difference in preferred modalities of interactions by attending the instructor's virtual office hours between traditional students (M = 3.00, SD = 1.00) and nontraditional students (M = 2.08, SD = .996), t = 1.932, df = 17, p = .070. The mean difference was .917. The *p*-value was greater than .05; therefore, the null hypothesis is upheld, indicating no significant difference was found.

Discussion Forums

Levene's test for equality of variances indicated that the assumption of homogeneity of variance was met, F (1,17) = 1.430, p = .248. The independent

samples *t*-test assumed equal variance, and the results indicated there was no statistically significant difference in preferred modalities of interactions by traditional students ($M = 3.43$, $SD = .535$) and nontraditional students ($M = 3.08$, $SD = .996$) reading the instructor's additions to discussion boards on Canvas, $t = .842$, $df = 17$, $p = .411$. The mean difference was .345. The *p*-value was greater than .05; therefore, the null hypothesis is upheld, indicating no significant difference was found.

Feedback on Assignments

Levene's test for equality of variances indicated that the assumption of homogeneity of variance was met, $F(1,17) = 2.587$, $p = .126$. The independent samples *t*-test assumed equal variance, and the results indicated there was no statistically significant difference in preferred modalities of interactions through receiving feedback on assignments from the instructor between traditional students ($M = 4.43$, $SD = .787$) and nontraditional students ($M = 4.42$, $SD = .515$), $t = .040$, $df = 17$, $p = .484$. The mean difference was .012. The *p*-value was greater than .05; therefore, the null hypothesis is upheld, indicating no significant difference was found.

Recorded Lectures

Levene's test for equality of variances indicated that the assumption of homogeneity of variance was met, $F(1,17) = .935$, $p = .347$. The independent samples *t*-test assumed equal variance, and the results indicated there was no statistically significant difference in preferred modalities of interactions by watching recorded lectures from the instructor between traditional students ($M = 3.57$, $SD = 1.397$) and nontraditional students ($M = 3.17$, $SD = 1.030$), $t = .726$, $df = 17$, $p = .239$. The mean difference was .405. The *p*-value was greater than .05; therefore, the null hypothesis is

upheld, indicating no significant difference was found.

Summary

A small sample size of individuals participated in the study (N=28). Some surveys were incomplete, and mean values were added for incomplete surveys. RQ1 and RQ2 used the same independent variable, forms of RSI. For RQ1, the interactive social presence category was statistically significant compared to the other categories, affective and cohesive, concerning the different forms of RSI. The information gathered for RQ2 regarding forms of RSI and student engagement was not statistically significant. RQ3 and RQ4 used the same independent variable, types of students (traditional or nontraditional), but focused on perceived frequency or preferred modality, respectively. There was no significance between traditional and nontraditional students and their perceived or preferred frequency of interactions with instructors or preferred modalities for RQ3 and RQ4. Chapter 5 will discuss the major findings and how they relate to the literature, identify themes, draw conclusions, and give recommendations for future research.

Chapter 5

Interpretations and Recommendations

Chapter 5 summarizes the entire study by giving an overview of the problem, the purpose statement, and the research questions while also reviewing the methodology and outlining the significant findings. Discussing findings related to the literature allows for conclusions to be drawn and the identification of implications for action and recommendations for future studies to occur.

Study Summary

The study investigated multiple aspects of RSI and its impacts on students through interactions with instructors in distance education courses. RQ1 and RQ2 focused on the frequency of the instructor's different forms of RSI relating to social presence and student engagement, respectively. At the same time, RQ3 and RQ4 examined if there is a relationship between the classification of students as traditional or nontraditional and their perceived frequencies and preferred modalities of interactions with their instructor. This chapter reviews why the study was performed, the methodology, and the major findings from the study.

Overview of the Problem

In 2005, the Higher Education Act (HEA) was amended to include the terms 'regular and substantive interactions (RSI)' to differentiate between correspondence and distance education courses; however, there was little to no guidance on what RSI meant, leaving institutions to interpret it for themselves (Online Learning Consortium et al., 2019). The HEA differentiated between distance and correspondence courses by the inclusion of RSI; therefore, a course with RSI is considered distance education, and

students are eligible for Title IV aid, whereas students seeking a certificate through correspondence course are ineligible for the Title IV aid (Bergeron, 2016; Garn, 2016; Online Learning Consortium et al., 2019; Piña & Martindale, 2023). The United States Department of Education (ED) Office of Inspector General (OIG) audits in 2012 and 2016 of St. Mary's and WGU, respectively, indicated that the HEA did not clearly define RSI, but there are also consequences for faculty and academic leadership not following the guidelines from 34 C.F.R. §600.2 (Evans & Kinoti, 2023; Piña & Martindale, 2023).

In 2019, ED clarified the meaning of RSI. As of July 1, 2021, mandates for RSI implementation in higher education institutions offering distance education are expected to abide by the guidelines set forth by the HEA (The State University of New York, n.d.). There are multiple ways to implement RSI in distance education. Regular interactions can be shown through predictable intervals of communication through office hours, email responses, feedback on assignments, weekly announcements, etcetera (Kerensky, 2022; Piorkowski, 2021). Substantive interactions can be shown through providing detailed feedback, responding or posting on discussion boards, and creating opportunities for students to interact (Piña & Martindale, 2023). These forms of communication are essential in remote and online courses. Huang and Hsiao (2009) mentioned (as cited in Gasell et al., 2021) that seven communication tools enable interactions in synchronous and asynchronous learning environments. The tools are "email, discussion boards, announcements, blogs, streaming audio/video, chat, and web-conferencing" (Gasell et al., 2021, p. 3439). There is limited information on the impacts of RSI forms on social presence and student engagement and if the type of student, traditional or nontraditional, on perceived frequencies or preferred modalities of interactions with their instructors.

Purpose Statement and Research Questions

This study aimed to investigate whether the frequency of RSI forms specified in the HEA impacted social presence and student engagement and if there is a relationship between the classification of a student as traditional or nontraditional and their perceived frequencies and preferred modalities of interactions with instructors.

The research questions for the study were:

RQ1

To what extent does the frequency of regular and substantive interactions in asynchronous learning predict social presence levels between instructors and students?

RQ2

To what extent does the frequency of regular and substantive interactions in asynchronous learning impact the student engagement levels between instructors and students?

RQ3

What is the relationship between the classification of students as traditional or nontraditional and their perceived frequency of regular and substantive interactions with instructors in a higher education setting?

RQ4

What is the relationship between the classification of students as traditional or nontraditional and their preferred modality of regular and substantive interactions with instructors in a higher education setting?

