A Phenomenological Study: Student Perceptions of Educational Technology in Online Discussion Forums

by

Julie Lawrence

Dissertation Submitted to the Doctoral Program

of the American College of Education

in partial fulfillment of the requirements for the degree of

DOCTOR OF EDUCATION

November 2020

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Julie Lawrence

Approved by:

Dissertation Chair: Krista Allison, Ph.D.

Committee Member: Tetiana McLemore, Ph.D.

Abstract

Higher education's changing landscape pushes leaders to examine the impact of student engagement and collaboration on student satisfaction, retention, and success in online education. Students identify dissatisfaction in online learning due to a feeling of isolation and challenges with the online learning environment creating elevated dropout rates. Educational technology embedded in online courses provides an opportunity for engagement and collaboration, reducing learner isolation. The phenomenological study explored student perceptions of educational technology in online discussions to promote engagement and collaboration. The community of inquiry model and transformational leadership framed the study where semi-structured interviews investigated the lived experiences of 15 participants who had experience as students in online higher education. The research examined the use of educational technology in online courses, the perceptions of educational technology in online discussion forums as an engagement strategy, and the perceptions of educational technology in online discussion forums as a collaborative strategy. The study's findings offered insights on student perceptions of online discussion forums, educational technology, the instructor's role, the human element, the transferrable skills for the 21st-century workforce, and the benefits and barriers with technology. The research results indicated the use of educational technology does not equate to increased engagement and collaboration. Reflective of prior research, course design, and the instructor's role impacted the perceptions of online courses, engagement, and collaboration. The student perceptions indicated using educational technology may develop 21st-century workforce skills when implemented effectively by the instructor.

Dedication

The dissertation is dedicated to the endless support system received from my cheering crew. The motivation and encouragement you provided through this journey are what kept me on track to achieving this accomplishment.

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Chapter 1: Introduction

Increased accessibility and affordability drive rising enrollments in online higher education institutions. In the fall of 2015, 5.5 million students enrolled in at least one online course, yet student dissatisfaction and dropout rates increased by more than 3% in online formats over traditional or hybrid modalities (Athens, 2018). Students identify the level of student-to-student and student-to-faculty engagement in the class with peers and faculty as directly affecting overall satisfaction with online courses and impacting dropout rates (Galbis-Córdova, Martí-Parreño, & Currás-Pérez, 2017). Course designers and faculty seek strategies to create meaningful student engagement and collaboration activities in online courses, both of which are identified as skills necessary in the workforce's top 10 list of needs (Gray, 2016). To develop collaboration and problem-solving skills, faculty build communities of learners (Tibi, 2016).

One strategy to build a community of learners and increase student engagement and collaboration is implementing educational technology, including, but not limited to, game-like features in online discussions (Sánchez-Mena & Martí-Parreño, 2017). Educational technology tools in online courses enhance student motivation and engagement, benefitting the online learning experience (Wilson, Calongne, & Henderson, 2015). The phenomenological study explored student perceptions of the uses of educational technology in discussion forums as a method of promoting engagement and collaboration in online classes in higher education. The chapter includes an overview of the study's problem and purpose, the significance of the research, and summarizes previous literature on the topic. The chapter identifies the theoretical framework and design of the study and reviews the three research questions framing the investigation. The chapter identifies the research procedures, defines data analysis steps, and provides the study's findings and conclusions.

Background of the Problem

The study's background was the identified need for higher education institutions with online courses to understand and implement students' opportunities to engage and collaborate with peers to develop competencies (Tibi, 2016). Online courses provide various student experiences offered through a learning management system, including lesson content, readings, discussion forums, and assignments or assessments with a minimum of 80% of the course content available online (Allen & Seaman, 2016). One structure of discussion forums is threaded discussions using a pre-developed prompt with directions for all students to create an initial written post answering the prompt and reply to peers' posts weekly (Berry, 2018). The challenge for faculty members is pushing student responses beyond answering the question to create detailed engagement, demonstrating critical thinking skills (Berry, 2018; Garrison, Anderson, & Archer, 2000).

Studies showed an increase in student engagement leads to improved student satisfaction resulting in higher completion rates (Allen & Seaman, 2016; Athens, 2018; Bicen & Kocakoyun, 2018; Caruth, 2018). Faculty indicated the use of gamification in classes increases student attention, motivation, and interactivity (Sánchez-Mena & Martí-Parreño, 2017), although an investigation into the uses of educational technology in online discussions was not located in research. The literature gap existed in exploring the student perceptions of the use of educational technology in online discussions and the result in student engagement and collaboration to advance course design and faculty development in online education.

Statement of the Problem

Students' perceptions of the use of educational technology tools in online discussions to increase engagement and collaboration were unknown, which caused the problem. Employers

identified a value in students having experiences as part of a learning community focused on engagement and collaboration to develop the skills necessary in the workforce (Gray, 2016). As higher education institutions face the rising online education enrollments, course designers and faculty seek opportunities to support students in developing interpersonal skills (Athens, 2018; Chiasson, Terras, & Smart, 2015; Galbis-Córdova et al., 2017). Research showed decreased student engagement and collaboration in online modalities lead to higher dropout rates (Sánchez-Mena & Martí-Parreño, 2017). Higher education institutions with online programs evaluate student satisfaction and graduation rates as benchmarks for student success, program effectiveness, accreditation, and federal funding (Rizvi & Jacobsen, 2018). Educational technology, including gamified environments, draws students' attention and builds confidence, leading to positive attitudes towards gamification (Galbis-Córdova et al., 2017). Implementation of educational technology requires intentional planning and selection of appropriate activities to support student development and increase satisfaction (Galbis-Córdova et al., 2017; Robinson, Kilgore, & Warren, 2017).

The goal of online discussions is establishing skills to deliberate, reflect, think critically, and engage with the content, instructor, and peers in the course (Galbis-Córdova et al., 2017). The faculty face challenges creating authentic online learning opportunities to engage students in collaborative experiences (Robinson et al., 2017). Faculty identify a need to design and implement meaningful course materials to meet students' diverse needs (Portugal, 2015). The problem of not knowing the student perceptions of the use of educational technology in online discussions impacts the students, faculty, and workforce, as without adapting the online discussion forums to engage students in creating collaborative activities, graduates enter the workforce underprepared for working with colleagues. The outcome of the study influences

course design and faculty development by identifying student perceptions of online discussion forums and the use of educational technology.

Purpose of the Study

The purpose of the phenomenological qualitative study was to explore the perceptions of students on the use of educational technology to support engagement and collaboration in online discussion forums. Teaching, face-to-face and online, requires faculty to consider and carefully plan with intentionality (Chiasson et al., 2015; Robinson et al., 2017). Educators need to understand how students engage with peers, instructors, and materials online to design robust, interactive courses supporting collaboration (Chadha, 2017). Learner isolation and dissatisfaction with online learning environments lead to increased dropout rates for higher education institutions (Sánchez-Mena & Martí-Parreño, 2017).

The qualitative study examined students' perceptions of online courses in higher education with discussion forums. The phenomenological design explored an understanding of how people interpret and construct meaning from personal experience (Merriam & Tisdell, 2016). Gathering student perceptions of the lived experiences in online discussion forums provided insights on strategies to reduce learner isolation and dissatisfaction. The findings offer ideas to address the increased dropout rates for higher education institutions.

Significance of the Study

As enrollment continues to grow in online education, higher education institutions work to identify methods to increase student engagement and collaboration (Chiasson et al., 2015; Galbis-Córdova et al., 2017). With more significant enrollment, institutions identify a concern over elevated withdrawal rates due to dissatisfaction in course design, communication, and student connection (Athens, 2018). The current study contributed to the field by identifying

students' perceptions on the use of educational technologies in online discussions to promote engagement and collaboration. By sharing the results with college administration and leaders, course developers and faculty create and implement environments in discussion forums focusing on engagement and collaboration. The results contribute to efforts to prepare students for online learning.

Research Questions

The purpose of the phenomenological qualitative study was to explore the perceptions of students on the use of educational technology to support engagement and collaboration in online discussion forums. Burns's (1978) transformational leadership theory and Garrison et al.'s (2000) community of inquiry framework guided the research questions with broad, open opportunities to collect students' perspectives. The following research questions steered the study:

Research Question One: What were the lived experiences of students utilizing educational technology in online courses?

Research Question Two: What were student perceptions of educational technologies in discussion forums as an engagement strategy in online courses?

Research Question Three: What were student perceptions of educational technologies in discussion forums as a collaborative strategy in online courses?

Theoretical Framework

Students' perceptions of the use of educational technology tools in online discussions to increase engagement and collaboration were unknown, which caused the problem. The purpose of the phenomenological qualitative study was to explore the perceptions of students on the use of educational technology to support engagement and collaboration in online discussion forums. The theoretical framework for the research employed Garrison et al.'s (2000) community of

inquiry model and Burns's (1978) transformational leadership theory to guide the investigation of student perceptions on the use of educational technology in online discussions to promote engagement and collaboration.

Theory

Garrison et al.'s (2000) community of inquiry model (CoI) and Burns's (1978) transformational leadership theory guided the framework for the current study. Developed by Garrison et al. (2000), the community of inquiry identifies the value in developing a collaborative community where students and teachers work together to make sense of the course content (Holbeck & Hartman, 2018). The community of inquiry model focuses on the establishment of social presence, cognitive presence, and teaching presence within educational experiences (Collins, Groff, Mathena, & Kupczynski, 2019).

Cognitive presence is the construction of meaning through collaboration and communication between students and with the instructor (Holbeck & Hartman, 2018). Social presence is established in humanizing the online course, creating connections and collaboration, and focusing on building knowledge (Collins et al., 2019). Teaching presence is the design and facilitation of the online course (Holbeck & Hartman, 2018). Teaching and social presence are equally essential for the faculty role in establishing and guiding online learning, moving the course beyond the structure of the online environment's content to a space of critical thinking, reflection, and knowledge construction (Collins et al., 2019). Implementing the CoI framework creates space to build knowledge through collaboration and student engagement with the content, peers, and faculty within an online course (Collins et al., 2019; Garrison et al., 2000; Holbeck & Hartman, 2018).

Transformational leadership theory, developed by Burns, provided a foundation for the study by exploring the teacher's role in supporting followers' motivation (Burns, 1978). Transformational leaders identify followers' satisfaction, motivation, and commitment as central to interactions and meaningful work (Burns, 1978; Majeed, Jamshed, Nazri, & Mustamil, 2019). Together, transformational leadership and the community of inquiry guided the theoretical framework for the study.

Definitions of Terms

The following terms were critical for the qualitative study. The terms identified topics in the phenomenological investigation. The definitions provided information on topics in the existing literature reviewed in Chapter 2.

Asynchronous communication: Unlike face-to-face classes where students and faculty connect synchronously or in real-time, online courses allow participation asynchronously or outside the parameters of time (Berry, 2018; Junus, Suhartanto, R-Suradijono, Santoso, & Sadita, 2019). Asynchronous communication flattens the traditional classroom empowering student control of contributions, participation, and learning (Berry, 2018). Asynchronous communication removes time and space barriers by allowing participants to engage with course content and peers during individually selected times (Berry, 2018; Junus et al., 2019). The use of asynchronous communication allows for more freedom for students to interact with the course content, peers, and faculty based on individual needs.

Educational technology: Educational technology utilizes gaming concepts and technology tools to foster student motivation by enhancing classroom experiences, both online and residentially (Wilson et al., 2015). Technology-enhanced learning uses technology tools to supplement education (Robinson et al., 2017; Swart, 2017). Educational technology includes the

use of technology applications, social media, speech-to-text, video, and collaboration tools (Reeves et al., 2018).

Online courses: An online course is a learning experience with a minimum of 80% of the content delivered in an online platform or learning management system (Allen & Seaman, 2016). The learning management system organizes online courses providing students with content, directions, expectations, and assessments through a technology-based environment (Allen & Seaman, 2016; Jan & Vlachopoulos, 2018). The faculty member facilitates the online environment to support student learning and mastery of competencies (Galbis-Córdova et al., 2017).

Online discussion forums: Online, asynchronous discussions serve as a method to connect learners through the online environment (Dempsey & Zhang, 2019). Online discussion forums' goal is for students to demonstrate higher-level critical thinking (Foo & Quek, 2019). One standard format of online discussions consisted of threaded posts. In a threaded discussion forum, students write a response to a predeveloped, faculty-created discussion prompt. Students continue the conversation replying to one another. The instructor participates in providing expertise, modeling, and guidance in the discussion forums.

Assumptions

Research assumptions are issues, ideas, or positions viewed as reasonable and widely accepted (Theofanidis & Fountouki, 2018). The phenomenological research investigated participants' lived experiences (Creswell & Poth, 2018; Merriam & Tisdell, 2016). The research required consideration of different assumptions. One assumption was the phenomenological study's design allowed for triangulation of the data regarding the participants’ lived experiences

in online courses and using educational technology in discussion forums through analysis of the questionnaires, semi-structured interviews, and member checking.

The study's identified assumption was that the participants responded truthfully throughout the data collection phases representing accurate perceptions. Since the study's participation was voluntary, the assumption was the participants shared openly and truthfully, accurately reflecting the perceptions. An additional assumption was that the subjects who volunteered and participated in the study by completing the questionnaire and the semi-structured interviews represented various higher education programs. Responses from a minimum of 15 participants with online experience as higher education students were necessary for the study. To meet the goal of 15 individuals for the study, another assumption was the potential participants shared the questionnaire through snowball sampling with other professional online social media groups or colleagues who met the criteria.

Scope and Delimitations

The study's scope explored students' perceptions of experience in a higher education online course with discussion forums. The snowball sample initiated participants' recruitment from a professional, online social media group and referrals for other potential participants. Potential participants represented a variety of fields of study, institutions, and included undergraduate and graduate education. The study investigated student perceptions of online discussion forums in higher education and the use of educational technology to promote engagement and collaboration.

Delimitations challenge the assumptions of the study, exposing the shortcomings (Theofanidis & Fountouki, 2018). The delimitations address the theory, research questions, and sample population used in the study (Theofanidis & Fountouki, 2018). One delimitation was the

use of snowball sampling, which resulted in a variety of participation from different institutions, fields of study, and included undergraduate and graduate education. The findings cannot transfer to other situations without further research or considerations by not limiting responses to specific parameters. The descriptive, detailed presentation of the setting, the participants, and the findings supports the reader in identifying potential similarities to consider transferability (Merriam & Tisdell, 2016).

Another delimitation was the use of convenience sampling with limited control of the sample (Sánchez-Mena & Martí-Parreño, 2017). The participants completed an online course in higher education with discussion forums and experienced the use of educational technology in the online course. The study provided rich, descriptive data to address the delimitation, which increased transferability (Merriam & Tisdell, 2016). Purposeful, criterion sampling provided information-rich data for participants meeting the predetermined requirements for inclusion in the study and addressed the delimitations (Creswell & Poth, 2018; Merriam & Tisdell, 2016). Further studies would determine if specific fields of study, institutions, or undergraduate and graduate education have similar findings. The results cannot be transferred to different environments without additional exploration.

Limitations

The research limitations are the potential uncontrolled weaknesses in the design or other factors (Theofanidis & Fountouki, 2018). The research study used a phenomenological approach to explore students' perceptions of educational technology use in online discussion forums to increase engagement and collaboration. One limitation was the access to a small group of participants (Theofanidis & Fountouki, 2018). Individuals qualifying as subjects were recruited through snowball sampling in a professional social media group online, and potential participants

were asked to forward the recruitment questionnaire to colleagues and acquaintances with experience as students in online higher education (Sánchez-Mena & Martí-Parreño, 2017).

The data collection tools caused limitations in participation. The online questionnaire was shorter than a paper and pencil form, avoiding participant fatigue and increasing completion rates (Theofanidis & Fountouki, 2018). The use of the online questionnaire did not allow for clarifying questions. Questionnaires with missing data or not fully completed resulted in the participant's withdrawal from the study (Theofanidis & Fountouki, 2018). The purpose of the questionnaire was to create a pool of potential participants. Semi-structured interviews, audio and video analysis, and member checking moved to triangulate the findings.

A limitation in content existed with semi-structured interviews, audio and video analysis, and member checking in ascertaining a comprehensive picture. Participants might not have reported true and accurate responses, limiting the study (Theofanidis & Fountouki, 2018). The data were triangulated by participants contributing to a semi-structured interview with verbal responses using audio and video recording to minimize the limitation. Member checking strategies, including clarifying questions and transcript verification, allowed participants to ensure responses captured perceptions and ensured the accuracy of data collected, resulting in triangulation (Creswell & Poth, 2018). Triangulation of data used multiple strategies to establish credibility (Creswell & Poth, 2018).

A limitation of qualitative studies was the need to address personal bias. Identifying, or bracketing, personal beliefs about educational technology tools in online discussions before and throughout research removes biases, judgments, and assumptions (Merriam & Tisdell, 2016). When conducting the study, self-reflective practices bracketed personal biases about discussion forums and educational technology. The limitation was addressed by ensuring the results were

not distorted or misinterpreted with personal bias when the study was finalized (Theofanidis & Fountouki, 2018).

Chapter Summary

The phenomenological study explored student perceptions of the uses of educational technology in discussion forums as a method of promoting engagement and collaboration in online classes in higher education. The study identified the background, problem, purpose, and significance of understanding student perceptions of educational technology uses in online discussions. The investigation explored the research questions, the theoretical framework guiding the study, and the study's assumptions and limitations. The next chapter includes a comprehensive literature review of online learning environments, discussion forums, educational technology tools, and student perceptions.

Chapter 2: Literature Review

With rising enrollments in online programs and courses, higher education institutions explore increased engagement and collaboration methods as strategies to support student satisfaction (Chiasson et al., 2015; Galbis-Córdova et al., 2017). Online higher education institutions face elevated withdrawal rates, with 28% of the student drops identifying dissatisfaction in course design or lack of communication and connection as reasons for ending enrollment (Athens, 2018). Improving student engagement impacts retention and success in online education (Collins et al., 2019). Institutions of higher education seek methods to engage students in meaningful interactions to construct knowledge. A need existed to explore instructional design and the use of educational technology as strategies for developing critical thinking skills in online discussions (Swart, 2017).