Through a quantitative approach, students unknowingly participated in a pilot program where instructors made RSI efforts in their asynchronous courses. Although RSI initially aimed to distinguish between correspondence and distance education, regular and substantive instructor interaction could help foster a learning environment that increases social presence and is closely aligned with student engagement (Ngoyi et al., 2014; The State University of New York, n.d.). The COVID-19 pandemic moved students to online learning and gave traditional and nontraditional students opportunities to continue their education. Due to this, the categories of traditional and nontraditional were examined in terms of perceived frequencies of interactions and preferred modalities relating to RSI.

Review of the Methodology

This quantitative research study was conducted at a large suburban community college in the Midwest and was selected through convenience purposive sampling. A cross-sectional study was used to identify social presence, student engagement, and perceived frequencies and preferred modalities for asynchronous community college students. Four instructors were willing to make the survey available in their RSI courses. The study occurred over two weeks, from November 25, 2024, to December 9, 2024, because finals at the community college started on December 10. The Director of Educational Technology and Distance Learning at the Community College posted the Canvas announcement created by the researcher to the participating courses on November 25 and once again on December 4th as a reminder. The announcement was short, but it provided information about the survey and a link for participants to complete it voluntarily through SurveyMonkey. A total of 189 students had access to the survey,

and 28 participated.

The survey consisted of eight sections. An initial question was asked about the course being focused on, followed by five multiple-choice demographic questions. The independent variable for RQ1 and RQ2 shared six multiple-choice frequency forms of RSI questions. For the dependent variable of RQ1, there were nine 5-point level of agreement Likert scale statements about social presence, consisting of three questions per category of social presence: affective, interactive, and cohesive (Lowenthal, 2009). The social presence statements taken from the CoI questionnaire, an open resource, were used for RQ1 (Arbaugh et al., 2008). The statements for the dependent variable of RQ2 were taken from the Online Student Engagement (OSE) scale with the permission of Dixson (2015), and they consisted of 19 statements through a 5-point Likert scale and a multiple-choice question created by the researcher. The independent variable for RQ3 and RQ4 was a multiple-choice question that allowed the participants to choose if they would consider themselves as traditional or nontraditional student based on the definition given in the question. The dependent variable for RQ3 consisted of six 5-point Likert scale statements and one multiple-choice question. The dependent variable for RQ4 also consisted of six 5-point Likert scale statements.

The survey was given during the last two weeks of the semester, which allowed participants to reflect on the semester, but it could have also been a limitation for the number of participants. The data was gathered through SurveyMonkey and exported to IBM Statistical Package for the Social Sciences (SPSS), a software program for analytical testing. For RQ1, the scores for each category of social presence were taken, and six multivariate tests were run comparing each form of RSI to the social presence

score, along with how each category of social presence compared to each other based on each form of RSI. For RQ2, the student engagement level score was taken, and six linear regression tests were run, comparing each form of RSI to the value of the student engagement level score. Independent samples *t*-tests were run for RQ3 and RQ4. The mean value for the Likert scale questions revolved around perceived frequency and was compared to the category of students, traditional or nontraditional. An additional test for RQ3 was conducted for the multiple-choice questions, asking participants how often they would prefer to hear from or interact with their instructor weekly, which was then compared to the student category. Lastly, RQ4 consisted of six tests comparing the student category to the score of each question to see if there was a preferred modality for traditional and nontraditional students and their interactions with their instructor.

Major Findings

There were minimal statistically significant findings for RQ1. The RSI forms of frequency regarding discussion forums and promptness of instructor feedback on assignments were statistically significant regarding the interactive category of social presence. The frequency of discussion forums per month was 2-3 times, and the frequency of instructor feedback promptness was within 2-3 days if the assignment was submitted by the deadline. For RQ2, there were no statistically significant relationships found between student engagement levels and forms of RSI. Additionally, RQ3 and RQ4 focused on two types of students, traditional and nontraditional, and their perceived frequencies and preferred modalities of interactions with instructors; no statistical significance was found between the type of student and the perceived frequency of interactions or the type of student and their preferred modalities.

The study's results were limited due to the low participation rate, which could be why most of the statistical tests performed did not show any significance of the RSI efforts throughout the Fall 2024 semester. The findings indicated that the category of interactive social presence is increased between the instructor and student based on the average frequency of monthly discussion forums and the average frequency turnaround time of feedback from the instructor on assignments turned in on time.

Findings Related to the Literature

The following section details how the information gained from the study relates to the literature review. This section is broken down into groups for each research question. This section provides a comprehensive analysis to align the existing research with the findings from the study.

Conceptual Framework Overview

Mediated environments encompass a wide spectrum of individuals who can interact with each other from a distance, ranging from text-only to virtual reality (Childs, 2008). Text-only environments are considered Computer-Mediated Communication (CMC) and have been a primary form of interaction in distance education (Childs, 2008). Although the term mediated environments is broad, it can be narrowed down into smaller portions, one of which is categories of experience, broken down into multiple forms of presence, social presence being one of them (Childs, 2008). Interactions can be versatile through mediated environments, so different available modalities can encourage various interactions within a distance education setting (Childs, 2008; Gasell et al., 2021; Ngoyi et al., 2014).

Theoretical Framework Overview

The Community of Inquiry (CoI) encompasses CMC experiences in higher-level education between the interconnected relationships of cognitive, social, and teaching presences (Garrison et al., 2000). The CoI framework gives instructors a base to consider while designing, facilitating, and incorporating direct instruction in a course (Lowenthal & Dunlap, 2020). The three forms of social presence can impact a student's ability to learn and be successful through an online learning platform. Lowenthal et al. (2022) discussed a fourth element, the instructor's social presence, because teaching presence can influence social and cognitive presence. The instructor's social presence acknowledges that interactions between the instructor and students can differ from those between peers by language usage, level of comfort in the course, and the instructor's ability to engage and effectively communicate with students through different modalities (Lowenthal & Dunlap, 2020). The CoI encompasses cognitive, social, and teaching presence, which can allow for increased student engagement and opportunities to think critically while collaborating with others in classroom environments (Berges et al., 2021). The framework also revolves around frequent interactions among students to students, students to instructors, and students to coursework through multiple online communication tools (Majewska & Zvobgo, 2023).

Results and Literature from Research Question 1

Social presence revolves around the feeling of inclusion within a community and the ability to authentically participate with others as a 'real' person by demonstrating genuine human emotion through different communication modalities

(Garrison et al., 2000). According to Majewska and Zvobogo (2023), “For online learning to be successful, there needs to be interaction and teaching support that sustains social and cognitive presence” (p. 316). Social presence is separated into three main categories: affective, interactive, and cohesive, which are described as emotional expression support, open communication, and group cohesion respectively (Garrison et al., 2000; Lowenthal, 2009).

There are multiple ways RSI can be implemented within a distance education course, and the RSI pilot program within the study allowed instructors autonomy over their courses. Two statistically significant findings were found in RQ1: the frequency of discussion forums monthly and the promptness of instructor feedback on assignments, both of which were associated with the interactive category of social presence. The interactive category enables open communication, shown through respectful input and recognizing the contributions of others (Garrison et al., 2000). The findings show that providing opportunities for students to participate in discussion boards and prompt feedback from the instructor fosters open communication and could contribute to students having a sense of connection to their instructor. The frequency of discussion forums per month was 2-3 times, and the frequency of instructor feedback promptness was within 2-3 days if the assignment was submitted by the deadline.

Both synchronous and asynchronous learning utilize CMC; however, Canvas, the Learning Management System (LMS) used by the community college in the study, has multiple ways for instructors and students to interact (Garrison et al., 2000). Communication through Canvas can be achieved through text, audio, and video.

Discussion boards are essential to distance education and can contribute to knowledge-sharing and social interaction opportunities (Gasell et al., 2021). The study did not focus on instructor involvement within discussion boards; however, according to Gasell et al. (2021), their presence can lead to more learning and a greater sense of community. There is limited information on this topic, and no support for the nonsignificant results was found.

Despite the statistically significance findings in RQ1, the small sample size in the study limited generalizable results. In the future, a larger sample size would allow for more accurate results and a better comprehensive understanding of different forms of RSI and social presence.

Results and Literature from Research Question 2

Social presence and student engagement are closely aligned. When students feel connected, there is a greater chance they will actively engage and collaborate with others, leading to a deeper understanding of the material and greater success in the online course (Ngoyi et al., 2014). Instructors can use various forms of CMC; however, the instructor must create a learning environment that fosters intellectual and emotional connections (Childs, 2008; Majewska & Zvobgo, 2023). These connections enable interactions between students and instructors (Childs, 2008; Majewska & Zvobgo, 2023). Researchers have also found when instructors actively participated, student participation and learning increased (Gasell et al., 2021).

Student engagement is a driving force for interest and motivation to learn in a course, all of which can be impacted by the teaching presence (Ngoyi et al., 2014). For instance, a study by Evans and Kinoti (2023) at a private Catholic Jesuit institution

focused on faculty-student engagement by actively utilizing RSI efforts through different modalities. Students reported feeling their instructors were engaging with them when faculty regularly replied on discussion boards to students and were present in the course through discussions, announcements, and emails. Ngoyi et al. (2014) discuss when learning activities are focused on student engagement, the instructor should give detailed feedback, including suggestions for improvements, extending past if answers are correct or incorrect.

While RSI is an important tool for instructor-student interactions, there were no statistically significant results for RQ2. There is limited information on this topic, and no support for the nonsignificant results was found. The findings from Evans and Kinoti (2023) varied from the results of this study, possibly due to a larger sample size. The sample size from this study was small; therefore, the conclusions cannot be definitive.

Results and Literature from Research Question 3

The researcher chose a community college for this study because the students attending these colleges typically consist of dual credit, traditional, and nontraditional students from diverse age ranges. Due to RSI being regulated, higher education institutions are trying to identify best practices for implementing it within their distance education courses (The State University of New York, n.d.). Traditional students are typically under 24, enrolled full-time (12 + credit hours), and begin post-secondary courses immediately after high school (National Center for Education Statistics, n.d.). In contrast, nontraditional students are usually part-time (11 or fewer credit hours) or have delayed post-secondary courses for at least one year after high school (National Center for Education Statistics, n.d.).

The interactions between students and instructors can be desirable because the instructor prepares and presents the material, motivates and supports learners, and provides feedback (Gasell et al., 2021; Moore, 1989). Instructors should prioritize their interactions and frequency to be regularly present in online courses to help make expectations clear to students and ensure social learning opportunities (Dennen et al., 2007; Gasell et al., 2021). In distance learning, communication gaps between instructors and students can bring challenges, so instructors must increase dialogue with students (Gasell et al., 2021).

A study by Eppler and Harju (1997) compared motivational levels between traditional and nontraditional students and found that traditional students require more extrinsic motivation. In contrast, nontraditional students are more intrinsically motivated because they are returning to school and committed to learning. Motivation levels could vary between traditional and nontraditional; however, current traditional students attending higher-level education institutions are likely more familiar with online learning and remote courses due to the COVID-19 pandemic (Tsevi, 2022).

Mediated environments enable interactions, and the CoI revolves around different interactions, which can be related to RSI. The frequency of interactions with the instructor through RSI could be an extrinsic motivator. An informal survey was given to students after the Evans and Kinoti (2023) study, and the frequency of interactions preferred was more than twice a week. Unfortunately, there were no statistically significant results for RQ3. The findings of Eppler and Harju (1997) varied from the results of this study; however, it is important to note that Eppler and Harju (1997) focused on intrinsic motivation between traditional and nontraditional students. It was

assumed that due to nontraditional students being more concerned with acquiring knowledge and developing skills than traditional students, the need for frequency of interactions would be less; however, traditional students have grown up with technology (Tsevi, 2022). If students had already been introduced to LMS in K-12, the learning curve for utilization could have been less, requiring fewer instructor interactions. There is limited information on this topic, and no support for the nonsignificant results was found. The study's small sample size and lack of statistical significance limited definitive conclusions. A larger sample size is needed to identify if there is a relationship between the type of student and the frequency of interaction.

Results and Literature from Research Question 4

As previously discussed in the last section, traditional and nontraditional students have varying levels of skills and motivation and are in different life stages (Eppler &Harju, 1997; Tsevi, 2022). Given these differences, this research question aimed to identify whether a relationship exists between the type of student and their preferred modalities.

An integral part of instructors' implementation of RSI is utilizing a variety of modalities to interact with students. Technological advancements through mediated environments have created opportunities for individuals to interact through varying modalities (Childs, 2008). Using these mediated environments in distance education can offer opportunities for learners to have experiences and relate to each other. Although distance education tends to be more text-based, there are varying ways to increase interactions through different modalities (Gasell et al., 2021; Ngoyi et al., 2014). The LMS, Canvas, includes varying ways instructors can interact with students through text,

audio, and video. The fourth element of instructor social presence is critical in teaching presence, influencing social and cognitive presence (Lowenthal et al., 2022). It recognizes that instructors interact with students differently than peers due to the language used, the level of comfort in the course, and the instructor's ability to effectively and efficiently communicate and engage with students through different mediums (Lowenthal & Dunlap, 2020).