Course discussions are one tool for learning and assessment in online classes. Students' perceptions of the use of educational technology tools in online discussions to increase engagement and collaboration were unknown, which caused the problem. The phenomenological study explored student perceptions of the uses of educational technology in discussion forums as a method of promoting engagement and collaboration in online classes in higher education. The theoretical framework for the study focused on the community of inquiry (CoI) model (Garrison et al., 2000) and transformational leadership theory (Burns, 1978), exploring the use of educational technology in online discussions to increase student engagement and collaboration through the development of cognitive presence, teaching presence, and social presence. The study's identified search strategy and theoretical framework were identified, followed by a thorough review of online learning environments, online discussion forums, educational technology, and student perceptions in the chapter.

Literature Search Strategy

The literature review explored various current peer-reviewed journals, books, and articles focusing on primary sources. The purpose of the literature review was to provide a synthesis of prior research, compiling a comprehensive and transparent analysis of the topic (Greyson et al., 2019). The literature review process included locating, classifying, and analyzing research conducted on the subject using peer-reviewed journals and dissertations (Álvarez-García, Sureda-Negre, & Comas-Forgas, 2015). The literature review used prior studies and presented the need for the current study.

The literature review strategy included exploring databases available through the American College of Education (ACE) library and the Online Learning Consortium (OLC) for peer-reviewed sources based on keywords. The review analyzed and synthesized research completed within the past five years to ensure the topic's timeliness and relevance to the current study. The primary search included the keywords of online education, discussion forums, and student satisfaction.

Additional searches explored the community of inquiry (CoI) theoretical framework, transformational leadership theory, collaboration, engagement, educational technology, and student perceptions of online learning. The literature review addressed cognitive presence, teaching presence, and social presence in online education, where the review continued to focus on student engagement and collaboration strategies through the development of the community of inquiry. Searches explained discussion forums, identified educational technology uses, and explored student perceptions and satisfaction indicators for online learning.

Theoretical Framework

Two theories guided the research of students' perceptions on the use of educational technology in online discussions to increase engagement and collaboration. The community of inquiry model (Garrison et al., 2000) and transformational leadership theory (Burns, 1978) offered the study's framework. The community of inquiry model explored three specific components of presence in online courses, while transformational leadership theory supported the teacher's role as a leader.

The Community of Inquiry Model

The community of inquiry (CoI) model, as developed by Garrison et al. (2000), is a theoretical framework focused on the development of an educational community of learners focused on building knowledge together (Robinson et al., 2017). A community of inquiry aims to bring individuals together to collaborate and engage in purposeful discourse and reflection to create personal meaning and mutual understanding in online courses (Garrison et al., 2000). CoI framework establishes the importance of building a cognitive presence, teaching presence, and social presence in online educational experiences (Collins et al., 2019; Garrison, 2017; Garrison et al., 2000).

The community of inquiry theoretical framework for online learning and teaching employs the values of collaboration in constructing knowledge stemming from social environments and the development of personal meaning (Garrison, 2017; Robinson et al., 2017). The foundation of the CoI framework addresses the need for a collaborative community in learning and teaching, where students and teachers work together to make sense of the course content by connecting knowledge to real-world applications (Holbeck & Hartman, 2018).

Students construct knowledge through exchanges and dialog with peers and instructors to test theories, explore alternative perspectives, and apply content to real-world contexts.

Figure 1 depicts the three interdependent components, cognitive presence, teaching presence, and social presence, necessary to build a community of inquiry in online courses to support the development of meaningful learning experiences (Garrison, 2017; Garrison et al., 2000). The Venn diagram illustrates the interdependent elements while supporting the overlapping or intersecting goals and outcomes when an online course demonstrates social presence, teaching presence, and cognitive presence (Garrison, 2017; Garrison et al., 2000; Peacock & Cowan, 2019). The theoretical framework's overlapping intersections represent online learning influences through trusting, meaning-making, and deepening understandings (Peacock & Cowan, 2019).

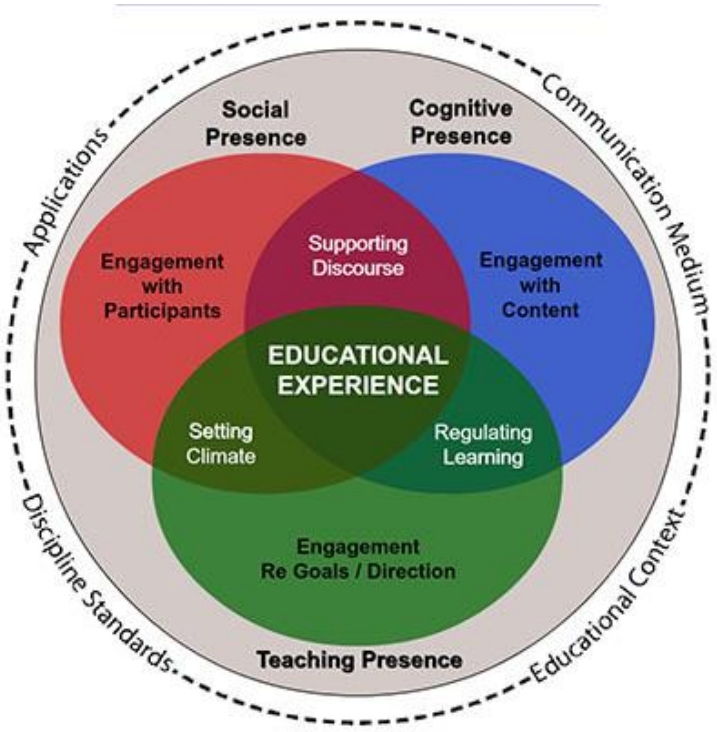

Figure 1. Community of Inquiry Framework (Garrison, 2017).

The development of a community of learners in online learning environments leads to a deep and meaningful educational experience (Garrison, 2017). The intersection of the three elements of presence creates the learners' educational experiences in an online learning community (Peacock & Cowan, 2019). Online learning environments include a learning platform or learning management system, tools, and educational technology, content, participants, and facilitators, and a good design drawing the components together to achieve learning outcomes (Jan & Vlachopoulos, 2018). Collaborative approaches in online education connect participants by exploring discourse and developing a deeper understanding of the course content (Garrison, 2017). The development of a community of inquiry offers students a space to explore content, test ideas, and understand concepts in a broader context.

Comprised of three areas of focus, cognitive presence in a community of inquiry is the construction of meaning through collaboration and communication between students and the instructor (Garrison, 2017; Holbeck & Hartman, 2018). Extending beyond Dewey's educational theories, cognitive presence supports critical inquiry, including critical thinking and problem-solving, in an environment personally and socially meaningful (Cooper & Scriven, 2017; Garrison, 2017; Gunbatar & Guyer, 2017). Garrison et al. (2000) defined cognitive presence "as the extent to which learners can construct and confirm meaning through sustained reflection and discourse in a critical community of inquiry" (p. 11).

Gunbatar and Guyer (2017) indicated cognitive presence is the research, construction, analysis, and verification of knowledge through collaboration with others. Cognitive presence is demonstrated through four phases of critical thinking, including the triggering event or dilemma, exploration of the nature of the problem employing reflection strategies, integrating information through analysis and synthesis, and developing resolution or solutions (Garrison, 2017; Garrison

et al., 2000; Hayati, Chanaa, Idrissi, & Bennani, 2019). One method in which students demonstrate cognitive presence is through social interactions in asynchronous online discussions (Hayati et al., 2019).

Teaching presence exists in the online course's design and facilitation (Holbeck & Hartman, 2018). In a study focused on online discussion forums, students displayed increased curiosity, deeper thinking, and enhanced engagement in developing ideas when a strong teacher presence existed (Gonzales, Long-Raymond, & Kehler, 2019). Teaching presence is the leadership level or facilitation of the social and cognitive constructs (Crosta, Manokore, & Gray, 2016). Teacher presence is the level of interaction, design, facilitation, and guidance in the areas of cognitive and social processes to engage students in meaningful outcomes (Garrison, 2017; Garrison et al., 2000).

Social presence is the ability for participants to establish trusting connections with a group, communicate openly, and develop relationships progressively (Garrison, 2017). Social presence is the ability to humanize an online course, creating connections and collaboration focused on building knowledge (Collins et al., 2019). Creating a community of inquiry established social presence and enhanced instructor support, increasing the students' feelings of connectedness to classmates (Jacobi, 2017). Cooper and Scriven (2017) elaborated on the importance of social connections based on community trust, where students hold open discussions challenging other perceptions and building mutual understandings. Trusting relationships provide a foundation for the development of self-confidence, self-efficacy, and self-esteem (Peacock & Cowan, 2019). Crosta et al. (2016) found a challenge in establishing a social presence through authentic learning experiences in online courses as a missing element in the sense of belonging to a community.

Together, cognitive presence, social presence, and teaching presence drive the development of an online community of learners, impacting engagement and collaboration in online learning environments. Teaching and social presence are equally essential for the faculty role in establishing and guiding online learning, pushing the course beyond the content's structure in the online environment (Collins et al., 2019). Educational technology demonstrates the potential opportunity to support learning outcomes by meeting diverse needs and motivations (Garrison, 2017).

The community of inquiry framework identifies the benefits of active, collaborative engagement for learners (Garrison, 2017). Implementing the community of inquiry framework throughout online environments, including in discussion forums, creates space to build knowledge through collaboration and student interaction with the content, peers, and faculty (Garrison, 2017; Garrison et al., 2000; Holbeck & Hartman, 2018). The community of inquiry guided the framework for the study by exploring student engagement and collaboration using educational technology in online discussions.

Transformational Leadership Theory

Transformational leadership theory, developed in 1978 by James MacGregor Burns, identified the role power plays in followers' motivation (Burns, 1978). Moving beyond transactional leadership, where the leader sets clear expectations and rewards or punishment for completion, transformational leadership relates to followers' satisfaction, motivation, and commitment (Anderson & Sun, 2017). Transformational leadership employs strategies to increase engagement with others by pushing to higher motivation levels, focusing on leader-follower interactions (Burns, 1978). Transformational leaders engage followers, impacting the students' behaviors positively (Majeed et al., 2019). In transformational leadership theory,

increased feelings of importance and work on meaningful tasks empower followers (Majeed et al., 2019).

As cited in Iqbal, Zaman, Siddiqui, and Imran (2019), transformational leadership models incorporate characteristics, including inspiring motivation through modeling, creating a shared vision, promoting intellectual stimulation, and considering the individual. The teacher serves as a role model, building trust, demonstrating integrity, and encouraging creativity and innovation (Majeed et al., 2019). Intellectual stimulation focuses on problem-solving within a group with shared values (Anderson & Sun, 2017) central in the community of inquiry framework. Transformational leaders support a vision driven by the organization, or in classes, course objectives while supporting followers in alignment with the vision and understanding the individual role in accomplishing the outcomes (Anderson & Sun, 2017).

Transformational leadership theory aligned with the theoretical framework of the community of inquiry and supported the study. The establishment of the community of inquiry, the cognitive presence, teaching presence, and social presence stem from the teacher's transformational leadership. The transformational leader provides meaningful work, empowers followers, and acts as a role model (Majeed et al., 2019).

Research Literature Review

The literature review addressed online learning environments, discussion forums, educational technology tools, and student perceptions about online learning and the use of educational technology. Understanding the student's perceptions in the use of educational technology in online discussions creates the opportunity for careful planning and thoughtful implementation of online courses (Chiasson et al., 2015). Course designers and faculty continue to search for methods of engaging students in online learning (Athens, 2018; Chiasson et al.,

2015; Galbis-Córdova et al., 2017). Online learning provides an opportunity for participants to work together on authentic learning experiences to construct mutual understanding and knowledge (Robinson et al., 2017).

The use of transformational leadership in developing and implementing the community of inquiry model provided a theoretical framework for exploring new and emerging educational technologies focused on active, creative, collaborative engagement for learners (Garrison, 2017). The literature review guided the identified study to examine educational technology in online discussion forums as a framework to develop and maintain a community of inquiry in online courses. Research shows students perceive the inclusion of technology in online classes as a positive contributor in fostering critical thinking skills (Swart, 2017). A gap existed in implementing educational technology in online discussion forums to increase collaboration and engagement.

Online Learning Environments

The definition of an online course is a learning experience comprised where at least 80% of the content is delivered in an online platform (Allen & Seaman, 2016). In the fall of 2014, more than 2.8 million higher education students reported completing all courses online (Allen & Seaman, 2016). Students enroll in online education for various reasons, including geographic location, work or family responsibilities, health issues, social anxiety or disabilities, personal preference for independent explorations, self-directed learning, or constraints restricting on-campus, traditional schooling (Cooper & Scriven, 2017). Online education addresses the gap of accessibility in education by removing the limits of time and space (Adebisi, & Oyeleke, 2018).

Cognitive presence. The evolution of information and communication technology (ICT) creates deep and meaningful learning when moved beyond passive information sharing and into

a realm of connected opportunities to develop critical thinking and inquiry (Garrison, 2017). Evidence indicates online learning is comparable in effectiveness to traditional classroom instruction (Fritea & Opre, 2015). Online courses executed using traditional teaching pedagogy offer a one-way transmission of knowledge and create a passive learning experience (Gonzales et al., 2019).

Gonzales et al. (2019) tested methods of creating a community of inquiring in online courses by shifting interactions from transmittal to the construction of knowledge by changing the three interdependent elements of the community of inquiry, cognitive presence, teaching presence, and social presence. The findings indicate increased dialogue when teaching presence demonstrated curiosity, acknowledgment of different perspectives, and support of the importance of co-creating knowledge (Gonzales et al., 2019). A well-designed online learning environment includes opportunities for asynchronous engagement from participants, self-paced learning opportunities, and the use of multimedia resources or educational technology to supplement and enhance the learning environment (Cooper & Scriven, 2017).

To counteract the view of isolation, course designers explore strategies to develop online communities in learning platforms (Athens, 2018; Chiasson et al., 2015; Galbis-Córdova et al., 2017). The course design provides the foundation for community development, as the learning design creates a conducive environment for collaboration, although establishing teacher presence is necessary to cultivate the community, which might not form naturally (Jan & Vlachopoulos, 2018; Junus et al., 2019). The transformative leader serves as a role model, demonstrating integrity, increasing communication, and employing idealized influence through building trust and encouraging innovation and creativity (Majeed et al., 2019).

Using semi-structured interviews, Robinson et al. (2017) conducted a case study focused on four faculty members' perceptions of integrating online collaborative learning in graduate courses. The study identified course design alone does not create community; just because the opportunity to collaborate and engage exists in the class does not mean students actively participate (Robinson et al., 2017). During the development process, course designers orchestrate the instructor's role in facilitating the online learning experience and encouragement of student engagement (Collins et al., 2019).

Course development includes design features addressing social presence, teaching presence, and cognitive presence, though how the students interact with the content, peers, and instructor depends on the specific class and individual students (Cooper & Scriven, 2017). Nelson and Parchoma (2018) identified the emergence of the community of inquiry during the curriculum development process by focusing the learning experiences on establishing a social and cognitive process through intentional planning. The faculty member plays the role of the leader in the course by creating the environment and setting the expectations. Faculty development and course design play a vital role in facilitating collaborative online learning experiences and require planning, implementation, and assessment (Junus et al., 2019).

Higher education institutions identify and implement long-term plans to engage students effectively and support faculty in providing meaningful experiences (Chiasson et al., 2015). Developing online courses requires thoughtful planning and implementation of engagement and collaboration activities, which are essential elements in higher education (Chadha, 2017). Research indicates a need for intentional planning and effective use of engagement strategies based on faculty and student perceptions of online learning. An essential component in online

classes is creating opportunities to engage and collaborate by building relationships among peers and with the instructor (Chadha, 2017).

Teaching presence. Creating a community of inquiry, specifically teacher presence, is necessary for traditional, face-to-face classrooms, as well as in online courses (Cutsinger, Wall, & Tapps, 2018). Traditional lecture-based courses limit student engagement opportunities, and often, the design goal in moving to online learning experiences is replicating the on-campus experiences in the online platform (Dunlap, Verma, & Johnson, 2016). Dunlap et al. (2016) merged presence identified in the community of inquiry model and experience from Kolb's experiential learning cycle in a framework to support and guide online course developers in the intentional planning for presence in online communities.

The move of a course from the traditional, face-to-face classroom to online environments requires different instructional design and the understanding of online learning theories, which are considerations for course designers and faculty (Stern, 2015). Online educators face challenges in replicating the interactions such as conversations, debates, and open, real-time discussions of traditional learning environments, although the evolution of the internet allows online courses to develop a collaborative space (Stern, 2015). Bridging the gap between distance education and the interactivity experienced in traditional classrooms is essential for online learning success (Stern, 2015).

Faculty employ the community of inquiry strategies to demonstrate support by using humor, scaffolding, modeling, videos, and personal connections (Robinson et al., 2017). Managing student behaviors in online classes requires the faculty member to understand diverse student needs while learning new technologies, including the learning management systems and educational technology tools. (Portugal, 2015). Developing a pedagogical awareness specific to

teaching online invites faculty to collaborate with others, increasing awareness of the importance of peer interaction (Chadha, 2017).

Teaching online requires faculty to conscientiously plan, make accommodations, and implement modifications to traditional teaching strategies to increase collaborative opportunities and student satisfaction (Robinson et al., 2017). By planning intentionally, faculty create environments, which demonstrate a real presence in the online platform (Chadha, 2017). Establishing an interactive environment allows peers to engage together in the online course by sharing ideas, identifying similar and different points of view, and collaborating, which is essential to mastering the course objectives (Chadha, 2017).

Social presence. The profile of higher education learner continues to evolve as more non-traditional students search for ways to advance education while balancing work and life, bridging the gap of accessibility, age, time, and distance (Adebisi & Oyeleke, 2018; Walters, Grover, Turner, & Alexander, 2017). Online learning equalizes education by removing prejudices and biases, such as age and race, identified in a traditional classroom (Portugal, 2015). Online learning supports adult learning theory, or andragogy, developing self-direction for participants and the opportunity to seek learning activities connected to personal lives through flexibility and autonomy (Portugal, 2015).

With the elevated demand for online education, institutions investigate methods for ensuring student outcomes, student satisfaction, and retention rates (Collins et al., 2019). More than 25% of students in higher education participate in at least one online course, and administrators face challenges in student attrition as common student perceptions include isolation and lack of connection with peers and faculty in online environments, which are factors

in increased dropout rates (Allen & Seaman, 2016; Delmas, 2017). Research shows courses reporting low student involvement have higher dropout rates (Galbis-Córdova et al., 2017).