Similar to the findings of Evans and Kinoti (2023), the faculty actively utilized RSI, which included interacting with students through different modalities. The study highlighted different modalities, such as discussion boards, announcements, and emails, that fostered the highest engagement levels between faculty and students.

The study's small sample size and lack of statistical significance limited definitive conclusions. A larger sample size would provide more insight into whether there is a relationship between the type of student and the preferred interaction modality between the instructor and students.

Conclusions

As discussed in Chapter 1, the ED is mandating RSI to all higher-level institutions offering distance education courses. There was confusion over RSI for many years after it was added to the HEA in 2005; however, after the 2019 release of final regulations with term definitions of RSI, higher-level institutions are still rolling out expectations for faculty on RSI efforts.

The findings from this study were limited, possibly due to the small sample size; however, there was the statistical significance of the average frequency of discussion forms and promptness of instructor feedback on assignments to the interactive category

of social presence. Although the information gained in this study was limited, it could foster additional research to be conducted with larger sample sizes. Implementing RSI into distance education has been on the horizon for the past few years, and it is expected to be all distance education courses by the summer of 2025 (WCET, 2024). Further research is necessary, and more data that can be gathered on RSI will enable all higher-level institutions to work towards better-supporting students and creating inclusive and accessible online environments.

Implications for Action

The study had limited statistically significant findings, which could be attributed to the small sample size. The new regulations for RSI in distance education based on the ED went into effect July 1, 2021 (The State University of New York, n.d.). Additional regulations for higher-level institutions implementing RSI will begin on July 1, 2025 (WCET, 2024). RSI implementation is still in the early stages. Still, if replicated, this study could be part of the groundwork for higher-level institutions to identify ways RSI can better serve their distance learners through inclusion and accessibility.

Recommendations for Future Research

There are multiple recommendations for the future, the first one being to replicate the study with a larger sample size of participants. Due to the small size of participants in this study, there were many limitations in identifying the significance of the research. A larger sample size would also allow for more tests to be conducted based on demographic information. Gender, age ranges, and highest level of education could be more closely examined concerning the research questions. Other things to consider in a future study regarding RSI in distance education are the individual comfort levels with asynchronous

learning. Lastly, the research focused on a community college setting, but future research could look at four-year colleges, both private and public.

Concluding Remarks

Four research questions were investigated in this study. Each question related to RSI while focusing on its impacts and relations to other aspects of distance education. The findings were limited; however, it is a step in the research to gain more information on RSI efforts and their implications on social presence, student engagement, and perceived frequencies and preferred modalities of students taking distance education courses.

Some research has been done regarding RSI; however, it is limited. Moving forward, more research will need to be done to ensure the needs of distance learners are met. Future research is essential regarding RSI and whether the efforts made by instructors are beneficial to students.

Educational technology is continually changing, and there are more opportunities to learn in varying ways. As education evolves to suit learners better, RSI is meant to be hand-in-hand to help ensure active participation, encourage engagement, and give opportunities for interaction with others in a distance education setting.

References

Alim, S., Petsangsri, S., & Morris, J. (2022). Does an activated video camera and class involvement affect academic achievement? An investigation of distance learning students. *Education and Information Technologies, 28*, 5875-5892. http://doi.org/10.1007/s10639-022-11380-2

Alkhudiry, R., & Alahdal, A. (2021). The role of online learning during and post COVID-19: A case of psycho-social study. *TESOL International Journal, 16*(1) 119- 138.

Amponsah, S., van Wyk, M. M., & Kolugu, M. K. (2022). Academic experiences of "zoom-fatigue" as a virtual streaming phenomenon during the COVID-19 pandemic. *International Journal of Web-Based Learning and Teaching Technologies, 17*(6), 1-16. http://doi.org/10.4018/IJWLTT.287555

Arbaugh, J. B., Cleveland-Innes, M., Diaz, S. R., Garrison, D.R., Ice, P., Richardson, J. C., & Swan, K. P. (2008). Developing a community of inquiry instrument: Testing a measure of the Community of Inquiry framework using a multi-institutional sample. *The Internet and Higher Education, 11*(3-4), 133-136.

Bailey, D. R., Almusharraf, N., & Almusharraf, A. (2022). Video conferencing in the e learning context: Explaining learning outcome with the technology acceptance model. *Education and Information Technologies, 27*, 7679-7698. http://doi.org/10.1007/s10639-022-10949-1

Basaran, B., & Yalman, M. (2020). Examining university students' attitudes towards using web-conferencing systems in distance learning courses: A study on scale development and application. *Knowledge Management & E-Learning, 12*(2), 209–230. https://doi.org/10.34105/j.kmel.2020.12.011

Basko, L., & Hartman, J. (2017). Increasing student engagement through paired technologies. *Journal of Instructional Research, 6*, 24-28.

Bergeron, D. A. (2016). No one gets it right every time: What does regular and substantive interaction mean? And who decides? *The Journal of Competency-Based Education*, *1*(3), 115-117. https://doi.org/10.1002/cbe2.1024

Berges, S., Martino, S., Basko, L., & McCabe, C. (2021). "Zooming" into engagement: Increasing engagement in the online classroom. *Journal of Instructional Research, 10*, 5-10.

Bird, J. E. (2023). *A phenomenological exploration of new teachers' experiences in a vCoP designed and administered by an educator preparation provider* [Doctoral dissertation, Baker University]. Baker University. https://www.bakeru.edu/images/pdf/SOE/EdD_Theses/Bird_Jessica.pdf

Camilleri, M. A., & Camilleri, A. C. (2022). The acceptance of learning management systems and video conferencing technologies: Lessons learned from COVID-19. *Technology Knowledge and Learning, 21*, 1311-1333. https://doi.org/10.1007/s10758-021-09561-y

Childs, M. (2008 May 5-6). Using a medicated environments reference model to evaluate learners' experiences of second life. *Proceedings of the 6th International Conference on Networked Learning.* 38- 45.