With flexibility in selecting schools, students no longer select programs based on geography; institutions focus on student satisfaction and retention (Rios, Elliott, & Mandernach, 2018). Terras, Mahar, Chiasson, Schroeder, and Baker (2018) conducted interviews of 12 students enrolled in a university serving online graduate and undergraduate programs as a follow up to a study on connectivity as a link to retention. The study identified the desired connectivity in online schools depended on student age, with 26 to 30 years old seeking high connectivity with peers and instructors, whereas students ranging from 46 to 50 preferring connections to advisors and instructors (Terras et al., 2018).

While online education removes some barriers to learning, including time and location, other obstacles such as creating transactional distance, or feeling of isolation, between participants exists, unless the teacher uses strategies to connect the students to the materials and other peers (Holbeck & Hartman, 2018). To optimize student learning, establishing a community of inquiry through cognitive presence, teaching presence, and social presence reduces the feeling of isolation or distance (Holbeck & Hartman, 2018). Course design focuses on creating a community of learning, increasing a sense of belonging to counteract retention issues in online courses (Delmas, 2017; Garrison, 2017). The feeling of connectedness between students and with the instructor increases satisfaction (Delmas, 2017). Co-creation of knowledge requires intensive brainstorming, collaboration, and discussion (Verstegen, Dailey-Hebert, Fonteijn, Clarebout, & Spruijt, 2018).

Asynchronous Online Discussions

Traditional face-to-face courses include an opportunity for students to engage and collaborate among peers in classrooms and hallways. Teachers and course designers in online environments face challenges by not seeing student boredom or confusion as signs to adapt teaching strategies to meet the needs (Cooper & Scriven, 2017). Smith (2019) elaborated on the skepticism for teachers accustomed to gauging student reactions, body language, cues, and facial expressions to adapt teaching strategies, making the transition to online teaching challenging. Dialogue and discussions facilitate reflective thinking and establish a collaborative learning environment focused on mutual goals and the development of shared knowledge (Gonzales et al., 2019). With the transition to online education, online environments incorporated text-based, asynchronous discussions as a method to connect learners creating a community of inquiry (Dempsey & Zhang, 2019).

Cognitive presence. Robinson et al. (2017) identified a need to enhance online discussions because an early implementation of online learning lacked meaningful interactions. In the early 1990s, social connections between students typically seen in classrooms moved to emails or discussion forums, leaving little time or focus for meaningful collaboration and interaction (Robinson et al., 2017). Berry's (2018) study reviewed discussion-based classes requiring initial responses to forum questions in addition to three peer responses during the week. Online discussions challenge teachers to move student posts beyond sharing detailed answers and towards higher critical thinking levels (Berry, 2018; Garrison et al., 2000). Berry (2018) identified the ability for all students to participate in online asynchronous discussions without taking turns in a traditional classroom, as well as the allotted time, usually over a week rather than three hours face-to-face, as positive student perceptions.

Course developers create and foster learning communities in online platforms by promoting a level of social networking to reduce the feeling of isolation (Longstaff, 2017). Online discussions' goals include supporting students in demonstrating higher-level thinking and critical thinking (Foo & Quek, 2019). The development of authentic discussion forums establishes teacher presence and ensures cognitive presence by supporting students in constructing meaning (Jacobi, 2017).

Discussion forums centered on content provide students a space to demonstrate, share, and asynchronously develop understandings of content, though some indicate online discussions are not optimal to online learning and teaching (Smith, 2019). Smith (2019) defined five purposes for discussion forums to extend student demonstration of mastery of concepts, including the use of a content forum, a coffee shop forum, a product or work sharing forum, a team forum, and a skills forum. As the instructor, Smith (2019) actively participated in all discussions, although acknowledged the small class size allowed the regular activity. The instructor's ongoing participation created a positive learning experience for the students, as indicated in end-of-course surveys (Smith, 2019).

Teaching presence. Asynchronous online discussions provide an opportunity for the development of critical thinking skills (Swart, 2017). Faculty and course developers intentionally design online discussions to foster critical thinking (Foo & Quek, 2019; Robinson et al., 2017). Engaging students in authentic, relevant forums provide students with a place to participate in thought-provoking conversations (Jacobi, 2017). Faculty facilitate discussions as the cornerstone of learning, directly impacting learning outcomes and satisfaction by stimulating learning, intervening to provide expertise, setting goals, and giving feedback (Dempsey & Zhang, 2019; Eom & Ashill, 2016). Gunbatar and Guyer (2017) identified students as more successful in

creating and maintaining community when presented with a discussion protocol framework in asynchronous discussions.

Belcher, Hall, Kelley, and Pressey (2015) investigated faculty strategies promoting critical thinking in online threaded discussion forums and analyzed the level of peer-to-peer interaction of more than 350,000 data points. Focused on faculty, the authors identified 12 positive behaviors in discussion forums, including challenging students to think, providing direction and supplemental material, and summarizing posts, and seven negative actions, including lack of participation, and using the same reply for all students as impacting student outcomes (Belcher et al., 2015). Belcher et al. (2015) concluded careful planning of discussion prompts to promote higher-level thinking, precise requirements of participation in the discussion forums, and faculty development lead to improved student outcomes. To improve outcomes of online discussions, an essential element of course design is the use of authentic topics focused on learning and growth and questioning strategies to drive meaningful connections applicable to the students' real lives (Jacobi, 2017).

To create a teaching presence in online discussions, teachers set clear guidelines and expectations, provide an initial prompt, employ questioning strategies, and demonstrate expertise (Foo & Quek, 2019). Establishing teacher presence includes developing supportive online discussions by setting the stage with clear expectations (Wilson et al., 2015). Teachers provide examples of purposeful and personal communication as social interactions drive online discussion forums, soliciting group thoughts, reflections, different points of view, and real-world connections (Rios et al., 2018). Teacher presence in discussion forums includes facilitating more in-depth dialog, clarifying content, integrating bridge concepts, and asking thought-provoking questions (Rios et al., 2018).

Jan and Vlachopoulos (2018) explored varying levels of teacher and tutor engagement in online discussion forums, identifying the learning design alone does not orchestrate the creation of community but instead creates an environment conducive to the formation of group learning. The research demonstrated guidance and facilitation in online discussions as a critical element in the structure of a learning community (Jan & Vlachopoulos, 2018). The results indicate the importance of teacher presence in online discussions in creating a dialogue rather than a monologue (Jan & Vlachopoulos, 2018). Supporting the results, Gonzales et al. (2019) investigated the instructor's role in facilitating online discussions, altering the level of participation from no engagement to interacting as the "guide on the side," finding the role of the teacher provides a foundation for dialogues in discussions. The transformational leader triggers discussions, facilitating higher levels of thinking and knowledge construction (Gonzales et al., 2019).

In a study of 500 graduate and undergraduate online courses, Parks-Stamm, Zafonte, and Palenque (2017) analyzed the correlation between teacher activity and student engagement and the impacts of class size on student participation. Instructor participation had a strong positive relationship with student participation, contradicting previous fears indicating instructor participation hampers student participation in discussions (Parks-Stamm et al., 2017). Online discussion forums invite active engagement from students in the learning platform (Parks-Stamm et al., 2017).

Parks-Stamm et al. (2017) identified conflicting views of instructor participation in online discussions based on class size. The study found increased class sizes create more opportunities for dialogue and responses, finding a negative impact in small class sizes due to the limited number of participants to engage in the discussion, although active instructor engagement offsets

the negative effect of lower participation (Parks-Stamm et al., 2017). Conversely, Junus et al. (2019) identified dividing classes into smaller groups assigning specific goals as a strategy to establish teaching presence.

Jacobi (2017) surveyed 27 students in upper-level online courses to understand the perspectives regarding productive asynchronous discussions. The study found small group forums guided by structured and relevant prompts are essential elements of online discussions (Jacobi, 2017). Gonzales et al. (2019) identified challenges with online discussions in constructing knowledge and engaging a community of learners. Online discussion forums rely on written communication, which is difficult for some participants who struggle to convey meaning in writing contexts (Gonzales et al., 2019).

When not adequately planned, online discussions fail to create meaningful interactions, especially when faculty and students view education as transmitting knowledge instead of building or developing an understanding (Gonzales et al., 2019). Written, threaded online discussions feel like a series of separate conversations or essays, like monologues, without engaging the community of learners in a collaborative conversation focused on constructing knowledge (Gonzales et al., 2019). The majority of learners embraced the collaborative methods for building knowledge, though some did not thrive in the community of inquiry model (Gonzales et al., 2019). Generating a community of inquiry focused on teacher presence in online discussions increases deeper thinking and develops ideas and an appreciation for other perspectives (Gonzales et al., 2019). As transformational leaders, the teachers increase the feeling of meaningful, significant work, increasing a sense of belonging in online classes (Majeed et al., 2019).

Social presence. Asynchronous, online discussions provide participants a space to interact, removing barriers of time and space (Berry, 2018; Junus et al., 2019). Unlike traditional classrooms, asynchronous online discussion forums engage participants in developing thoughtful responses while exploring a variety of perspectives (Jacobi, 2017). Jacobi (2017) found students perceived online discussions as effective or more effective than traditional face-to-face class conversations, explicitly indicating the benefits of multiple perspectives beyond the few participants who speak in the classroom. In a study by Berry (2018), students identified a complaint in face-to-face classes due to frustration over discussion domination by a few while the rest of the class sat passively, not contributing personal perspectives or experiences.

Scholl, Hayden, and Clarke (2017) addressed the changing education platform and the implications on personal interactions in the move to online education. To counteract the limitations, providing ample opportunities for student engagement and progression towards competence is essential (Scholl et al., 2017). Online discussion forums allow participants time to think critically, re-read, and analyze at the readers' pace (Junus et al., 2019). By writing down ideas, participants think about the concepts, organize thoughts, monitor, and assess understanding, increasing awareness of the thought process (Junus et al., 2019). Berry (2018) indicated asynchronous online discussions provide an opportunity for students to drive the conversation by contributing, participating, and learning.

Students identified a preference for structured, relevant discussion prompts, allowing time for reflection and critical thinking, by applying content to real-life experiences (Jacobi, 2017). Athens (2018) explored peer-to-peer interactions and online discussions, concluding students found online discussions increased comprehension of the course content. The findings

further identified perceptions of online discussion forums as encouraging open-mindedness and improving critical thinking (Athens, 2018).

While students identified online discussions as beneficial to learning, some believed the required peer interaction, such as the discussion board, did not affect overall success in the course (Athens, 2018). Wicks et al. (2015) did not find a significant difference in students' outcomes in low-collaborative versus high-collaborative classes; the study identified a need to further investigate the effects of collaboration on peer-to-peer and peer-to-teacher interactions. The survey results indicated students in high-collaboration courses valued peers more than the students in low-collaboration classes, informing course design strategies to promote collaboration as a method to increase engagement and the construction of meaning and knowledge (Wicks et al., 2015).

Another consideration in online discussion forums is group size. Chen, deNoyelles, Patton, and Zydney (2017) investigated the use of discussion protocols by stimulating a productive discussion driving to meaningful conversations in a sizeable, video-streamed course. The goal of protocol-based discussions is to provide peer-reviewed feedback to classmates' written assignments (Chen et al., 2017). Student perceptions of teaching presence, social presence, and cognitive presence increased significantly when teachers facilitate careful, intentional online discussions in large classes (Chen et al., 2017). Conversely, Foo and Quek (2019) conducted a literature review of the use of asynchronous discussion forums to develop critical thinking skills and found the peer feedback strategy does not necessarily result in stronger critical thinking skills. Teachers promote higher-order thinking and critical thinking skills in the discussion through intentional design, careful scaffolding of learning, and sharing expertise to redirect or advance the conversation (Foo & Quek, 2019).

Chen et al. (2017) found dividing large classes into smaller learning communities of approximately 10 students increased student satisfaction allowing for collaboration in small communities, establishing a connection to other classmates while allowing the instructor to keep the larger whole community on one page. Collaborative learning groups are smaller, typically consisting of six to 10 students allowing a division of labor amongst participants (Robinson et al., 2017). The creation of community draws students to a common goal of building knowledge with the faculty member's support (Robinson et al., 2017).

Discussion forums reduce learner isolation, providing an opportunity for engagement to develop a sense of community (Chadha, 2017). Through collaborative learning activities, students build on prior knowledge and develop shared understandings by creating a community of inquiry (Robinson et al., 2017). Discussion forums increase reflection and develop an understanding of different viewpoints (Chadha, 2017).

Educational Technology

Preparing graduates equipped for the 21st-century workforce is central to higher education (Gray, 2016). Alkhataba, Abdul-Hamid, and Bashir (2018) reviewed six Web 2.0 technologies and web applications in blended or online learning. The goal of integrating technology in online classes is to promote social interactions by creating collaborative spaces for communication and education (Alkhataba et al., 2018). The use of technology supports student acquisition of skills necessary for the modern-day, 21st-century world by increasing interactive, student-centered learning (Alkhataba et al., 2018).

Moore (2016) explored the Google work culture and Google applications as teaching methods for developing collaborative skills necessary in the future workforce. The teaching strategies, such as using Google Slides, Google Drive, and Google Docs, cultivate online

collaborative skills and prepare students to work with people globally (Moore, 2016; Reeves et al., 2018). Moore (2016) identified technology as a tool for developing collaborative learning experiences to support student development of skills for the workforce.

Educational technology and game-like features in education increased students' motivation, engagement, and success in courses (Sánchez-Mena & Martí-Parreño, 2017). Sánchez-Mena and Martí-Parreño (2017) surveyed teachers on reasons for implementing gamification in higher education courses and found increasing attention, motivation, and interactivity, or collaboration and engagement among students as top answers. Collins et al. (2019) explored the use of educational technology as a tool to increase student engagement in online courses. Studies show the use of engagement strategies improves student retention (Allen & Seaman, 2016; Collins et al., 2019).

Cognitive presence. Swart (2017) conducted a mixed-methods study of 127 students blending face-to-face and online technology to create environments of inquiry, exploring perceptions of the use of online discussion forums as a tool for developing critical thinking skills. The participants identified the use of questioning strategies, or Socrative questioning, in online discussion forums as essential to promoting higher-order thinking and allowing for the application of learning to real-life scenarios (Swart, 2017). Additionally, students indicated the inclusion of technology-enhanced learning facilitated a more in-depth development of critical thinking (Swart, 2017). The findings support the inclusion of educational technology components in online courses development (Swart, 2017). Technology is a requirement for 21st-century learners (Swart, 2017).

Robinson et al. (2017) reminded teachers and course developers to ensure the educational technology tools supplement learning and do not overpower the content. Reeves et al. (2018)

identified the integration of technology tools as imperative in working with today's students. Integrating education technology requires a clear purpose. The ASSURE model provided a framework for technology integration, including six stages (Reeves et al., 2018). Implementation of technology requires planning to ensure the technology is aligned with the objectives and enhanced learning (Reeves et al., 2018). Reeves et al. (2018) created a Technology Integration Learning Community (TILC) and developed the TILC Online Course Framework (TOCF), a framework for technology integration building off the ASSURE model for the planning and implementation for integrating technology and media in education. The TILC modified ASSURE to incorporate the addition of technology applications, social media, and collaboration tools (Reeves et al., 2018).

Teaching presence. Online discussion posts support developing a community of inquiry when students are required to use course content to articulate ideas, reflect, and interpret (Kilis & Yildirim, 2019). Reeves et al. (2018) identified a need for online courses to welcome and guide students in a similar format to face-to-face classes by providing a prepared introduction or orientation overviewing the course structure, the learning expectations, the components of the course, and how to start. In a qualitative study by Kilis and Yildirim (2019), 91 students in a fully online associate program participated in six online discussion forums articulating ideas and interpreting concepts through reflective thinking to assess students' social presence, cognitive and teaching presence. Findings support the importance of discussion designs addressing real-life scenarios and cases thoughtfully and attractively (Kilis & Yildirim, 2019).

A well-prepared, student-friendly, easy-to-open video created using YouTube, Kaltura, or other video applications increases student interest and engages learners (Reeves et al., 2018). Reeves et al. (2018) explored the use of communication tools such as Remind or Google Voice,

content sharing through podcasts, slide presentations, and collaboration with Google Suite and social media successfully integrated technology in online courses and enhanced the online experiences by tying purpose to the learning objectives. Kilis and Yildirim (2019) identified high levels of group cohesion and open communication using Facebook and WhatsApp by keeping students informed and increasing communication and interactions. The comfort of a friendly environment such as Facebook or a social media platform provides a place for conversation, interaction, collaboration and establishes a sense of community (Kilis & Yildirim, 2019).

Gamification adds game-like elements to a non-game environment, such as leaderboards or competition in courses (Tan, 2018). Tan (2018) identified a move to meaningful gamification, which reduces the attention on external awards or competition, instead focusing on increasing intrinsic motivation using game-like features (Tan, 2018). Gamification in learning is the use of gaming elements such as game design, rewards systems, game thinking or game-like activities, and experiences like participating in a game implemented in an online course to encourage the user to accomplish a task (Wilson et al., 2015). Wilson et al. (2015) conducted a case study featuring a gamified design, implementation, and assessment of a game to strengthen online learning. The application of gaming features requires the teacher to carefully plan and set the stage for student expectations to motivate and energize learners (Wilson et al., 2015).

Rojas, Kapralos, and Dubrowski (2016) created focus groups of game developers, game designers, and medical students identifying motivators for using online tools and game-like elements in classes. The consensus of the four focus groups indicated points systems, leader boards, and clear structure motivate students to use online tools (Rojas et al., 2016). Gamification employs game-like features to motivate student success.

In a study exploring gamification incorporated into learning management systems and the impacts on student outcomes, interest, motivation, and satisfaction, Frost, Matta, and MacIvor (2015) added adventure storylines, badging, points, and leaderboards as the premise of the course. The study did not indicate using gamified elements had a positive impact on student engagement (Frost et al., 2015). The gamified format had adverse effects on learning in the study, though the outcomes supported the use of gamified elements for specific assignments or activities rather than the entire course (Frost et al., 2015). Klemke, Eradze, and Antonaci (2018) explored gamification, concluding more interactive learning and personalized experiences benefit massive open online courses. Incorporating gamification in online classes requires careful selection, course design, and application (Klemke et al., 2018).

Effective use of educational technology tools implemented through intentional planning increases social presence amongst participants (Chiasson et al., 2015; Robinson et al., 2017). The key to incorporating educational technology is to ensure the tool supplements the content and does not deter from learning (Robinson et al., 2017). The use of educational technology requires an awareness of online teaching and learning pedagogy, thoughtful planning, and knowledge of lesson content as more important for students than learning how to use the gaming tool or resource (Robinson et al., 2017). Robinson et al. (2017) indicated the teaching and learning theory, or pedagogy, comes before exploring technology's integration to accomplish collaborative learning goals. Holbeck and Hartman (2018) determined using educational technology such as Flipgrid, breakout rooms, Loom, and Remind decreases learner isolation in online education by increasing the establishment of the community of inquiry elements.

Social presence. Educational technology increases student motivation and satisfaction, including the use of gamification and video or audio options in online courses (Bicen &

Kocakoyun, 2018; Wilson et al., 2015). Technology tools like Kahoot! provide methods of improving student interest and motivation. Gaming creates an attractive learning environment offering a sense of competition, and students indicate an increase in interest in the content and development of a learning community through a gamified climate (Bicen & Kocakoyun, 2018). Educational technology, such as badging, is another useful tool in promoting social presence in online courses, enhancing social presence between peers and instructors (Hung, Zarco, Yang, Dembicki, & Kase, 2017).

Izmirli (2017) conducted a qualitative study of 12 undergraduate students based on the use of Facebook for announcements and discussions by analyzing data from posts and interviews. The study found using Facebook established a social presence including affective expression, open dialogue, and group cohesion (Izmirli, 2017). Educational technology in online environments provides students with enhanced opportunities to connect with peers.

VoiceThread, a collaboration tool online using video, audio, and text options to engage participants with presentation materials, promotes community in online learning by establishing personal connections, shared purpose, collaboration, and reflection, humanizing participants (Delmas, 2017). Teachers develop a human presence in online classes using online technology (Stern, 2015). Rios et al. (2018) identified the use of educational technology, such as Flipgrid or VoiceThread, to facilitate real-life interactions by creating a social learning environment. Kent (2017) found VoiceThread as an effective method to evaluate language and assess learning outcomes while engaging language learners in alternative approaches to participate in asynchronous conversations in meaningful and authentic ways. Conversely, Collins et al. (2019) found student perceptions of the use of asynchronous video messaging tools were not more effective than text-based communication.

Mese and Dursun (2019) conducted a mixed-methods study exploring the effectiveness of blended learning environments focusing on gamified elements examining a control group, with no gamified elements embedded within the course, and an experimental group using enriched experiences, including gamification. The study identified gamification in the context of the community of inquiry in blended learning had positive effects on learning, although found no significant differences existed between the control and experimental group in regards to teaching presence, social presence, and cognitive presence (Mese & Dursun, 2019). The findings indicate students have both negative and positive reactions to gamified elements in building the community of inquiry (Mese & Dursun, 2019). Kaufmann (2018) furthered research on the positive impact gamified elements have in online learning environments, finding an opportunity to integrate applications to support students in moving from stagnate, passive learning to active engagement with course material. Active participation increases grades and student satisfaction (Kaufmann, 2018).

Discussion post rankings, or a post-voting mechanism, uses a rating system on discussion posts (Longstaff, 2017). The tool provides a meaningful act of rating peer posts using a green up arrow or a red down arrow to indicate alignment to personal beliefs or demonstrate disagreement or disapproval (Longstaff, 2017). Longstaff (2017) served as an observer in online discussions in massive open online courses (MOOCs) and explored the rating system finding both enforced and undermined development of a community of learners. The voting system impacted the students' self-perceptions and created an environment of bullying, silencing minority voices by welcoming particular views and alienating others (Longstaff, 2017). Xie, Lu, Cheng, and Izmirli (2017) addressed the importance of conflict presence and discourse in discussion forums, which faculty or peer-mediators monitor.

Student Perceptions

One strategy for higher education institutions to ensure student outcomes and increase retention rates is to improve student engagement and create a greater sense of community, resulting in reduced feelings of isolation in online courses (Collins et al., 2019). Higher education administrators' perceptions indicated elevated concerns about online retention rates compared to face-to-face courses, believing online learning's effectiveness has decreased in recent years (Allen & Seaman, 2016; Collins et al., 2019). Gauging student feedback helps institutions, course designers, and teachers improve online teaching and learning experiences for all (Berry, 2018).

Cognitive presence. Hoey (2017) evaluated 1625 instructor posts in 36 graduate-level online courses to determine the student perceptions of the course content, the instructor's role, and the use of discussion forums. The findings support the quality of engagement in online discussions, the course quality, and the teacher’s focus on instruction, and developing content increases student perception of learning (Hoey, 2017). Berry (2018) further identified the value in cognitive presence as the level of challenge, research, and data-driven questions in the course impacting student perceptions of online learning and online discussion forums.

Teaching presence. Students perceive faculty involvement as the key to building confidence and guiding student learning (Athens, 2018). Student perceptions increase when faculty play an active role as the facilitator, intellectually stimulate participants, and provide ongoing feedback (Eom & Ashill, 2016). Online learning environments demonstrate teacher presence by providing a purposeful, collaborative learning environment, moving from teacher-centered learning to a student-centered, shared space valuing the input and ideas from all (Nelson & Parchoma, 2018). Kucuk and Richardson (2019) investigated online graduate students

concerning the community of inquiry framework, finding alignment between the model and online learners' engagement and satisfaction. Participants identified teaching presence as a direct and indirect impact on satisfaction (Kucuk & Richardson, 2019).

Galbis-Córdova et al. (2017) surveyed 128 undergraduate students and identified positive perceptions about the attitudes regarding attention, confidence, and relevance towards the use of online gamification in education. The study found students expected online educational activities designed explicitly for the learning platform supplementing learning focused on developing competencies and created as relevant learning experiences (Galbis-Córdova et al., 2017). Milman and Wessmiller (2016) identified the use of teaching strategies in online courses to gain attention, demonstrate relevance, develop confidence, and increase satisfaction.

Educational technology, including the use of videos, multimedia presentations, simulations, real-world scenarios, and applying knowledge with others, increases motivation in online learning (Milman & Wessmiller, 2016). Cutsinger et al. (2018) compared the differences in students' perceptions in traditional courses and online courses, finding no significant differences in teacher presence between the two modalities. The study identified a statistical significance between teaching presence and overall course satisfaction (Cutsinger et al., 2018). The research of teacher presence indicates the meaningfully designed online courses engage learners and results in positive learning experiences (Cutsinger et al., 2018).

Social presence. Students identify a lack of one-on-one interaction, both peer-to-peer and student-to-instructor, or the de-personalization of the learning environment, in dissatisfaction in online learning (Delmas, 2017). Predicting student behavior and engagement preferences in the online environment challenges educators, so understanding motivators for success is essential

(Hayati et al., 2019). Some students report negative experiences and dissatisfaction in online education, identifying a lack of personal connections to the instructor and peers (Jacobi, 2017).

The quality of learning experiences for students reflects the classroom's social presence, demonstrating increased participation rates and overall student motivation (Richardson & Lowenthal, 2017). Student perceptions indicate satisfaction when learning environments include engagement strategies to connect peer-to-peer and student-to-instructor. Social presence is the ability to communicate with others, both socially and emotionally, generating a sense of community, which increases overall student satisfaction in online learning (Garrison, 2017).

Berry (2018) analyzed more than 6,000 student responses to open-ended questions about online education, identifying common student perceptions of online learning experiences. Common perceptions include frustration moving from face-to-face learning to online and the pace of online work (Berry, 2018). The students indicated a sense of isolation, changes in the student and faculty roles, difficulty establishing relationships with peers and the professor, and not having face-to-face time for conversation as challenges in online courses (Berry, 2018). Elements found in creating a community of inquiry, including cognitive presence, influence student perceptions regarding online education through course design and instructor presence.

Athens (2018) saw increased positive student perceptions in online courses when the instructor demonstrates responsiveness, active participation, and feedback. Eom and Ashill (2016) surveyed 372 students who completed at least one online course gauging factors impacting satisfaction. Student satisfaction was significantly affected by the development of the community of inquiry, including social presence identified through instructor-to-student and student-to-student communication, teaching presence in the course's facilitation, and cognitive presence demonstrated in course design (Eom & Ashill, 2016).

Student satisfaction drives online course development as instructors and course designers strive to meet the needs of diverse learners (Rios et al., 2018). A key element in student satisfaction and persistence in online education is the development in the sense of belonging in the online environment achieved by developing a community of inquiry (Delmas, 2017). The mixed results presented demonstrate a need for further research on educational technology in online discussions to develop a community of inquiry and decrease learner isolation, though the findings in the literature review do not demonstrate all educational technology increases engagement and collaboration.

Gap in Literature

Online education continues to expand to meet the diverse needs of learners. In 2014, 14% of all higher education students completed courses through distance education in online platforms (Allen & Seaman, 2016). Higher education institutions seek to understand perceptions of online learning as 28% of dissatisfied students disenroll, indicating poor course design, lack of communication in online learning, and a sense of isolation as reasons to not persist (Athens, 2018; Delmas, 2017). To increase student satisfaction, employing transformational leadership within the context of a community of inquiry based on demonstrating cognitive presence, teaching presence, and social presence, reduces learner isolation (Garrison, 2017; Jacobi, 2017; Robinson et al., 2017). The goal of online discussions is to engage students in reflective, critical thinking (Swart, 2017). Educational technology decreases transactional distance through the increased sense of community of inquiry (Holbeck & Hartman, 2018). The use of educational technology in online discussion forums and the impact on student perceptions were not explored in prior research.

Chapter Summary

Higher education trends indicate the relevance of online learning in the 21st century in preparing graduates for the workforce (Gray, 2016). Online courses promote active, collaborative experiences using technology mirroring the skills required in jobs (Chiasson et al., 2015). Online discussions provide a space for students to explore, reflect, and build knowledge together (Robinson et al., 2017). Educational technology offers alternative methods to engage students in learning experiences addressing the cognitive presence, teaching presence, and social presence of the community of inquiry (Holbeck & Hartman, 2018; Robinson et al., 2017). Student perceptions of online discussion forums guide course development and faculty development.

The phenomenological study explored student perceptions of the uses of educational technology in discussion forums as a method of promoting engagement and collaboration in online classes in higher education. The thorough review of current literature explored online education, online discussions, the uses of educational technology tools, and the perceptions of students in alignment to transformational leadership and the community of inquiry model of teaching and learning. Transformational leadership and the community of inquiry theory provided a framework for the research.

Enrollment in online education continues to increase. Higher education institutions investigate strategies to increase student collaboration and engagement in online discussion forums by developing a community of inquiry focused on establishing a cognitive presence, teaching presence, and social presence (Garrison, 2017; Garrison et al., 2000). Educational technology provides a tool to increase engagement and collaboration (Robinson et al., 2017). The study filled the identified gap by examining students' perceptions of educational technology implementation in online discussions to engage and collaborate, informing course design and

faculty development. The phenomenological qualitative methodology for the study exploring student perceptions of educational technology use in online discussion forums is identified in Chapter 3.

Chapter 3: Methodology

Students identify satisfaction in online courses when engagement and collaboration activities exist between students and with faculty (Galbis-Córdova et al., 2017). Online higher education institutions explore methods for engaging students in meaningful experiences, including collaborative activities (Chiasson et al., 2015). Merriam and Tisdell (2016) defined a phenomenological qualitative study as using words as data to analyze how participants interpret experiences and construct meaning. The phenomenological study explored student perceptions of the uses of educational technology in discussion forums as a method of promoting engagement and collaboration in online classes in higher education. The study sought to answer the following research questions:

Research Question One: What were the lived experiences of students utilizing educational technology in online courses?

Research Question Two: What were student perceptions of educational technologies in discussion forums as an engagement strategy in online courses?

Research Question Three: What were student perceptions of educational technologies in discussion forums as a collaborative strategy in online courses?

The phenomenological design answered the research questions by exploring students' lived experiences in online discussion forums in higher education. The study design created an opportunity to identify common themes among students on educational technology uses in online discussions related to engagement and collaboration. Identification of the research design and rationale, the researcher's role, the research procedures, including sample population and instrumentation, the data analysis, the reliability and validity, and the study's ethical methods are included in the chapter.

Research Design and Rationale

Understanding how people interpret and construct meaning from experiences requires qualitative research (Merriam & Tisdell, 2016). The qualitative research platform explored the topic's perceptions, looking at how and why, to understand the phenomenon. The qualitative research collected data using interview transcripts, journals, and questionnaires and employed a coding process to analyze the data and find meaning. Qualitative research methods answered the research questions and identified educational technology and online discussion forums' root student perceptions.

A phenomenological design of qualitative research explored students' lived experiences in online discussion forums in higher education. Phenomenological studies investigate people's experiences in everyday life and activities (Merriam & Tisdell, 2016). The research followed Creswell's (2006) interpretive phenomenological design, which allowed examining participants' lived experiences, allowing interpretations of data. The study explored student perceptions to identify common themes of educational technology use in online discussion forums in higher education and the impact on engagement and collaboration. The purpose of the phenomenological study was to access the world as experienced by the participants and make interpretations of the shared experiences, specifically exploring students' perceptions on the use of educational technology to support engagement and collaboration in online discussion forums.

The interpretive phenomenological design used processes explained by Merriam and Tisdell (2016) and explored student experiences' perceptions by bracketing, analyzing, and comparing to identify the phenomenon's essence. The study examined student perceptions based on experiences with educational technology in online discussion forums in higher education. The use of Husserl's phenomenological approach created an understanding between participants and

the world through interpretation and meaning. The phenomenological design allowed exploration into higher education students' world in online courses through individual experiences and developed shared meanings through interpretation.

Role of the Researcher

In the phenomenological study, a human instrument gathers and analyzes data (Cypress, 2018). With experience as a student and instructor of online courses and discussion forums, acknowledging personal feelings of online discussion forums and the use of educational technology as methods of increasing engagement and collaboration was necessary. Before research began, bracketing addressed personal biases and experiences as a student and faculty member in online courses. The research employed strategies of identifying, or bracketing, personal beliefs about educational technology tools in online discussion forums removed biases, judgments, and assumptions freed the investigation to focus on the participants' responses. Epoche, or refraining from judgment, was essential to the phenomenological research design (Merriam & Tisdell, 2016). Alase (2017) identified the data's investigation and interpretation as central to phenomenological research through opportunities for participants to narrate responses without distortion. The candidate deployed the online questionnaire to create a pool of participants and hosted interviews serving as a participant-observer to solicit, conduct, and interpret data, a strategy discussed by Creswell and Poth (2018). The participant-observer role confirmed the limitation of interactions to data collection and analysis with minimal contact outside of the study based on membership in online social media groups. The participants received a recruitment letter to the study and information about the study's purpose (see Appendix A) based on the completion of the online recruitment questionnaire voluntarily (see

Appendix B). The letter included information on the facilitation of data collection, data analysis, and distribution of outcomes.

Research Procedures

The phenomena of interest addressed students' perceptions of educational technology use in online discussion forums in higher education. Aligning to the description of phenomenological research by Creswell and Poth (2018), the study's procedures provided an understanding of several individuals' experiences to support the development of practices for course design and faculty training. The focus of the semi-structured interviews was to understand the shared perceptions or themes of student engagement and collaboration in online discussion forums in higher education and the perceived impact of the use of educational technology.

Population and Sample Selection

Purposeful sampling emphasized an in-depth understanding, providing information-rich data (Merriam & Tisdell, 2016). The phenomenological study's objective was to corroborate and analyze participants' lived narratives using detailed descriptions about experiences in discussion forums in online courses. The use of criterion sampling required participants to meet predetermined criteria, including the phenomenon's experience. The study used snowball sampling, a common form of purposeful sampling, beginning with a few key participants meeting the criteria who refer other potential participants, a strategy described by Merriam and Tisdell (2016). Snowball sampling based on the identified criteria was used to identify the participant pool. The snowball sample was created from a professional online social media forum of online educators, and potential participants forwarded the invite to others who met the criteria. The sample population did not include any participants under the age of 18.

The snowball sample began with a few key participants experienced in an online course in higher education with discussion forums and familiarity with educational technology. Using SurveyMonkey, the questionnaire for participation was shared through an online social media forum with site permission (see Appendix C). The questionnaire asked potential participants to answer questions to confirm alignment with study criteria and was set with logic steps to identify when a potential participant did not meet the necessary criteria. If a potential participant did not meet the criteria, a logic step in the questionnaire displayed a disqualification notification thanking the potential participant for answering the questions. The message shared information indicating the criteria were not met and provided notification of the published study's availability upon completion through dissertation repositories.

Potential participants who met the criteria of completing an online course through higher education and identified personal experience with educational technology received a notification indicating the survey results were received, and if selected, an email would be sent with additional information about participation in the study and the informed consent documents. Snowball sampling of participants experienced in an online course in higher education with discussion forums provided a reasonably homogeneous sample in connecting to the research questions and meaningful participation. In alignment with the suggested participant size by Creswell and Poth (2018), the study explored a group of participants who experienced the phenomenon with a goal of 15 participants. The sample size of 15 provided adequate responses to the point of saturation, where similar responses to interview questions were gathered, and no new insights were noted.

Criterion sampling identified potential participants based on the predetermined criteria ensuring the data collected represents the population. For inclusion, the potential participant (a)

completed an online course with discussion forums, (b) experienced educational technology in online courses, and (c) was 18 years or older. Participants were excluded for not meeting one of the criteria, not completing all the questionnaire components, or not responding to outreach or returning the required informed consent form. The participants cooperated and agreed to inclusion in the research.

The potential participants were invited to participate voluntarily. The interested participants were sent a recruitment email with information on the study's goals, the research questions, and data collection methods (semi-structured interviews) (see Appendix A). Potential participants interested in participating were asked to review the informed consent, including the study's goals (see Appendix D). Addressed in the informed consent document were any potential ethical issues, methods for protecting participant privacy and confidentiality, and a plan for the use of triangulation techniques, including corroboration with participants.