Coates, M., & Cosgrove, B. (2010, August 9). *Limitations and delimitations.* PBWorks. https://researchcourse.pbworks.com/w/page/28203356/Limitations%20and%20Delimitations

Coffey, L. (2023). *Report suggests online learning has yet to peak*. Inside Higher Ed | Higher Education News, Events and Jobs. https://www.insidehighered.com/news/tech-innovation/teachinglearning/2023/08/15/report-suggests-online-learning-has-yet-peak

Coffey, L. (2024). *Online college enrollment continues post-pandemic decline*. Inside Higher Ed| Higher Education News, Events and Jobs. https://www.insidehighered.com/news/tech-innovation/teaching-learning/2024/01/30/online-college-enrollment-continues-post-pandemic

Community College Research Center. (n.d.). *Community college FAQs*. Retrieved August 18, 2024, from https://ccrc.tc.columbia.edu/community-college-faqs.html

Creswell, J. W., & Creswell, J. D. (2018). *Research design: Qualitative, quantitative, and mixed methods approaches* (5th ed.). Sage Publications, Inc.

Davis, V. (2020). New regulations review #1: Regular & substantive interaction. *WCET Frontiers.*https://wcet.wiche.edu/frontiers/2020/04/03/new-regs-review-1-regular-substantive-interaction/

Dennen, V. P. (2005). From message posting to learning dialogues: Factors affecting learner participation in asynchronous discussion. *Distance Education, 26*(1), 127–148. http://doi.org/10.1080/01587910500081376

Department of Education. (2014). Competency-based education programs: Questions and answers (DCL ID: GEN-14–23). Retrieved from https://fsapartners.ed.gov/knowledge -center/library/dear-colleague-letters/2014-12-19/gn-14-23-subject-competency-based-education-programs-questions-and-answers

Dixson, M. D. (2015). Measuring student engagement in the online course: The online student engagement scale (OSE). *Online Learning, 19*(4).

Dolenc, K., Šorgo, A., & Ploj-Virtič, M. (2021). Perspectives on lessons from the COVID-19 outbreak for post-pandemic higher education: Continuance intention model of forced online distance teaching. *European Journal of Educational Research, 11*(1), 163-177.

Evans, C., & Kinoti, M. D. (2023). Operationalizing "substantive faculty interaction" for online course: Identifying high impact teaching practices. *Jesuit Higher Education: A Journal, 12*(1). https://doi.org/10.53309/2164-7666.1401

Eppler, M. A., & Harju, A. L. (1997). Achievement motivation goals in relation to academic performance in traditional and nontraditional college students. *Research in Higher Education, 38*(5), 557-573.

Federal Student Aid. (2021). *2021-2022 Federal Student Aid Handbook: Program eligibility, written arrangements, and distance education.* U.S. Department of Education.

Fondo, M. (2021). Supporting intercultural communication with visual information in virtual exchanges: When a picture paints a thousand words. In M. Satar (Ed.), *Virtual exchange: towards digital equity in internationalisation* (pp. 73-81). Research-publishing.net. https://doi.org/10.14705/rpnet.2021.53.1291

Gasell, C., Lowenthal, P.R., Uribe-Flórez, L.J., & Ching, Y-H. (2021). Interaction in asynchronous discussion boards: a campus-wide analysis to better understand regular and substantive interaction. *Education and Information Technologies*, 27, 3421–3445. https://doi.org/10.1007/s10639-021-10745-3

George, J. F. (2003). Groupware. *Encyclopedia of Information Systems*, 509-518. https://doi.org/10.1016/B0-12-227240-4/00084-8

Garn, M. (2016). Why we need to stop using 'self-paced' in CBE descriptions. *WCET Frontiers*. https://wcet.wiche.edu/frontiers/2016/08/10/stop-using-self-paced- in-cbe/

Garrison, D. R., Anderson, T., & Archer, W. (2000). Critical inquiry in a text-based environment: Computer conferencing in higher education. The Internet and Higher Education, 2, 87–105. doi:10.1016/S1096-7516(00)00016-6

Grannan, C. (2022, August 25). What's the Difference Between Emoji and Emoticons?. Encyclopedia Britannica. https://www.britannica.com/story/whats-the-difference-between -emoji-and-emoticons

Gryshuk, R. (2024, March 4). *Best LMS for Higher Education in 2024*. EducateMe. https://www.educate-me.co/blog/best-lms-for-higher-education#:~:text=Canvas%20LMS%3A%20Most%20Used%20LMS,and%20an%20advanced%20course%20structure.

Guidelines and Examples for the Hypothesis Testing (Ch. 3) and Results (Ch. 4) Sections Draft (APA 7th ed.). (2022, March 14). *Guidelines and examples for the hypothesis testing (ch. 3) and results (ch. 4) sections draft (APA 7th ed.)* [Powerpoint slides]. Baker University.

Händel, M., Bedenlier, S., Kopp, B., Gläser-Zikuda, M., Kammerl, R., & Ziegler, A. (2022). The webcam and student engagement in synchronous online learning: Visually or verbally? *Education and Information Technologies, 27*, 10405-10428. https://doi.org/10.1007/s10639-022-11050-3

Holmberg, B. 1986. *Growth and Structure of Distance Education*. London: Croom-Helm.

Institutional Eligibility, 34 C.F.R. *§600* (2024). https://www.ecfr.gov/current/title-34/subtitle-B/chapter-VI/part-600

Kaban, A. L., & Yataganbaba, E. (2022). The affordances of video conferencing tools in synchronous online sessions in the Turkish EFL context. *International Journal of Computer-Assisted Language Learning and Teaching, 12*(1), 1-20. https://doi.org/10.4018/IJCALLT.301194

Kerensky, K. (2022). Regular and substantive interaction update: Where do we go from here? *WCET Frontiers.*https://wcet.wiche.edu/frontiers/2022/11/08/regular-substantive -interaction-Update-where-do-we-go/

Knapp, N. F. (2018). Increasing interaction in a flipped online classroom through video conferencing. *Association for Educational Communications & Technology, 62*, 618-624. https://doi.org/10.1007/s11528-018-0336-z

Lowenthal, P. R. (2009). Social presence. *IGI Global,* 1900-1906.

Lowenthal, P. R., & Dunlap, J. (2011). Investigating students' perceptions of various instructional strategies to establish social presence. Paper presented at the annual meeting of the American Educational Research Association (AERA), New Orleans, LA.