Instrumentation

Student perceptions were gathered through a two-step process. Data collection for participant perceptions consisted of an initial questionnaire (see Appendix B) sent via SurveyMonkey, asking qualifying questions based on the identified participant criteria. The questionnaire confirmed the completion of an online higher education course, identified experience as a student with educational technology in online courses, and verified the potential candidate was over 18 years of age. The questionnaire was deployed in a professional social media group online with permission from the administrator (see Appendix B). When the minimum qualifications were not met, the survey's logic steps informed the potential participant of disqualification. Participants had the option to select to participate in semi-structured

interviews to share additional thoughts. The questionnaire responses ensured the participant pool met the study's criteria.

Semi-structured interviews were conducted based on a core set of open-ended questions using everyday language and associated follow up items identified in the interview guide to solicit a narrative while maintaining consistency and structure in alignment with protocols described by Butina (2015) and Jamshed (2014). The interview was a conversation with a purpose, seeking a description of the participant's lived experiences. The recorded interviews lasted between 30 minutes and 60 minutes and followed the interview guide, which created a systematic way to explore responses. The protocol provided the core questions as well as potential clarifiers to gain insight into student perceptions (see Appendix E). The semi-structured interview questions aligned with the research questions about student perceptions of online discussion forums in higher education and educational technology.

According to Prakash and Pallepati (2016), the research used reliable and valid data collection instruments, demonstrating the ability to gather information necessary for analysis. Based on Merriam and Tisdell (2016), the research instrument's validation included the use of subject matter experts (SME) to review the questions. SMEs provided insight into confusing questions that needed rewording. SMEs scrutinized the tools, scoring questions for relevance, clarity, and alignment to the study's goal, steps in creating valid interview questions as described by Prakash and Pallepati (2016).

Five subject matter experts from various institutions were selected for the validation process, including online students and faculty, faculty with course development experience, and doctoral students not participating in the study. The interview guide and a validation spreadsheet allowed the SMEs to determine the essence of the questions and sought feedback on the

alignment to the research questions. A final interview guide (see Appendix E) was created based on the feedback received, demonstrating alignment with the research questions. A screenshot of the email sent to SMEs for expert validation is included in Appendix F.

Data Collection

Data collection of student perceptions included the use of a questionnaire to identify potential participants. A SurveyMonkey questionnaire was deployed in a professional social media group with administrator permission. The questionnaire identified the completion of an online course in higher education, educational technology experience, and a minimum of 18 years of age. Potential participants meeting the criteria through the logic steps in the questionnaire were asked to further participate in the study by sharing personal identifiers, including name and email address, to schedule semi-structured interviews to provide insights into perceptions of online discussion forums in higher education.

The purpose of the semi-structured interview was to gather general, demographic information about student experiences, as well as personal responses about online experiences, the uses of educational technology, and views on discussion forums in online classes to understand perceptions. Creating an interview guide and protocol included the list of open-ended questions and promoted the conversation's facilitation focused on the specific areas (see Appendix E). The participant-oriented interviews focused on participants sharing the story of lived experiences through individual narration without judgment. The synchronous interviews were held and recorded via Zoom, a web conferencing tool with automatic transcription, as a verbal with an audio and video component to increase the feel of a face-to-face meeting allowing for visual cues in coding, in agreement with Merriam and Tisdell (2016). The participants permitted audio and videotaping, which provided comprehensive data for analysis, including

nonverbal cues such as pauses, raised voices, and visual cues as part of the triangulation of findings. The data from the online questionnaire and the interviews were used for data analysis to identify themes about engagement and collaboration in online discussion forums in higher education.

Data Preparation

After completing the questionnaire, participants followed procedures for informed consent, including the submission of the informed consent form acknowledging awareness of the requirements of participating in the study and participant rights. The data gathered furthered the study and was used for no other purpose, and personal data were carefully managed and organized to ensure confidentiality. The data gathered was stored securely and password-protected, replacing identifiers with a number system to preserve participants' identity. Completed questionnaires collected through SurveyMonkey containing names and email addresses, or personal identifiers, were separated into two files with the personal identifiers removed and stored in a separate, password-secured file, replacing the identifiers with participant numbers as assigned for the duration of the study. The questionnaire responses were clustered, removing personal information to a separate file to set up interviews and for member checking purposes and stored on a password-protected, personal hard drive accessed only for the research study.

The interview transcripts were coded and saved, removing all identifiers on the researcher's password-protected, personal hard drive. After transcription, audio and video recordings were to be maintained in a secure and password-protected location for three years, after which the files will be destroyed. Once the interviews began, participants were identified by the assigned participant number. Personal identifiers were used to set up the interviews and

complete the study's member checking portion to verify the transcription's validity. Personal identification of participants was not included in the results of the study. The process of data analysis included anonymizing individual names and identifiers, as well as institutional information, similar to the process described by Dooly, Moore, and Vallejo (2017).

Data Analysis

The first step in data analysis was bracketing personal biases and judgments in a written journal. The bracketing process removed judgment and interjection of personal opinions, opening the study up to following the participants' data, aligning to the analysis strategies outlined by Alase (2017) and Creswell and Poth (2018). The data analysis required full immersion into the data, consolidating the information to focus on segments to find patterns and themes.

Following protocols outlined by Butina (2015) and Cypress (2018), after the interview, the recording was viewed immediately or shortly after, making notes of considerations. Transcription services were used for the semi-structured interviews. The written transcript was sent to the participant to member check via email to verify the information reflected the interview and perceptions. The participant was asked to send edits, if necessary, to accurately represent the perceptions. Video recordings were maintained on the password-secured website for additional coding of pauses in speech, visual cues, and other clarifying nuances as a piece of triangulation of the findings.

The interview responses were used for data analysis by completing a series of loops, starting with broad categories of managing and organizing data to identifying emergent themes, coding, developing interpretations, and creating a visual representation of the data, strategies outlined by Creswell and Poth (2018). Because of the small-scale and manageable size of data,

coding interview documents and questionnaire responses were manually feasible (Saldaña, 2016). Following the process indicated by Merriam and Tisdell (2016), the interviews' transcripts were uploaded to a spreadsheet allowing line numbering on the left and space on the right to add notes and codes. According to Creswell and Poth (2018), taking notes is the first step in reading the collected data, including writing a general summary of findings and beginning a reflective journal.

The initial notes began the coding process, a technique used to discover or make meaning and requires multiple cycles to generate themes and categories, following protocols of coding described by Saldaña (2016). The coding process provided labels to interview transcripts focusing on the participant's words to detect patterns, categorize, and allow for analysis. The analysis followed a looping process beginning with a review of the interview transcripts, which created initial codes. The initial codes were consolidated to a list of groupings that were reduced to themes. Descriptive codes summarized the data by creating clusters of themes. The clustered categories were compiled to create a visual representation of the data for reporting purposes.

Reliability and Validity

Establishing trustworthiness in the qualitative research was demonstrated by presenting the conclusions and the alignment with the research questions, the data, and the analysis. The study supported a topic worthy of consideration, provided transparent steps, and contributed to the field of online education. Credibility and dependability were established through bracketing, auditing, use of triangulation, member checking, and providing thick, rich descriptions, an essential element of research as indicated by Flynn and Korcuska (2018) and Merriam and Tisdell (2016).

As indicated by Merriam and Tisdell (2016) and Palinkas et al. (2015), gathering student perceptions until saturation created a comprehensive understanding of perceptions of online discussions in higher education to the point of no new substantive information. Validity was demonstrated through two strategies, including member checking and continued clarification of personal biases, similar to strategies identified by Butina (2015). Member checks for interview transcripts validated findings. The study demonstrated trustworthiness through the findings, which made sense based on the data collected, following research procedures identified by Merriam and Tisdell (2016).

Transferability was demonstrated by the ability to generalize findings to the broader population. The description of elements, data, and findings provided thick descriptions of participants' experiences in online discussions in higher education, drawing the reader into the events based on the protocols defined by Creswell and Poth (2018). The study employed auditing processes to support confirmability, including using a reflective journal and member checks. The strategy of reflexivity ensured personal biases did not threaten the credibility of the study. The study elements resonated with readers by demonstrating integrity and creating a level of trust by adhering to ethical standards and scholarly writing elements supporting the qualitative research process described by McLeod (2011).

Ethical Procedures

The validity of the research study included the demonstration and adherence to ethical procedures. Ethical considerations included approvals from the research site through the Institutional Review Board (IRB), protecting the participants' rights, securing data, and reporting on findings mirroring the protocols defined by Cypress (2018). Participants received a letter (see Appendix A) describing the study's purpose, research questions, and participation methods.

Supporting Creswell and Poth's (2018) phenomenological research protocols, when contacting participants, general information about the research and participation options were provided through a consent form, and participation was voluntary. The letter about the study and the consent form confirmed participation was voluntary; no penalties came from not participating, and participants were able to withdraw at any time (see Appendix D).

Audio and video recordings were stored in a password-protected site until the transcription process was completed and shall be maintained securely for three years. Using Creswell and Poth's (2018) research protocols, participant identity was coded and masked in written data with a separate master list stored in a secure location in a different file after transcription for semi-structured interviews. Completed questionnaires collected through SurveyMonkey containing names and email addresses, or personal identifiers, were separated into two files with the personal identifiers removed and stored in a separate, password-secured file, replacing the identifiers with participant numbers as assigned for the duration of the study. The questionnaire's personal information was removed from the data, separated into a different document, and used solely for communication for the semi-structured interviews. The personal information was separated into a different password-protected, secured file for storage.

Interview transcripts were emailed to individual participants to member check the validity of transcripts and make any corrections. The interviews' triangulation through member checking ensured a detailed description, reflective of Cypress's (2018) research strategies. Once the participant indicated the written transcripts reflected accurate responses, the audio and video recordings were moved to a password-protected file secured for three years before destroying. The letter of participation and form for participant informed consent were provided to the IRB

along with the interview and questionnaire protocols for approval before participant outreach and data collection began.

Chapter Summary

The phenomenological study explored student perceptions of the uses of educational technology in discussion forums as a method of promoting engagement and collaboration in online classes in higher education. The phenomenological design employed strategies to review participants' lived experiences focusing on understanding perceptions, including how and why. The methodology chapter explained the study's design, the sample population and size, the data collection protocol, the data analysis, and the ethical expectations to establish trust. The analysis of the data collected from the semi-structured interviews based on the methods presented is discussed in Chapter 4.

Chapter 4: Research Findings and Data Analysis Results

The purpose of the phenomenological qualitative study was to explore the perceptions of students on the use of educational technology to support engagement and collaboration in online discussion forums. Engagement and collaboration activities exist between students and with faculty and are two indicators of student satisfaction in online courses (Galbis-Córdova et al., 2017). Engaging students in meaningful, collaborative learning experiences provide real-world connections aligned with 21st-century skills necessary for the workforce (Chiasson et al., 2015). Included in the chapter are the recruitment of participants and the semi-structured online interview processes. The study's research questions and theoretical framework were used to discuss results and themes collected from the semi-structured interviews.

Burns's (1978) transformational leadership and Garrison et al.'s (2000) community of inquiry theories framed the research questions' exploration. The community of inquiry model focused the study on cognitive, social, and instructor presence as the foundation for purposeful discourse through collaboration and engagement (Collins et al., 2019; Garrison, 2017; Garrison et al., 2000). Transformational leadership theory drew the instructor's role in creating meaningful work, empowering followers, and acting as a role model (Majeed et al., 2019). The established interview guide posed questions aligning to one or more of the three questions. The following research questions directed the study:

Research Question One: What are the lived experiences of students utilizing educational technology in online courses?

Research Question Two: What are student perceptions of educational technologies in discussion forums as an engagement strategy in online courses?

Research Question Three: What are student perceptions of educational technologies in discussion forums as a collaborative strategy in online courses?

The phenomenological research answered the research questions by exploring higher education students' lived experiences in online discussion forums and educational technology. The data analysis provided common themes among students on educational technology uses in online discussions related to engagement and collaboration. The analysis followed the methodology established in Chapter 3. The data collection, data analysis, and results presented in Chapter 4 represent the participants' responses to the semi-structured interview reflecting on the research questions based on the community of inquiry framework and transformational leadership theory.

Data Collection

The 15 participants for the study met three main criteria to ensure alignment with the research investigating the lived experiences of online discussion forums and the use of educational technology. The sample size provided responses to the point of saturation, where common themes were identified, following research protocols indicated by Merriam and Tisdell (2016), Moser and Korstjens (2018), and Palinkas et al. (2015). An online questionnaire using SurveyMonkey was deployed through a professional educators' social media group to identify the potential participant pool. The questionnaire ensured three criteria were met: (a) completion of an online course with discussion forums, (b) experience with educational technology in online courses, and (c) 18 years of age or older. Potential participants who did not meet one of the criteria were immediately disqualified from participation through a logic step in the survey indicating the study results would be available upon research completion through dissertation repositories. The average time for the questionnaire was less than one minute.

From the initial 54 respondents, 29 potential participants met the criteria to move forward in the study and were sent the introductory letter and the informed consent form through email. Of the 29 potential participants meeting the purposeful sample's parameters aligning to the study's goals, 19 returned the signed informed consent. Once the informed consents were received, an email was sent to the individual respondents to set up a semi-structured interview via Zoom, a web conferencing tool, based on interviewee availability. The one-on-one virtual interviews placed the participant in the Zoom room for a real-time dialog and interview, a research strategy identified by Creswell and Poth (2018).

Potential participants were sent an email with the Zoom invite, including the meeting information for the semi-structured interview, within a week of completion of the forms. Meetings were held at a variety of hours based on participant and interviewer availability. Seventeen of the 19 potential participants confirmed interest in the semi-structured interview and scheduled the meeting. Of the 17 potential participants, 15 participants completed the interview. The participants were assigned participant numbers 1 through 15 for data collection. Two respondents did not log in at the predetermined time and did not respond to follow-up outreach to reschedule. The interviews were conducted in Zoom, a web conferencing tool, averaging 35 minutes in length. The interviews were recorded on Zoom and an external password-protected device with permission from the participant. Of the participants, 13 used video and audio, and two elected to use audio-only. The video and synchronous components created a face-to-face or real-time engagement in the interviews.

During a challenging time in the world, the data collection took place with the onset of COVID-19 and shelter-in-place orders across most states. The weeks before the data collection, schools moved all educational experiences, elementary to high school and higher education, to

fully online classes. The move to online education across the school systems created challenges for faculty identifying strategies for authentic teaching and learning experiences, faculty workloads, student experiences, and equality to meet diverse learners' needs (Zhang, Wang, Yang, & Wang, 2020). The education system's strain impacted the 15 participants in various ways, though the 15 participants had previous experiences as students in online education.

Of the 15 participants, 11 were females and four males. Table 1 demonstrates the participant identifiers, the years of experience as a student in online education, the highest degree awarded, and the current role of the participants of the study. The participants were assigned a number from the onset of the interviewing process to protect anonymity. A number was assigned to the participants during the interview. The participant was informed personal data furthered the study and would be managed and organized to ensure confidentiality, a process outlined by Dooly et al. (2017). The numbering convention was consistent from the point the initial questionnaire was completed to the end of interviews and assigned to saved, password-protected data.

Table 1

Research Participants

Participant Identifiers	Years as a Student in Online Education	Degree	Role
1	7	Doctorate	Adjunct and Doctoral Instructor Online
2	17	Doctorate	Tutor and Online Teacher Trainer
3	5	Doctorate student	Adjunct Instructor Residential and Online
4	21	Doctorate student	Academic Leadership, Higher Education
5	14	Doctorate	Adjunct Instructor and Elementary Teacher
6	10	Master's student	Higher Education Leadership
7	8	Doctorate	Full-Time Instructor Residential; Adjunct Instructor Online
8	8	Doctorate student	Adjunct Instructor Online
9	5	Doctorate	Adjunct Instructor Face-to-Face and Online; Marketing Consultant
10	1	Doctorate student	Adjunct Instructor
11	2	Doctorate student	Adjunct Instructor Online; Supervisor at Research Lab; Owner of Training Businesses
12	4	Doctorate student	Adjunct Instructor Online
13	Less than 1 year		Adjunct Instructor Online
14	2	Doctorate	Academic Leadership, Higher Education; Adjunct Instructor Online
15	Not provided	Doctorate	Academic Leadership, Higher Education; Adjunct Instructor Online

The semi-structured interviews followed the interview guide with the use of clarifying questions as needed. Employing research strategies outlined by Butina (2015) and Jamshed (2014), the interview guide employed a core set of open-ended questions using everyday language to solicit participant experiences while maintaining consistency and structure. The interviews required some redirection at points to capture the participants' perspectives as students in online courses. The 15 participants completed a minimum of one semester in online education and completed at least one class in a residential, brick and mortar setting in the academic career. The 15 participants held positions in higher education at the time of the study,

and 13 of the 15 served as an adjunct or full-time instructor in higher education on online platforms.

The semi-structured interview began by confirming the participant reviewed the introductory letter (see Appendix A) and the informed consent (see Appendix D), which was signed and returned before the interview. The 15 participants agreed to allow for audio and video recording of the session for transcription purposes. The interviewee was assigned the corresponding participant number and assured of the plan for securely storing the data. The data collection progressed as identified in the interview guide following the methodology chapter procedures without deviation.

Data Analysis and Results

The semi-structured interviews followed the protocols outlined in the study. Before collecting data, and each day throughout the data collection process, self-reflective journaling removed the researcher's personal bias based on experiences as a student and faculty member in online courses from the process. Following research protocols outlined by Alase (2017) and Creswell and Poth (2018), the analysis included reflective journaling and allowed the ability to acknowledge potential personal bias, and ensured focus as the participant-observer in the interview process.

Drawing from Creswell and Poth's (2018) data analysis process, the study used a spiraling or looping strategy to employ a series of analytic strategies to explore the data. The first step was organizing the data. The recordings of the interviews were transcribed using the transcription software, Trint. An additional review of the individual interviews allowed for edits to ensure the data's accuracy, check for grammatical issues, and word verification without changing the overall meaning. Field notes were incorporated as needed to provide clarification.

The transcripts were sent within four days of the interview to the participants to complete a member check to verify accuracy and to gather any missing information. Using a strategy defined by Merriam and Tisdell (2016), member checking ensured internal validity and credibility by allowing participants to verify the responses shared and fine-tune to capture the perceptions accurately. The transcripts were edited based on participant feedback and saved under a revised document in the password-protected file.