Lowenthal, P. R., & Dunlap, J. C. (2020). Social presence and online discussions: A mixed method investigation. *Distance Education, 41*(4), 490–514. https://doi.org/10.1080/01587919.2020.1821603

Lowenthal, P. R., Fiock, H. S., & Shreaves, D. L. (2022). Investigating students' perceptions of screencasting style of video feedback in online courses. *TechTrends, 66*, 265–275. https://doi.org/10.1007/s11528-021-00665-x

Lowenthal, P. R., & Moore., R. L. (2020). Exploring student perceptions of Flipgrid in online courses. *Online Learning, 24*(4), 28-41. https://doi.org/10.24059/olj.v24i4.2335

Lowenthal, P., West, R. E., Archambault, L., Borup, J., & Belt, E. S. (2021). Faculty perceptions of using synchronous video-based communication technology. *Online Learning, 25*(4), 74-103. http://doi.org/10.24059/olj.v25i4.2890

MacIntosh, J. (2001). Learner concerns and teaching strategies for video-conferencing. *The Journal of Continuing Education in Nursing, 32*(6), 260-265.

Majewska, I., & Zvobgo, V. (2023). Students' satisfaction with the quality of synchronous online learning under the COVID-19 pandemic: Perceptions from liberal arts and science undergraduates. *Online Learning, 27*(1), 313-335. http://doi.org/10.24059/olj.v27i1.3201

Martin, F., Polly, D., & Ritzhaupt, A. (2020). Bichronous online learning: Blending asynchronous and synchronous online learning. *EDUCAUSE Review.* https://er.educause.edu/articles/2020/9/bichronous-online-learning-blending-asynchronos-and-synchronous-online-learning

Merriam-Webster. (n.d). *Assumption*. In Merriam-Webster.com dictionary. Retrieved May 26, 2024, from https://www.merriam-webster.com/dictionary/assumption.

Merriam-Webster. (n.d). *Communication*. In Merriam-Webster.com dictionary. Retrieved March 15, 2024, from https://www.merriamwebster.com/dictionary/communication.

Merriam-Webster. (n.d). *Higher education*. In Merriam-Webster.com dictionary. Retrieved March 15, 2024, from https://www.merriamwebster.com/dictionary/higher%20education.

Mirzoyan, S. (2020). The impacts and outcomes of the higher education act of 1965 fifty five years later [Unpublished master's thesis]. California State University, Northridge.

Moore, M. G. (1989) Editorial: Three types of interaction. *American Journal of Distance Education, 3*(2), 1-7. Retrieved from http://aris.teluq.uquebec.ca/portals/598/t3_moore1989.pdf

National Center for Education Statistics. (n.d.). *Nontraditional undergraduates/ definitions and data.* Retrieved May 24, 2024, from https://nces.ed.gov/pubs/web/97578e.asp#:~:text=Enrollment%20patterns.,pattern%20would%20be%20considered%20nontraditional

National Center for Education Statistics. (n.d.). *Undergraduate enrollment*. U.S. Department of Education. Retrieved May 24, 2024, from https://nces.ed.gov/programs/coe/indicator/cha

NC-SARA. (2024). *About NC-SARA.* NC-SARA. https://nc-sara.org/about-nc-sara

NC-SARA. (2024). *Fast facts*. NC-SARA. https://nc-sara.org/fast-facts

NC-SARA. (2024). *Our work*. NC-SARA. https://nc-sara.org/our-work

NC-SARA. (2024). *Mission & history*. NC-SARA. https://nc-sara.org/mission-history

Ngoyi, L., Mpanga, S., & Ngoyi, A. (2014). The relationship between student engagement and social presence in online learning. *International Journal of Advances in Computer Science and Technology, 3*(4), 242-247.

Nkwake, A. M. (2020). Why are assumptions important? *Springer, Cham.* 97-114. http://doi.org/10.1007/978-3-030-33004-0_7

Office of the Inspector General, U.S. Department of Education. (2017, September). Final audit report: Western governors university was not eligible to participate in title IV programs (Control No. ED-OIG/A05M0009). Retrieved from https://www2.ed.gov/about/offices/list/oig/auditreports/fy2017/a05m0009.pdf

Online Learning Consortium (OLC), WICHE Cooperative for Educational Technologies (WCET), & University Professional and Continuing Education Association (UPCEA). (2019). *Regular and substantive interaction: Background, concerns, and guiding principles.* https://files.eric.ed.gov/fulltext/ED593878.pdf

Piña, A., & Martindale, T. (2023). Regular and substantive interaction in online courses: Why it matters for administrators. *Online Journal of Distance Learning Administration, 26*(2), 1-14.

Piorkowski, R. (2021). *OSCQR in support of regular and substantive interaction* [Webinar]. The State University of New York. https://drive.google.com/file/d/1VRxOlOqjAgD 047T_2Sid8xJQQd5CSRTx/view

Poulin, R., & Davis, V. (2016). Interpreting what is required for "regular and substantive interaction." *WCET Frontiers*. https://wcet.wiche.edu/frontiers/2016/09/30/interpreting-regular-and-substantive-interaction/

Roberts, C., & Hyatt, L. (2019). *The dissertation journey: A practical and comprehensive guide to planning, writing, and defending your dissertation* (3rd ed.). Corwin.

Salkind, N. J. & Frey, B. B. (2020). *Statistics for People Who (Think They) Hate Statistics*, 7th ed. Sage.

Skiba, D. J. (2018). Reflections on online education and regulations. *Nursing Education Perspectives, 39*(1), 55-56. doi: 10.1097/01.NEP.0000000000000273

Sogunro, O. A. (2017). Quality Instruction as a motivating factor in higher education. International Journal of Higher Education, 6(4), 173-184.

Steuer, J. (1995). Defining virtual reality: Dimensions determining telepresence. Biocca, F. & Levy, M. R. (Ed.) *Communication in the Age of Virtual Reality* (33-56). Routledge Communication Series.

Tagg, A. C., & Dickenson, J. A. (1995). Tutor messaging and its effectiveness in encouraging student participation on computer conferences. *Journal of Distance Education, 10(*2), 33-55. https://www.ijede.ca/index.php/jde/article/view/238/599

The State University of New York. (n.d.). *OSCQR – the SUNY Online Course Quality Review Rubric*. https://oscqr.suny.edu/

The State University of New York. (n.d.). *How OSCQR supports RSI*. https://oscqr.suny.edu/how-oscqr-supports-rsi/

The State University of New York. (n.d.). *OSCQR is unique*. https://oscqr.suny.edu/about/about-oscqr/oscqr-is-unique/

The State University of New York. (n.d.). *RSI standards*. https://oscqr.suny.edu/rsi/rsi-standards/

Toppo, G. (2018). Defining "regular and substantive" interaction between instructors and students. *Inside Higher Ed.* https://www.insidehighered.com/digital-learning/article/2018/08/08/new-debate-regular-and-substantive-interaction-between

Tsevi, L. (2022, October 10-11). *Evaluating teaching and learning in higher education institutions in a post-COVID era: A review* [Paper presented]. American Association for Adult and Continuing Education (AAACE) Commission for International Adult Education (CIAE) Annual Pre-Conference, Milwaukee, WI, United States. https://eric.ed.gov/?id=ED629007

Valenti, E., Feldbush, T., &Mandernach, J. (2019). Comparison of Faculty and Student perceptions of Videos in the Online Classroom. *Journal of University Teaching & Learning Practice, 16*(3), 1-21.

Vagias, Wade M. (2006). *Likert-type scale response anchors*. Clemson International Institute for Tourism & Research Development, Department of Parks, Recreation and Tourism Management. Clemson University.

Veluvali, P., & Surisetti, J. (2022). Learning management system for greater learner engagement in higher education- a review. *Higher Education for the Future, 9*(1), 107-121. https://doi.org/10.1177/23476311211049855

WCET. (2024, September 5). *Last chance to shape 2024 distance education federal regulations: Join the rulemaking process now!* Retrieved December 31, 2024, from https://wcet.wiche.edu/frontiers/2024/09/05/last-chance-to-shape-2024-distance-education-federal-regulations-join-the-rulemaking-process-now/

Appendices

Appendix A: Survey Questions

Data Collection Questions

Course	
Multiple Choice Question	Potential Answers
1.) Which course are you focusing on while filling out this survey?	● BUS 121 ● BUS123 ● BUS 241 ● CDTP 155 ● DRAF 123 ● DRAF 135

Please select the answer that best represents you.

Demographics	
Multiple Choice Question	Potential Answers
2.) I identify as	● Male ● Female ● Non-binary ● Other, please specify _____ ● Prefer not to say
3.) What is your ethnicity/race?	● Asian ● Black or African American ● Hispanic or Latino ● Native American or Alaska Native ● Native Hawaiian or Other Pacific Islander ● White ● Other, please specify _____ ● Prefer not to say

4.) Where do you live in the United States?	● East ● Midwest ● North ● Northwest ● Northeast ● South ● Southeast ● Southwest ● West ● I do not live in the United States ● Prefer not to say
5.) What is your age?	● Under 18 ● 18-24 ● 25-34 ● 35-44 ● 45-54 ● 55-64 ● 65 or older ● Prefer not to say
6.) What is the highest level of education you have completed?	● High school diploma or equivalent ● Some college, no degree ● Associate's degree ● Bachelor's degree ● Graduate or professional degree ● Prefer not to say

RQ1 (Independent Variable) & RQ2 (Independent Variable)- Forms of RSI

Forms of RSI	
Multiple Choice Question	Potential Answers
7a.) On average, how often do you receive emails from your instructor per week?	● 0-1 ● 2-3 ● 4-5 ● 6 or more
7b.) On average, how often does your instructor post weekly announcements?	● 0-1 ● 2-3 ● 4-5 ● 6 or more
7c.) On average, how often do you attend virtual office hours or meetings with your instructor per month?	● Never ● Once ● 2-3 times ● 4 or more times
7d.) On average, how often do you have discussion forums per month?	● Never ● Once ● 2-3 times ● 4 or more times
7e.) On average, how frequently do you post in each discussion forum?	● 0-1 ● 2-3 ● 4-5 ● 6 or more
7f.) On average, how quickly do you receive feedback from your instructor on an assignment turned in on time?	● Within 24 hours ● 2-3 days ● 4-5 days ● More than 5 days

RQ1- Social Presence (Dependent Variables)

Questions are taken from the Community of Inquiry questionnaire (Arbaugh et al., 2008) with some modifications

Please indicate your level of agreement with the following statements by marking a response.
Strongly Disagree (1)- Strongly Agree (5)

Affective (Affective Expression)		Strongly Disagree (1)	Disagree (2)	Neutral (3)	Agree (4)	Strongly Agree (5)
8a	Getting to know other course participants gave me a sense of belonging in the course.					
8b	I was able to form distinct impressions of some course participants.					
8c	Online or web-based communication is an excellent medium for social interaction.					
Interactive (Open Communication)		Strongly Disagree (1)	Disagree (2)	Neutral (3)	Agree (4)	Strongly Agree (5)
9a	I felt comfortable conversing through the online medium.					
9b	I felt comfortable participating in the course discussions.					
9c	I felt comfortable interacting with my instructor.					
Cohesive (Group Cohesion)		Strongly Disagree (1)	Disagree (2)	Neutral (3)	Agree (4)	Strongly Agree (5)

10a	I felt comfortable disagreeing with other course participants while still maintaining a sense of trust.					
10b	I felt that the instructor acknowledged my point of view.					
10c	Online discussions help me to develop a sense of collaboration.					

RQ2- Student Engagement (Dependent Variable)

Questions taken from the Online Student Engagement scale (Dixson, 2015)

Within that course, how well do the following behaviors, thoughts, and feelings describe you? Please answer using the following scale: Not at all characteristic of me (1) - Very characteristic of me (5)

		Not at all characteristic of me (1)	Not really characteristic of me (2)	Moderately characteristic of me (3)	Characteristic of me (4)	Very characteristic of me (5)
11a	Making sure to study on a regular basis					
11b	Putting forth effort					
11c	Staying up on the readings					
11d	Looking over class notes between getting online to make sure I understand the material					
11e	Being organized					
11f	Taking good notes over readings, PowerPoints, or video lectures					

11g	Listening/reading carefully					
11h	Finding ways to make the course material relevant to my life					
11i	Applying course material to my life					
11j	Finding ways to make the course interesting to me					
11k	Really desiring to learn the material					
11l	Having fun in online chats, discussions or via email with the instructor or other students					
11 m	Participating actively in small-group discussion forums					
11n	Helping fellow students					
11o	Getting a good grade					
11p	Doing well on the tests/quizzes					
11q	Engaging in conversations online (chat, discussions, email)					
11r	Posting in the discussion forum regularly					
11s	Getting to know other students in the class					

Please select the answer that best represents your engagement in the course.

Overall Engagement with Instructor	
Multiple Choice Question	Potential Answers
12.) At what rate do the interactions with your instructor add to your overall engagement in this course?	● Not at all ● A little ● Somewhat ● Quite a bit ● A great deal

RQ3 (Independent Variable) & RQ4 (Independent Variable)
Traditional or Nontraditional Student

Please select the answer that best represents you.