The small scale of the data allowed for hand or manual coding, following the protocols by Saldaña (2016). The spiraling process for data analysis continued with in-depth reviews of the individual interviews with notetaking on the right side of the transcripts to identify key phrases and concepts. Similar to a process identified by Merriam and Tisdell (2016), a filing system was developed to keep track of the notations for reference throughout the data analysis process. The reflective journal's use provided the opportunity to address personal biases, reflect on the data reviewed, and summarize the field notes in alignment with the phenomenological research strategies described by Alase (2017) and Creswell and Poth(2018). The data analysis process included initial coding during transcription, a reflective journal, and verification from members to address data accuracy. The notes helped identify patterns and common ideas discussed in the individual interviews and interesting points to consider for continued data analysis.

Following the analysis process outlined by Creswell and Poth (2018), the individual interviews' notes led to the next step in coding. The analysis resulted in the development of a comprehensive list of common codes and responses shared by participants and identified any outliers. The comprehensive list of codes was used in the next spiral of the analysis process, drawing out the common themes from the tallied instances of codes from the individual interviews and reflecting on the research questions. The codebook established in Appendix G

demonstrates the looping process, including common phrases and codes to themes.

The identified themes in the data analysis spirals were applied to the theories, which provided the study's framework, the community of inquiry, and transformational leadership theories. The themes were the result of coding and categorizing during the spiraling process, a coding procedure outlined by Saldaña (2016). The coding process began with identifying clusters of coded data combined from particular statements into general categories and themes, as identified in the coding book found in Appendix G. A visual representation of the coding book is shared in Figure 2.

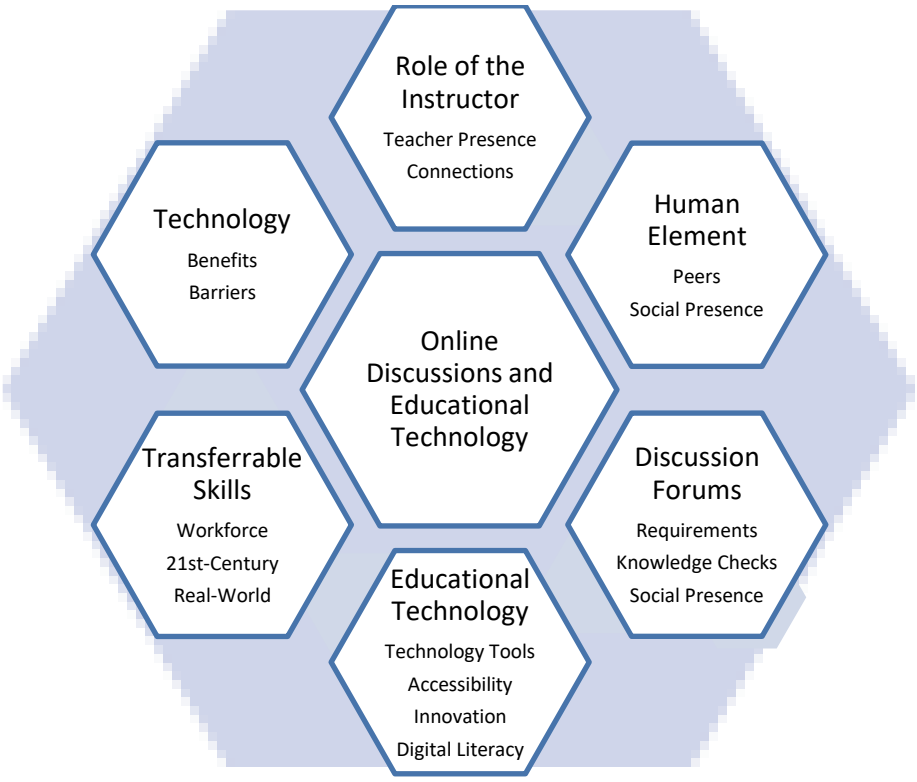

Figure 2. Codebook Summary. The figure shows a summary of Appendix G identifying common phrases and codes with the aligned themes.

The interview analysis focused on the three research questions. The coding process allowed for themes to emerge from common phrases and developed codes. The interviews provided student perceptions on the following:

Research Question One: What are the lived experiences of students utilizing educational technology in online courses?

Research Question Two: What are student perceptions of educational technologies in discussion forums as an engagement strategy in online courses?

Research Question Three: What are student perceptions of educational technologies in discussion forums as a collaborative strategy in online courses?

The codes and themes noted through the spiral analysis supported the topics from the literature review, including themes of discussion forums, the teacher's role, and the use of educational technologies. Themes of the value of the human element, challenges and advantages of technology, and transferrable skills and 21st-century workforce were identified. Figure 3 represents the themes from the data analysis in alignment with the three research questions.

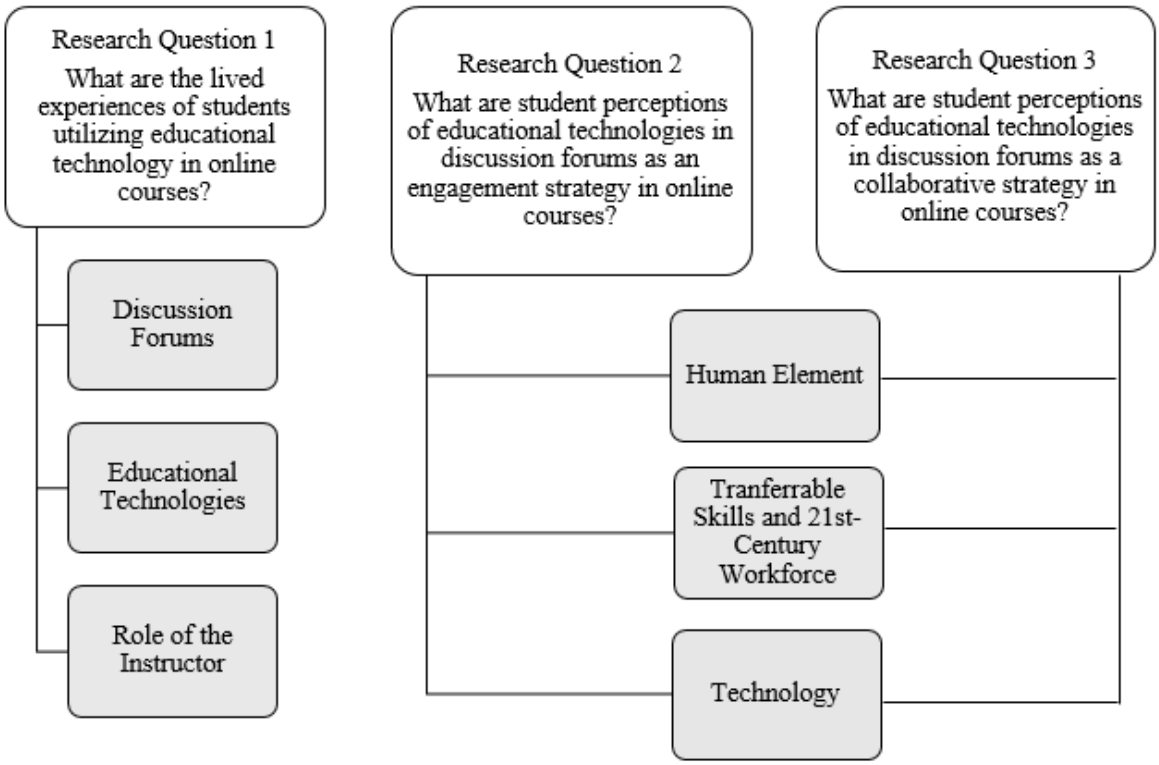

Figure 3. Alignment of Research Questions and Themes. The figure shows the themes identified in the data analysis based on the three research questions.

Research Question One

Research question one explored the lived experiences of students utilizing educational technology in online courses. The 15 participants indicated convenience as the unified reason for selecting an online format for school. Cooper and Scriven (2017) identified convenience, including geographic location, personal time and constraints, and health issues or disabilities as

motivators for enrolling in online education. The participants had some experience in face-to-face classes and online courses. Figure 4 illustrates the participants' experiences on the use of educational technology in online courses based on the results of the criterion questionnaire (see Appendix B).

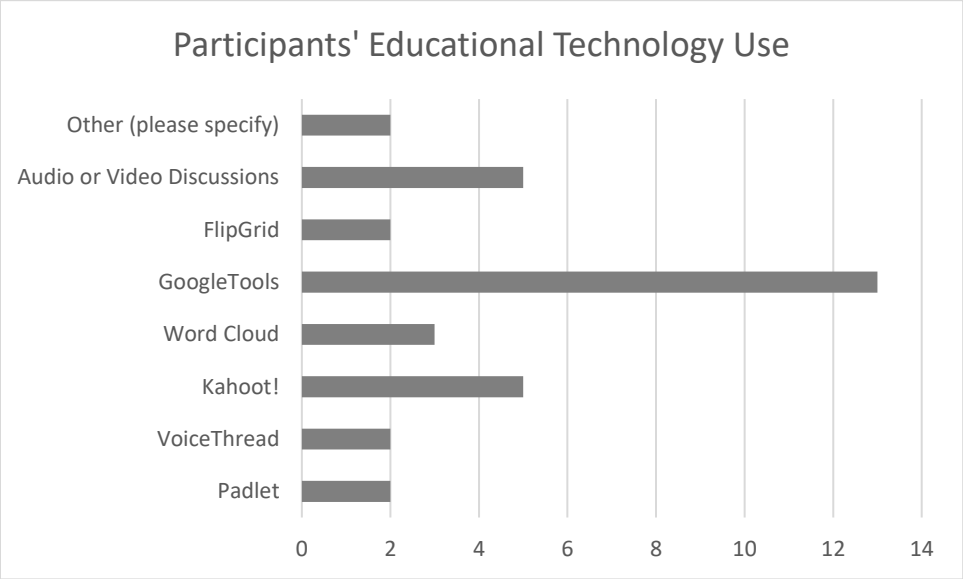

Figure 4. Participants' Educational Technology Use. The figure shows the participants' experiences with the use of educational technology in online courses.

The themes in the data analysis developed based on interpretations of statements from the interviews and were organized with written descriptions, the phenomenological process, according to Saldaña (2016). The data analysis of the interviews resulted in three identified themes regarding the lived experiences of online education and the use of educational technology. The themes included the perceptions of the discussion forums, the uses of educational technology, and the instructor's role. A detailed description of the themes is included.

Discussion forums. Ten participants identified discussion forums as one strategy for engagement and collaboration in online courses. The other five participants shared information

on discussion forums when explicitly asked. Participants indicated various uses for discussion forums, including a space for sharing ideas, offering help, and getting to know people. The discussion forum was a place for collaboration and professional networking. Participant 4 summarized discussions as the place to recollect knowledge, synthesize, and add perspectives based on personal experiences. The participant shared how the activity was used to help critical thinking and learn others' perspectives on the concepts.

As identified by participant 12, one goal of discussions was to "invoke good discourse and discussion," which was essential in creating the questions and facilitation of the conversation. Participant 1 stated engagement and collaboration strategies "are extremely important. You need to work with other people. You need to have the benefit of their experience and their insight on subjects to understand the content you're learning." The participant discussed the engagement and collaboration as missed opportunities in online discussions as the forums posed no value-add to the learner.

Participant 7 identified the value of debate, which stems from quality discussion prompts. The participant said, "It means there are multiple perspectives…if everybody's going to say the exact same thing, then what's my impetus or my incentive to really engage myself or immerse myself in the discussion?" Four participants stated discussion forums were a way to check the box to meet a requirement to indicate participation or engagement. Participant 2 indicated the "discussion boards fall short" when students do not put in much effort.

Twelve participants shared challenges and dissatisfaction with discussion forums in the interviews. Five participants indicated the discussions felt "canned," where courses and prompts were pre-developed with little opportunity for authentic learning experiences. Participant 9 shared, "Sometimes I think that the collaboration is forced…a requirement that you respond to so

many classmates," causing a missing feeling of authenticity. Several participants indicated threaded discussion forums do not provide open dialog but instead require students to regurgitate information found in the course lesson or reading. Discussion forums were referenced as chores and busywork by three participants.

Common problems with discussion forums included the engagement level of peers and the asynchronous nature. Four participants addressed a feeling of frustration when peers put through minimal effort in discussion forums or replied with short "I agree" statements, which did not enhance the discussions. Four participants indicated discussion boards lacked meaningful interaction. One stated the forums could be a "waste of time" and "a rote, mechanical thing" when the instructor uses simple discussion prompts, which do not build connections. Participant 13 addressed concerns of incorrect information shared in reply posts from peers. One challenge identified in discussions was the quality of discussion prompts, which were identified at times to be closed topics without opportunity for opinion.

One strategy six participants experienced in online courses was using hybrid or blended models, which allowed face-to-face interactions at various points of the education process to supplement online work. The participants indicated the strategy allowed the development of relationships in a face-to-face setting, which carried over into the online platforms. The use of live virtual meetings through video conferencing was another strategy used to build relationships in the online classroom.

An element of the online discussion identified by the participants was the creation of the human element through social presence. The online courses felt lonely and isolating, as identified by six participants. The online discussion offered the opportunity to interact with others when the activity created dialog, was a meaningful exchange, and added value to the

course. Participant 7 indicated the asynchronous format of online discussions created a disconnected and disengaged feeling.

Two participants presented as outliers when discussing the use of discussion forums. Participant 6 preferred to work alone, leading to the appeal to completing online courses with a minimal need for communication or collaboration with peers. Participant 5 addressed discussion forums as an area to reflect and process with value on the initial post, but the reply post was completed to meet a quota or requirement.

Educational technologies. Participants identified several educational technologies used in online courses, as identified in Figure 4. The most common educational technology used in online courses was Google Docs, as indicated by 13 participants, followed by video and audio discussions, and Kahoot! as identified by five participants. Educational technology uses included sharing resources, videos and presentations, and transferrable skills necessary for the workforce.

A common form of educational technology addressed by nine participants was the use of web conferencing tools for live, virtual meetings. Participant 1 shared the desire to "do a GoTo Meeting or something and have everybody just present that way and share the dialog." The participant stated video conferencing helped to maintain human interaction. Participant 8 elaborated on weekly virtual meetings as providing a space where "students were given opportunities to present instead of the instructor," allowing students to lead discussions, which was interactive. Participant 8 added the ability to roleplay and brainstorm as part of live, virtual meetings were effective strategies to enhance the online class.

Educational technology allowed flexible learning anywhere, anytime, for anyone, as indicated by seven participants. Participant 11 addressed the speed at which technology moves and the rate information is received. The participant stated, "It allows us to expedite the things

that we need to do in our daily lives."

The caution identified by 11 participants on the use of educational technology in online courses included the challenges of learning the technology programs and accessibility. Participant 4 elaborated on using educational technology to support transferrable skills though indicated the challenge when "people don't know how to make a video when people really don't know how to use these technologies as this is something people should already have learned." Participant 3 stated, "If you can learn it, learn it now," indicating digital skills and knowledge of how to use technology are necessary later in the workforce and society.

Ten participants discussed the importance of understanding why educational technology was used in the course and how the activity aligned with the curriculum. Participant 5 addressed, "Educational technology is only as good as the person using it. And if the instructor is not comfortable with the technology…then sometimes we lose the value of the content an instructor could share." Participant 11 stated, "Technology depends on the instructor using the technology, just because the technology is there doesn't mean that the instructor knows how to use it."

Participant 5 offered an alternative view on educational technology use, stating: "There is a way to get that learning across with or without all the bells and whistles." The participant addressed administrators' focus on the use of educational technology in courses equates to telling an instructor how to teach, stating, "I want you to teach this, and I want you to do it my way." The participant discussed feeling as though educators are "pushing people out because we want the technology more than we want the people."

Role of the instructor. Ten participants addressed the role of the instructor. Participant 14 stated, "It's really driven by the instructor and how savvy they are in engaging and creating a space" for learning comparable to on-ground, face-to-face classes, specifically looking at the

amount and quality of learning. The participant indicated increased instructor engagement fostered a scholarly discussion. Participants identified the instructor's preference and the ability for technology as impacting the effectiveness of the use of educational technology.

Participant 4 stated the "driver of a good discussion board is actually the instructor." The participant described the instructor's role as asking questions, encouraging, and allowing students to incorporate personal opinions and experiences, and diversifying the discussion rather than merely repeating the same responses. Participant 5 described the difference between instructors as having "a really great instructor who popped in every day and made sure that she touched every student every day. I've had some really like, some lackadaisical instructor who might be present, and you might not even know it."

The instructor role played a factor in student engagement and communication. Participant 8 stated, "It's important for even the professors to jump in and be a part of the discussion." The participant addressed the benefit of developing relationships by making discussions applicable by building off interest and tying the information to something personal. The participant valued reflective discussions employing higher-level thinking, which the participant stated the instructor needs to model and teach.

Participant 15 identified the appreciation when the discussion was facilitated using "proper and clear instructions." Eight participants discussed the required minimum word counts and the number of replies as requirements in many online discussions. Participant 9 discussed the forced nature of discussions, "a requirement that you respond to so many classmates," which seemed like the school's way to monitor attendance. The participant indicated a resulting lack of authenticity and found the forums not informative. Participant 12 indicated experiences where discussions were set up with clear directions, though did not believe other students would agree

to the exchange's value.

The value of instructor feedback was identified by Participant 4, specifically in promoting critical thinking. Participant 12 indicated “being able to dig deeper into a question, particularly if I get feedback from my instructor asking me to elaborate on a comment or post.” The instructor's participation and fast feedback were identified as helpful.

The role of the instructor impacts the overall learning in the course. Participant 15 pursued a career in online education “because I wanted to offer so much more than I had…going to school and stuff. So, I wanted to create a better atmosphere than I had going through college.” The participant discussed a personal drive to improve the student experience by improving online classes.

Research Questions Two and Three

Research question two explored the student perceptions of educational technologies in discussion forums as an engagement strategy, and question three explored the student perceptions of educational technologies in discussion forums as a collaborative strategy in online courses. The themes uncovered in the review of the lived experiences identified in research question one created a foundation for the themes established from the interviews for research questions two and three. Three main themes developed out of the interviews, including the human element, transferrable skills and the 21st-century workforce, and technology.

Human element. The human element was identified as one theme in the interviews when exploring the engagement and collaboration in online discussions. Participant 11 elaborated on the challenge of developing a community sense of connectedness. The participant stated, “There is a tradeoff between the convenience of being an online learner versus being an onsite learner and that tradeoff is that you lose the sense of community online, but you gain convenience.”