Student Information- Traditional or Nontraditional	
Multiple Choice Question	Potential Answers
13.) Would you consider yourself a traditional or nontraditional student? -Traditional student – enrolled in at least 12 credit hours **AND** started college immediately after high school/ earning GED **AND** 24 years old or younger. -Nontraditional student – delayed college enrollment by at least one or more years after high school/GED **OR** taking 11 credits or less	● Traditional ● Nontraditional ● Prefer not to say

RQ3- Perceived Frequency of RSI (Dependent Variable)

Please indicate your level of agreement with the following statements by marking a response.

Strongly Disagree (1)- Strongly Agree (5)

Perceived Frequency of RSI from the instructor to student		Strongly Disagree (1)	Disagree (2)	Neutral (3)	Agree (4)	Strongly Agree (5)
14a	Regular interactions with my instructor are important for learning course content.					
14b	I am satisfied with the frequency of interactions with my instructor each week.					
14c	My academic needs have been met because of regular interactions with my instructor.					
14d	The interactions with my instructor are frequent enough to be meaningful to my learning.					
14e	The interactions with my instructor are frequent enough to encourage higher-level thinking on the course material.					
14f	The instructor provides constructive feedback frequently enough to help me improve my work.					

Please select the answer that best represents your needs.

Preferred frequency of interactions with the instructor with RSI	
Multiple Choice Question	Potential Answers
15.) How many times in a week would you prefer to hear from and/or interact with your instructor?	● 1-2 times a week ● 3-4 times a week ● 5-7 times a week ● Other, please specify _____

RQ4 - Preferred modalities of RSI (Dependent Variable)

Please indicate your level of agreement with the following statements by marking a response. Strongly Disagree (1)- Strongly Agree (5)

Preferred modalities of RSI with instructor		Strongly Disagree (1)	Disagree (2)	Neutral (3)	Agree (4)	Strongly Agree (5)
16a	I prefer to hear from my instructor regularly through announcements on Canvas.					
16b	I prefer to interact with my instructor by reading their additions to discussion boards on Canvas.					
16c	I prefer to attend virtual office hours with my instructor.					
16d	I prefer to receive feedback from my instructor on assignments.					
16e	I prefer to communicate with my instructor through email.					
16f	I prefer to watch recorded lectures from my instructor.					

Appendix B: IRB Approval at Baker University

BAKER UNIVERSITY
Own Confidence

Baker University Institutional Review Board

October 22, 2024

Dear Julie McCormic and Anna Catterson,

The Baker University IRB has reviewed your project application and approved this project under Expedited Status Review. As described, the project complies with all the requirements and policies established by the University for protection of human subjects in research. Unless renewed, approval lapses one year after approval date.

Please be aware of the following:

1. Any significant change in the research protocol as described should be reviewed by this Committee prior to altering the project.
2. Notify the IRB about any new investigators not named in original application.
3. When signed consent documents are required, the primary investigator must retain the signed consent documents of the research activity.
4. If this is a funded project, keep a copy of this approval letter with your proposal/grant file.
5. If the results of the research are used to prepare papers for publication or oral presentation at professional conferences, manuscripts or abstracts are requested for IRB as part of the project record.
6. If this project is not completed within a year, you must renew IRB approval.

If you have any questions, please contact me at skimball@bakeru.edu or 785.594.4563.

Sincerely,

Scott H. Kimball

Scott Kimball, PhD
Chair, Baker University IRB

Baker University IRB Committee
Tim Buzzell, PhD
Steve Massey, EdD
Jiji Osiobe, PhD
Susan Rogers, PhD

Appendix C: Community College Approval

Julie McCormic – Doctoral Student
November 14, 2024

Dear Julie McCormic

has reviewed and approved your proposed research project to implement a Regular and Substantive Interaction (RSI) survey among online students. Your research will help the College's understanding of student engagement and success in online learning environments.

Please do not directly refer to , but use "a large suburban community college located in the Midwest" in writing your dissertation.

Sincerely

Appendix D: Canvas Announcement

Your feedback is crucial to this course. We are currently reviewing our online courses, and we would appreciate insight into your learning experiences from this course. The information gathered through this survey is valuable and will be instrumental in shaping online courses moving forward. Please take a few minutes to complete the survey this week. Thank you in advance.

Please click HERE to start the survey.

Appendix E: Informed Consent Statement

Title of Research Project

Investigating the Impacts of Regular and Substantive Interactions on Students in Asynchronous Community College Courses: A Quantitative Study

Name of Principal Investigator

Julie McCormic

Introduction

You are invited to participate in a research study regarding your experience in the asynchronous course that provided you with the link to this survey.

Purpose

The survey is being used to gather trends and insight into the methods used by instructors in asynchronous classes that were beneficial to your learning, and the information gathered will be part of a doctoral study.

Procedures

You're currently enrolled in an asynchronous course piloting a new way for instructors to engage with students. If you are currently enrolled in more than one course that is asking you to complete this survey, please choose one course to focus on while completing the survey.

The survey should take less than 6 minutes, and no follow-up participation is required.

Participant Population

The researcher is looking for 100 students enrolled in asynchronous courses, with instructors piloting new and different ways of engaging students.

Voluntary Participation

Your participation in this research study is entirely voluntary. You may choose not to participate in this study or withdraw at any time without penalty or loss of benefits. Please be aware that this research study can be discontinued at any time without your consent. If, for some reason, the principal investigator believes that you are not fully participating or that this study is contrary to your best interest, your participation can be discontinued.

Fees and Expenses

There are no costs.

Compensation

Due to this being an anonymous study, there is no compensation for completing the survey.

Risks and Inconveniences

There is no foreseeable risk associated with participating in this survey.

Benefits

The survey is designed to collect on your perception of the asynchronous course you received this URL from, and the information gathered will help shape future asynchronous courses. The information collected will benefit instructors and students.

Alternatives to Participation

There are no alternatives.

Confidentiality

The survey is anonymous and only asks for common demographic information and perceptions. The researcher will be the only one with access to the data, and after the data is collected from SurveyMonkey, it will be deleted from the site. The data will be used in a dissertation study. After five years, the data will be deleted from the researcher's password-protected computer.

Questions

If you have any questions about the survey, as a participant, it is your right to contact the researcher, Julie McCormic, with questions or concerns at julieamccormic@stu.bakeru.edu

Consent

By clicking "Next," you are consenting to participation.

Participation in the survey is entirely voluntary, and you can withdraw at any time without any negative consequences.

If you decide to withdraw from the survey, and are okay with the information already filled out being given to the researcher, please submit it. If you choose to withdraw from the survey, and do not want any of the data collected, please exit the survey on your web browser.

Your time is valuable, and it is greatly appreciated if you choose to participate.

Thank you.