Participant 1 shared a feeling of missing out with online learning because the focus on collaboration and working with peers was not present in the course.

A preferred method of creating human connections was described as "[o]ne person presenting and then drawing people in with discussions," as identified by participant eight. Three participants indicated the use of discussion forums as a Facebook-style conversation building the social elements as effective strategies in online classes. Participant 10 discussed social media type conversations and stated, "What makes it engaging is you are getting mad about something. That is when you post." The interviewee stated, "That might be true because there is no emotional involvement in the discussion."

Participant 7 discussed the value of the instructor's role in "keeping people feeling connected; to sort of foster that sense of interpersonal connectedness." Participant 10 discussed the human element by sharing resources, supporting peers, and referenced the class as "banded together and made our discussion for that." The participant discussed the value of peer relationships as valuable when the instructor was disengaged.

Participant 5 stated:

> I'm a student who intentionally seeks an online program that does not require me to do group work. So, it's not an important piece of my education to me. If I wanted to collaborate and talk to people all day, I would go to class in a building where I had to talk to people and sit with them at a table.

The participant stated the value in collaborating across technology but did not find the interactions essential to meeting personal goals or completing the online course(s). Another participant stated, "We shouldn't be forced to try to learn how to work together."

Transferrable skills and the 21st-century workforce. Participants addressed the use of technology and digital literacy. Participant 9 shared the value in using "video posts, and that is to help students prepare for a world in which they're not just writing their presentations, but they're actually presenting them." The use of video posts in discussions helps students hone the presentation and speaking skills necessary in the workforce.

Preparing students for higher-level thinking was central to education. Participant 11 indicated using different types of technologies provided tools and developed skills necessary to move forward in careers, offering real-world scenarios. Online simulations were identified as an educational technology tool that provides authentic applications of learning. Participant 14 stated:

> [T]his is just what 21st-century education is all about, and I think 21st-century way of life, quite frankly, know if we're serious about what we're preparing people to experience when they get out in the workforce…people have to have the ability to experience this as part of their education.

Technology. Incorporating educational technology into online courses requires consideration. Figure 5 summarizes common themes of educational technology use in online discussions, including benefits and barriers. Identified benefits for educational technology use include motivation, engagement, 21st-century skills, and the ability to implement real-world scenarios into learning. Barriers to using educational technology were identified as access, cost, usability, and student comfort levels. In the interviews, seven participants identified assumptions about access to a device and the internet when taking classes online. Participant 11 said, "We need to overcome and stop assuming that everybody has an iPad."

Figure 5. Benefits and Barriers to Educational Technology Use in Discussions.

The 15 participants addressed the benefits of the use of educational technology in online courses. Participant 12 elaborated on a motivator for the inclusion of educational technology as "the ability to increase engagement with classmates and the instructor, having different tools to use…appeal to different types of learners, different types of students." Participant 15 discussed the benefit of "actively learning the material." Nine participants identified technology as "the future" and valuable for students to learn now. Seven participants indicated the use of educational technology allows for currency and real-world connections.

Some educational technologies require students to leave the learning management system to log into a separate website. Participant 13 indicated technology requiring logging into a different website was not preferred though the course's overall success increases with the use. Participant 9 indicated, "Introducing another piece of technology into another piece of

technology can be challenging.” The participant continued stating, “Classrooms designed for virtual worlds can become cumbersome, and be very difficult to know where to find all the pieces to complete an assignment.” A common idea among interviews was the importance of identifying if the technology's use takes longer than traditional learning methods such as written discussion posts.

Reliability and Validity

The study followed protocols to ensure validity, credibility, and transferability. The transparent steps outlined in the data collection and the data analysis processes established trustworthiness and demonstrated alignment between the study's framework and the research questions. The research analysis employed strategies defined by Flynn and Korcuska (2018) and Merriam and Tisdell (2016), including the use of bracketing through reflective journaling, member checking, and the development of thick, detailed descriptions, created credibility and dependability. The 15 participants allowed data collection to the point of saturation and created a comprehensive understanding of students' perceptions in online discussions and educational technology uses. Following the qualitative research protocols identified by Butina (2015), validity was demonstrated using member checks and reflective journaling.

Chapter Summary

The phenomenological study explored student perceptions of the uses of educational technology in discussion forums as a method of promoting engagement and collaboration in online classes in higher education. The semi-structured interviews solicited insights from the student perspective on engagement and collaboration strategies in online discussions. The 15 participants identified convenience as the primary reason for completing online courses. Ten participants identified the use of discussion forums as an engagement and collaboration strategy,

and 10 participants described the role of the instructor as playing a vital role in the quality of the online course. Diverse responses were gathered on the use of educational technology in online discussions, including benefits such as motivation, 21st-century skills, and meeting the needs of diverse learners, and barriers such as cost, accessibility, and technology challenges.

The data collection and analysis procedures provided an in-depth review of the three research questions in alignment with the community of inquiry and transformational leadership theories, which guided the study. The investigation offered clear, concise, and descriptive details about the data collection process and the spiraling or looping strategy employed to uncover the six themes, discussion forums, educational technologies, the role of the instructor, the human element, transferrable skills and the 21st-century workforce, and technology. The discussion and conclusion of the study are provided in the next chapter.

Chapter 5: Discussion and Conclusion

Student enrollment rates in online education continue to increase though satisfaction and success continue to be areas of concern for higher education institutions. Athens (2018) addressed student dissatisfaction finding dropout rates in online classes exceed traditional or hybrid results by more than 3%. The identified student dissatisfaction included a lack of communication and a feeling of isolation resulting in retention issues in online education. The purpose of the phenomenological qualitative study was to explore the perceptions of students on the use of educational technology to support engagement and collaboration in online discussion forums. The study examined students' lived experiences in online courses and online discussion boards using educational technology to identify common perceptions and fill a literature gap. Garrison et al.'s (2000) community of inquiry framework and Burns's (1978) transformational leadership theory guided the exploration of the three research questions.

Research Question One: What were the lived experiences of students utilizing educational technology in online courses?

Research Question Two: What were student perceptions of educational technologies in discussion forums as an engagement strategy in online courses?

Research Question Three: What were student perceptions of educational technologies in discussion forums as a collaborative strategy in online courses?

The data analysis in Chapter 4 uncovered six key themes in response to the three research questions. The common themes found in the study of research question one regarding students' lived experiences in educational technology uses in online courses included the discussion forums, the types of educational technologies, and the instructor's role. Garrison (2017) identified the instructor's role as an essential component of building the community of inquiry.

Exploring research questions two and three regarding the perceptions of educational technologies in discussion forums as engagement and collaboration strategies yielded similar themes of the human element, transferrable skills and the 21st-century workforce, and technology. The comprehensive analysis of the data provided new knowledge and awareness in response to students' lived experiences in online courses.

The research explored the use of educational technologies in online courses. Examining the student perceptions of educational technology use in discussion forums as engagement or collaboration strategies was not located in prior research. The qualitative study of student perceptions included semi-structured interviews to understand the lived experiences in online courses, discussion forums, and using educational technology in online classes. Figure 2, found in Chapter 4, summarized the findings, interpretations, and conclusions reflecting on the three research questions and the six identified themes. The limitations and recommendations provided address the validity and transferability of the study. The study outcomes demonstrate implications for leadership.

Findings, Interpretations, and Conclusions

As a result of the detailed literature review in Chapter 2, the role of transformational leadership theory and the community of inquiry framework in reducing learning isolation, increasing satisfaction, and establishing engagement and collaboration in online courses was explored. Increased enrollments in online higher education have resulted in decreased satisfaction due to poor course design, lack of community and communication, and an elevated sense of isolation (Athens, 2018; Delmas, 2017). The study explored students' lived experiences in online courses with discussion forums and the use of educational technology. Convenience and flexibility were a common reason for taking courses online for the 15 participants in the

study. The 15 participants held positions in higher education as adjunct instructors or administrators at the time of the study.

The peer-reviewed journals examined in the literature review identified the value in building a community of inquiry by drawing learners together to create knowledge through critical thinking, debate, and discourse (Berry, 2018; Galbis-Córdova et al., 2017; Garrison et al., 2000; Tibi, 2016). Discussion forums are one area of online learning where students explore, reflect, and build knowledge together (Robinson et al., 2017). Online discussion forums' goal is to engage students in higher-level thinking and demonstrate critical thinking (Foo & Quek, 2019). Educational technology provides an alternative method of engagement for students in learning experiences and addresses the community of inquiry through enhancing teaching presence and social presence (Holbeck & Hartman, 2018; Robinson et al., 2017).

The study explored students' perceptions of the use of educational technology in online discussions and the implications of engagement and collaboration. The study's findings indicated 12 of the participants perceived an alternative to threaded discussions would be an improvement to overall satisfaction in online learning. Eleven participants identified extensive technology barriers such as accessibility, digital literacy skills, and overwhelming the content by learning new technology. The literature review found educational technology, including the use of videos, simulations, real-world scenarios, and collaboration, increased motivation in online learning (Milman & Wessmiller, 2016).

The community of inquiry framework paired with transformational leadership theory guided the study. The 15 participants highlighted the lived experiences as a student in online courses. Six themes emerged from the exploration of the three research questions. The themes demonstrated the perceptions of online learning and the use of educational technology to

promote engagement and collaboration in discussion forums identified in the following sections.

Discussion Forums

The study results supported the students' views of discussion forums as an engagement and collaboration strategy in online education. Berry (2018) discussed a common discussion forum in online courses where students were expected to provide an initial response to discussion prompts followed by required replies to three or four peers during one week. The 15 participants unanimously shared insights on threaded discussion forums using pre-developed prompts with weekly expectations for participation. Jacobi (2017) identified the value in authentic, relevant forums for students to engage in thought-provoking conversations. Twelve of the current study participants shared challenges and dissatisfaction with discussion forums in the threaded format, indicating discussions felt "canned," forced, and a place of regurgitation and not authentic opportunities for critical thinking and discourse.

While the perceptions of the purpose of discussion forums aligned with the literature review, the lived experiences did not foster critical thinking skills, which were identified by Swart (2017) as a goal of the online course interactions. Garrison (2017) identified the need to create deep and meaningful learning, which moves beyond passive information sharing. The study's findings indicated a need for further exploration to identify strategies to improve the student experience by moving discussions to meaningful exchanges of information through authentic learning experiences. The study results supported the importance of discussion designs addressing real-life scenarios and cases thoughtfully and attractively, in alignment with the findings of Kilis and Yildirim's (2019) research.

Educational Technology

Participants in the study experienced multiple educational technologies in online courses.

Similar to Robinson et al.'s (2017) findings, the study's outcomes supported the importance of incorporating educational technology as a supplement to the content and not a deterrent from learning. Eleven participants addressed learning new technology as a barrier. Implementing educational technology was more than embedding the tool in the learning management system as an assignment or discussion forum. The use of educational technology required awareness of online teaching and learning pedagogy, thoughtful planning, and knowledge of lesson content to ensure student learning is focused on course content and not on using the gaming tool or resource, further supporting findings from Robinson et al. (2017). Aligning to the research on the community of inquiry by Garrison et al. (2000) and Garrison (2017), the findings of the study supported the value of course design and implementation focused on creating deep and meaningful educational experiences through practices to support the development of individuals prepared for society's needs through the formation and construction of knowledge.

Participant 5 addressed educational technology's effective use as not "just bells and whistles," but instead strategic use for educational purpose and value. Garrison (2017) discussed the past problems with faculty too focused on the technology and not on the quality of the pedagogy resulting in deficiencies, limitations, and learner dissatisfaction. The study's findings supported Collins et al.'s (2019) research, which found asynchronous video messaging tools did not prove to be more effective than text-based responses in discussion forums. The current research supported Alkhataba et al. (2018) in defining the goal of integrating technology as promoting social interactions in collaborative spaces. The study supported the need for careful consideration when implementing educational technology in online courses to ensure the use supports mastery of the content.

Role of the Instructor

The community of inquiry framework places value on the instructor presence developed in online courses. The instructor draws the elements of a community of inquiry together by providing a balanced relationship between learning outcomes and the individuals' needs while encouraging active engagement (Garrison, 2017). The study's findings supported the importance of the instructor's role in developing and implementing meaningfully designed online courses, which engage learners, resulting in positive learning experiences, as discussed in research by Cutsinger et al. (2018). Similar to findings from Gonzales et al. (2019), the research indicated a transformational leader demonstrates instructor presence by developing meaningful exchanges in discussions, resulting in higher levels of thinking and collaborative construction of knowledge. Ten participants identified the instructor's role as vital in creating the online environment, establishing connections with peers, and fostering learning.

The results of the study identified the role of the instructor as the cornerstone of educational experiences, impacting student outcomes and satisfaction by stimulating learning, intervening to provide expertise, setting goals, and giving feedback, similar to findings in studies by Dempsey and Zhang (2019) and Eom and Ashill (2016). The study findings aligned with the importance of teacher presence in online discussions focusing on creating a dialogue rather than a monologue, as discussed by Jan and Vlachopoulos (2018). Participants identified value in active participation and leadership of the instructor supporting the study by Gonzales et al. (2019), indicating the teacher's role provides a foundation for dialogues in discussions.

Human Element

The human element in online classes in the study equated to the social presence in peer-to-peer communication and the interaction with instructors in alignment with research by Collins

et al. (2019) and Jacobi (2017). The findings supported the literature by Delmas (2017) and Stern (2015), indicating technology promotes a community in online learning, creating personal connections, shared purpose, and collaboration by humanizing participants. Social presence, identified as the ability to humanize a course, focused on creating connections and collaboration in knowledge development (Collins et al., 2019).

While the community of inquiry focuses on the importance of social presence, the human element of social interaction was not found to be essential for mastery of content and satisfaction in online courses for the 15 participants in the current study. Delmas (2017) and Jacobi (2017) indicated students identify the lack of one-on-one interaction between peers and with instructors as depersonalization leads to dissatisfaction in online learning. The findings of the current study regarding students' perceptions of using educational technology to support engagement and collaboration in online discussion forums suggested students may or may not feel the communication, engagement, and collaboration with peers was essential to the learning environment.

Transferrable Skills and 21st-Century Workforce

The research suggested participants identified the value of transferrable skills, including digital technology skills, which are necessary for the 21st-century workforce. As Swart found, the 21st-century learner requires developing technology skills to prepare for global work. Results of the study aligned with the literature's focus on preparing the graduate for the 21st-century workforce. Participants identified the acquisition of transferrable skills of the 21st-century world as a benefit to educational technology in online courses. The responses coincided with the literature review highlighting the need to cultivate online collaborative skills to prepare students for a workforce where engaging with colleagues across the world is common, including Moore

(2016) and Reeves et al. (2018).

Technology

The results of the study suggested the implementation of educational technology requires consideration. The findings indicated the benefits of using educational technology include motivation, engagement, transferrable skills, and real-world scenarios supporting the research. The participants identified educational technology in online learning as a strategy to increase motivation, engagement, and success, as suggested by Sánchez-Mena and Martí-Parreño (2017). The study outcomes supported the benefits of using technology to support the acquisition of digital skills required for the modern-day, 21st-century world by increasing interactive, student-centered learning, similar to the findings of Alkhataba et al. (2018).

Moore (2016) identified technology as a tool for developing collaborative learning experiences to support student development of skills for the workforce. Participants indicated technology as vital to establish digital literacy and the need for students to acquire the skills necessary for success in the future. Garrison (2017) elaborated on the community of inquiry's value in a 21st century online classroom, focusing on mirroring the connectivity and collaborative skills needed for success in an evolving society.

The findings of the study aligned with prior research on the barriers to using technology in online courses. Seven participants identified accessibility, cost, usability, and comfort levels as challenges in implementing educational technology in online courses. Learning new technologies was indicated as an obstacle for students and instructors, supporting Portugal's findings (2015). The study supported research indicating the tool's effectiveness was impacted by the instructor's knowledge and the strategies to use the tool to support the lesson's content without imposing additional challenges, similar to the outcomes found by Robinson et al. (2017).

Summary of Findings

The results of the study supported the research indicating the importance of intentional planning when using educational technology. In alignment with the current investigation and the study by Robinson et al. (2017), the findings suggested the availability of technology is not enough; the integration required careful consideration to support student learning. Supporting Collins et al. (2019) and Stern (2015), course design and instructor roles were indicated as essential elements of the online learning environment. The role of the instructor was identified as an element affecting student satisfaction. While the development of a community of learners supported the findings of Delmas (2017), Garrison (2017), and Garrison et al. (2000), some participants stated collaboration and engagement with peers were not essential to learning. The findings existed with participants experienced in the graduate level, post-secondary education, and experienced teaching in online platforms.

Limitations

Limitations were uncontrolled weaknesses in a study's design or implementation (Theofanidis & Fountouki, 2018). The phenomenological research investigated the perceptions of students on the use of educational technology to support engagement and collaboration in online discussion forums. The study reduced limitations and established trustworthiness using transparent steps aligning the research questions, the data, and the analysis of the research conclusions based on the process identified by Merriam and Tisdell (2016).

The interview guide provided questions aligned to the research questions. A limitation to the interview questions existed in the identified need for redirection or clarification. Before data collection, subject-matter experts reviewed the semi-structured interview questions to determine the instrument's reliability and validity in gathering the information necessary for the analysis

using a protocol discussed by Prakash and Pallepati (2016). Further piloting of the interview questions would benefit future studies.

The research required personal bracketing to acknowledge and minimize biases to reduce potential threats to the study's credibility. A reflective journal maintained throughout the study bracketed personal biases to ensure an openness to the data collection, allowing the participant responses to be free from judgments and assumptions, strategies described by Butina (2015) and Merriam and Tisdell (2016). The strategy of reflexivity ensured personal biases did not threaten the study's credibility. Credibility and dependability were established through bracketing, auditing, triangulation, member checks, and thick, rich descriptions following qualitative research procedures identified by Flynn and Korcuska (2018) and Merriam and Tisdell (2016). Per the recommendations found in Butina (2015) and Saldaña (2016), the study included member checks of interview transcripts allowing the participant opportunity to reflect on responses and ensure the data's accuracy and validate the findings.

A primary limitation of the study was the participants' backgrounds, education level, and work experience. The 15 participants met the criteria of completing a minimum of one course in online higher education and experiencing the use of a minimum of one educational technology tool in the online course. According to Creswell and Poth (2018), phenomenological studies collect data from individuals with lived experiences. The participant pool was comprised of people who completed graduate and doctoral level online classes and held a job in higher education, with 13 serving as adjunct instructors in online education, as identified in Table 1 in Chapter 4. Additional research is necessary to determine transferability across undergraduate and graduate levels of post-secondary education and solicit students' perceptions without online teaching experience.

The phenomenological study consisted of 15 semi-structured interviews, a relatively small sample size. Theofanidis and Fountouki (2018) identified a small participant group as a limitation. The sample size provided adequate responses to the point of saturation, and no new insights were noted. Transferability was demonstrated by the ability to generalize findings to the broader population. The results are transferable to students with similar participant experiences, but not necessarily to students in undergraduate and graduate levels of post-secondary education or participants without teaching experience in online education.

Recommendations

The phenomenological study focused on the lived experiences of students in online courses. The current study's findings aligned with the literature review indicating using educational technology does not equate to increasing engagement and collaboration. Eleven participants cautioned about the use of educational technology, citing challenges of learning the tools and accessibility. The 15 participants unanimously identified the benefits of using educational technology in increasing digital skills necessary for the workforce.

The instructor's role was found as instrumental in the effectiveness of the use of educational technology, learning, and student satisfaction in online discussions. Findings suggested the use of educational technology alone does not increase or decrease satisfaction levels. The study's outcome indicated the need for faculty and course developers to employ strategies in the design of online discussions to intentionally foster critical thinking in support of the research by Foo and Quek (2019) and Robinson et al. (2017). The course design and role of the instructor were identified as impacting online learning perceptions regardless of educational technology use.

Further research is necessary to determine if associates, bachelors, masters, or doctoral level courses in post-secondary education affect the experiences' overall perceptions. The participants completed or took classes at the doctorate level during the online education experience. The purposeful criterion sample informed the research based on students' similar lived experiences in online courses with discussion forums and educational technology experience. An examination of undergraduate and graduate levels in post-secondary education will determine if the findings are generalizable across sectors. The participants of the study held positions in higher education as online adjunct faculty or administrators. Additional research is required to determine if the participants' position as an online educator influenced the values or themes identified in the study.

Course design and faculty development should focus on intentional planning and implementation of collaborative and engagement activities to supplement the course content, as supported by Robinson et al. (2017). The instructor's role in online education should be central in professional and teaching development to ensure strategies to create social learning are carefully planned. The instructor should select activities to support 21st-century, transferrable skills while ensuring not to overpower the mastery of the course's competencies.

Implications for Leadership

The study's implications for leadership included the importance of elevating the instructor's role in online courses. The findings of the elevation of the role of the instructor supported the literature of transformational leadership, which focuses on satisfaction, motivation, and commitment (Anderson & Sun, 2017). Exploring Burns's (1978) theory, instructors employing transformational leadership strategies increased engagement by promoting higher motivation levels centered on instructor-student interactions. The study indicated

transformational leaders as instructors engage followers, positively affecting students by increasing feelings of importance and working on meaningful tasks. The results of the study demonstrated the active leadership role faculty play in learning experiences.

Leaders of Higher Education

The study's results supported leaders of higher education in the exploration of student satisfaction in online courses. The findings suggested the level of student and faculty engagement in online courses affects student satisfaction in support of Galbis-Córdova et al. (2017). As explored by Robinson et al. (2017), the development of courses and the strategies for faculty implementation required careful consideration of educational technology use to support 21st-century skills without distracting from the content of the course. The study results indicated leaders in higher education institutions need to determine strategies to meet students' needs and increase satisfaction in online environments. The study provided insights on course development and the teacher's role in creating engaging and collaborative environments.

Leaders of Faculty

The study's findings focused on the course development and faculty implementation of the online environment, which may be supplemented by educational technology. The findings identified the role of the instructor as central to student satisfaction and persistence. Student perceptions indicated using educational technology is essential for the development of transferrable skills necessary for work in the 21st century. However, the role of the instructor impacted practical use. An instructor's presence in the community of inquiry and as a transformational leader focused on learning through active, creative, and collaborative engagement, indicated by Garrison (2017). The focus on faculty development supported

institutions in providing educational experiences aligned to preparing graduates for a global workforce.

Leaders of faculty may benefit by using the study's findings to create development plans, workshops, and training to enhance the instructor's role in the online course. The study supported Belcher et al. (2015) in determining the value of the instructor's role in promoting critical thinking and discourse in online discussions. As discussed by Robinson et al. (2017), a central piece of faculty development in online education included strategies for creating the human element to engage students in critical thinking, discourse, and building knowledge. The findings elevated the importance of the faculty's role in online courses in providing the foundation for teaching 21st-century skills.

Personal Leadership

Personal leadership skills evolved by examining Burns's (19788) transformational leadership and Garrison et al.'s (2000) community of inquiry framework. The study's outcomes provided insight on leadership skills for working with faculty in online courses and understanding student experiences. The research study demonstrated the importance of removing biases during data collection on the lived experiences of the phenomena and bracketing personal beliefs allowing for thick, descriptive analysis of the data to conclude from the participant interview responses. The leader employed strategies to remove personal bias to engage followers.

The transformative leader developed an understanding of strategies to identify the follower's satisfaction, motivation, and commitment, as described by Anderson and Sun (2017). Understanding transformational leadership and the instructor's role empowered the leader to model and mentor teachers, elevating the faculty member's role in the online classroom. The

leader focused on developing and coaching conversations to encourage the faculty member to pursue essential and meaningful work as transformational leaders in the online classroom.

Conclusion

The purpose of the phenomenological qualitative study was to explore the perceptions of students on the use of educational technology to support engagement and collaboration in online discussion forums. The study suggests educational technology may be one piece of the solution to creating engaging and collaborative environments, though course designers and faculty need to consider the technology challenges and barriers for successful implementation. The study's outcome implies the instructor's role is the foundation for online learning and a central factor in student engagement and satisfaction. The instructor's knowledge and intentional use of educational technology require careful consideration to ensure the implementation does not impede learning. The use of educational technology supports student development of 21st-century skills necessary for the workforce, though should not overpower the value of learning the lesson's content or mastering the course's competencies.

The study indicated that student perceptions of discussion forums and educational technology depend on the faculty member's level of engagement, the expectations, and the forum's goals. The community of inquiry framework, which guided the research, focused on the cognitive presence, social presence, and teaching presence (Garrison, 2017; Garrison et al., 2000). The community of inquiry placed value on the interactions between students in building knowledge and the instructor's role in creating meaningful experiences (Garrison, 2017; Garrison et al., 2000; Robinson et al., 2017). Educational technology in online courses was identified as essential in preparing graduates for the workforce. However, the barriers to implementation might outweigh the benefits. The study indicated a need for careful consideration in

implementing educational technology to support digital skills development. Satisfaction in the online environment stemmed from the teacher presence, which is a factor in the community of inquiry and supports the transformational leadership theory.

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Appendix A: Recruitment Letter

March 17, 2020

Julie Lawrence
1633 Masters Court
Naperville, Illinois 60563

Hello,

My name is Julie Lawrence, and I am an Academic Dean at the Aurora and Mokena campuses of Rasmussen College. I am also a doctoral candidate in the field of Educational Leadership and Online Education through American College of Education. I am writing to let you know about an opportunity to participate in a dissertation research study about student perceptions of educational technology in online course discussions in higher education. I am conducting a qualitative, phenomenological study exploring student perceptions on educational technology in online discussions in higher education as a method of engagement and collaboration.

The purpose is to identify common themes to inform course design and faculty development. Participants in the study provide insights on the following research questions, which guide the study:

1. What are the lived experiences of students utilizing educational technology in online courses?
2. What are student perceptions of educational technologies in discussion forums as an engagement strategy in online courses?
3. What are student perceptions of educational technologies in discussion forums as a collaborative strategy in online courses?

Three methods of data collection for the study include questionnaires, interviews, and member checking. Agreement to be contacted for more information does not obligate you to participate in this study. Your participation in the study is voluntary, and there is no penalty for not participating. If you do not wish to participate, you may withdraw at any time.

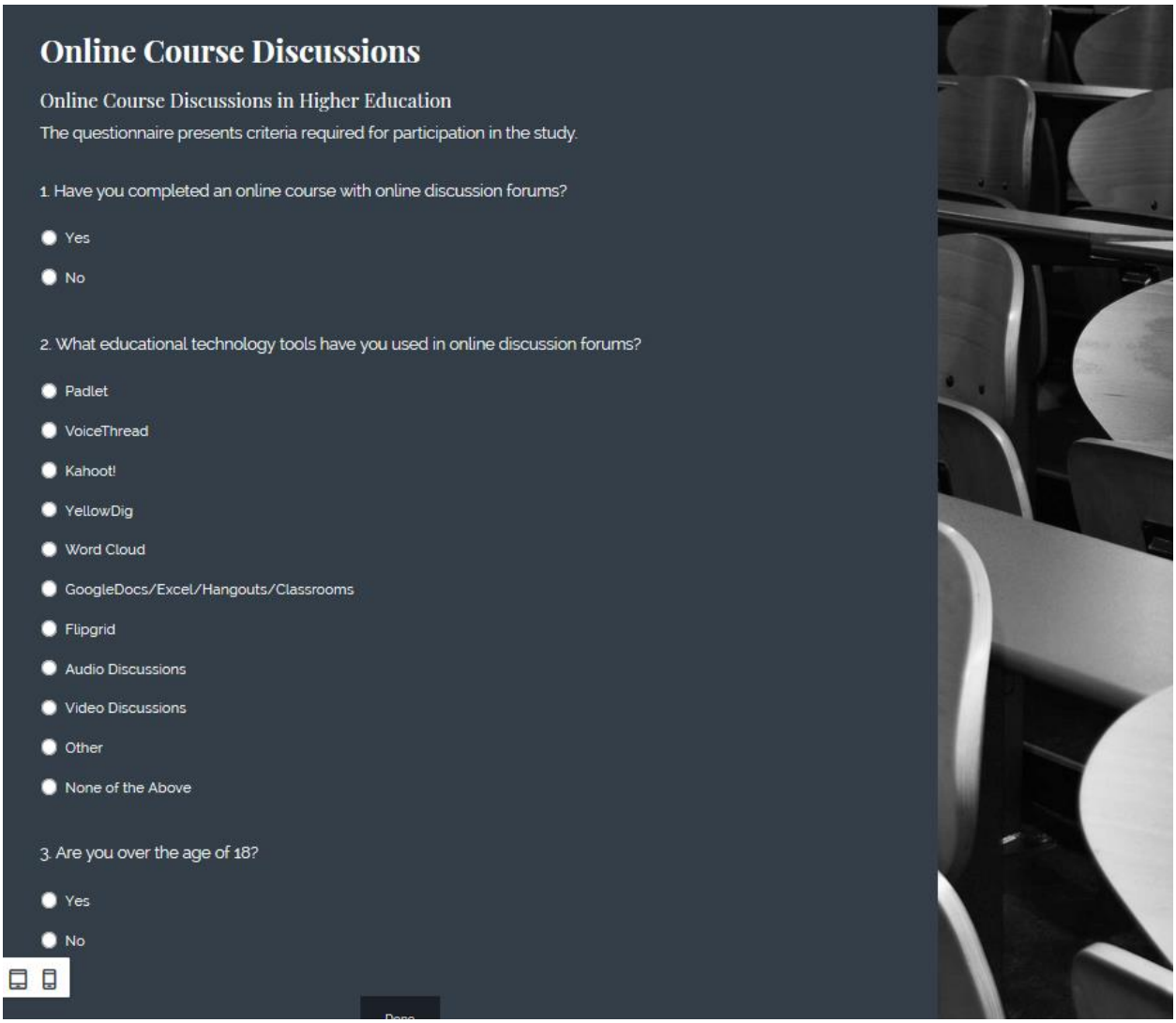
I may publish the results of this study; however, I will not use your name or share any information you provided. Your information will remain confidential and secured. If you would like additional information about the study, please call 630-707-7789 or email at j-lawrence@att.net.

Thank you again for considering this dissertation research opportunity.

Sincerely,

Julie Lawrence, M.Ed.

Appendix B: Participant Questionnaire



Online Course Discussions

Online Course Discussions in Higher Education

The questionnaire presents criteria required for participation in the study.

1. Have you completed an online course with online discussion forums?

- Yes
- No

2. What educational technology tools have you used in online discussion forums?

- Padlet
- VoiceThread
- Kahoot!
- YellowDig
- Word Cloud
- GoogleDocs/Excel/Hangouts/Classrooms
- Flipgrid
- Audio Discussions
- Video Discussions
- Other
- None of the Above

3. Are you over the age of 18?

- Yes
- No

Appendix C: Letter of Intent

[redacted] Thu, Apr 9 at 12:24 PM

Thank you for the response.

I am a doctoral candidate at the American College of Education with approval for the dissertation proposal through IRB through ACE to complete my dissertation research between now and summer. I serve as an academic dean of two campuses of Rasmussen College in the Chicagoland area and am pursuing a doctorate in educational leadership and online education.

The title of my dissertation is "Student Perceptions of Educational Technology in Online Discussions in Higher Education." The phenomenological study proposes the use of SurveyMonkey to gain potential participants to students (or former students) and semi-structured interviews (through web conference tools) to assess student perceptions of online discussion forums and the use of educational technology, as a tool to enhance online discussions, specifically collaboration and engagement.

I am seeking a minimum of 15 participants (current or former students), who have experienced online discussions including threaded, written discussion forums and educational technology enhanced discussions to engage and create collaborative experiences.

I have been approved through the IRB process from the American College of Education. I understand there are approvals and IRB considerations for other student groups as well.

Important Contacts for this study include:

Principal Investigator: Julie Lawrence E-mail: j-lawrence@att.net Phone: 630-707-7789

Dissertation Chair: E-mail: Krista.allison@ace.edu Phone: 417-298-2348

Thank you for your consideration.

Please let me know if you have any questions I can answer.

Thank you for your consideration.

Julie Lawrence

j-lawrence@att.net

630-707-7789

[redacted] Thu, Apr 9 at 12:28 PM

To: Julie

Hi... what a wonderful institution. I work there as well and happily!

Happy to have you share this in the group. Please note that I approved it so the moderators don't take it down. Thank you and good luck!

tbg [redacted]

Show original message

Appendix D: Informed Consent Document

Prospective Research Participant: Read this consent form carefully and ask as many questions as you like before you decide whether you want to participate in this research study. You are free to ask questions at any time before, during, or after your participation in this research.

Project Information

Project Title: Student Perceptions of Educational Technology in Online Courses in Higher Education

Researcher: Julie Lawrence
Organization: American College of Education
Email: j-lawrence@att.net **Telephone:** 630-707-7789

Researcher's Faculty Member: Dr. Krista Allison
Organization and Position: American College of Education, Dissertation Chair
Email: Krista.allison@ace.edu

Introduction

I am Julie Lawrence, and I am a doctoral candidate student at American College of Education, conducting research under the guidance and supervision of my Chair, Dr. Allison. I will give you some information about the project and invite you to be part of this research. Before you decide, you can talk to anyone you feel comfortable with about the research. This consent form may contain words you do not understand. Please ask me to stop as we go through the information, and I will explain. If you have questions later, you can ask them then.

Purpose of the Research

You are being asked to participate in a research study, which will assist with understanding student perceptions of educational technology in online discussions in higher education as a method of engagement and collaboration. This qualitative study will examine the experiences of students in online courses with discussion forums. Through the investigation of student perceptions, course design and faculty development will be explored to implement best practices for engagement and collaboration in online higher education.

Research Design and Procedures

The study will use a qualitative methodology and phenomenological research design. Questionnaires will be disseminated via social media membership groups and email to potential participants to determine interest and if the study criteria are met. Participant interviews through web conferencing tools will be scheduled once the questionnaire is complete and informed consent forms are collected. The study will comprise of 15 participants, randomly selected from responses.

Participant selection
You are being invited to take part in this research because of your experience as an online student who can contribute much to the perceptions of online discussions in higher education, which meets the criteria for this study. The student participants must (a) have completed an online course with discussion forums, (b) have experience with educational technology in online courses, and (c) be 18 years or older.

Voluntary Participation
Your participation in this research is entirely voluntary. It is your choice whether to participate. If you choose not to participate, there will be no punitive repercussions, and you do not have to participate. If you select to participate in this study, you may change your mind later and stop participating even if you agreed earlier.

Procedures
We are inviting you to participate in this research study. If you agree, you will be asked to complete a questionnaire or participate in an interview. The type of questions asked will range from a demographical perspective to direct inquiries about the topic of online education, engagement, and collaboration.

Duration
The interview portion of the research study will require approximately 30-45 minutes to complete. If you are selected to participate in the study, the time expected will be a maximum of 45 minutes. Participants will also receive the transcript of the interview to member check and verify the validity of the responses.

Risks
The researcher will ask you to share personal and confidential information, and you may feel uncomfortable talking about some of the topics. You do not have to answer any question or take part in the discussion if you do not wish to do so. You do not have to give any reason for not responding to any question.

Benefits
While there will be no direct financial benefit to you, your participation is likely to help us find out more about educational technology, online discussions, and engagement and collaboration. The potential benefits of this study will aid the course design and faculty development in online institutions.

Confidentiality
Collected data will be kept confidential and secure. Video and audio files and transcripts will be moved to a password-protected file once the transcription process is complete and destroyed 3 years after completion. During the defense of the doctoral dissertation, data collected will be presented to the dissertation committee. The data collected will be coded replacing all personal identifiers with the designated code.

Sharing the Results
At the end of the research study, the results will be available for each participant. It is anticipated to publish the results so other interested people may learn from the research.

Right to Refuse or Withdraw
Participation is voluntary. At any time, you wish to end your participation in the research study, you may do so without repercussions.

Questions About the Study
If you have any questions, you can ask them now or later. If you wish to ask questions later, you may contact me at j-lawrence@att.net or 630-707-7789. This research plan has been reviewed and approved by the Institutional Review Board of American College of Education. This is a committee whose role is to make sure research participants are protected from harm. If you wish to ask questions of this group, email IRB@ace.edu.

Certificate of Consent
I have read the information about this study, or it has been read to me. I acknowledge why I have been asked to be a participant in the research study. I have been provided the opportunity to ask questions about the study, and any questions have been answered to my satisfaction. I certify I am at least 18 years of age. I consent voluntarily to be a participant in this study.
Print or Type Name of Participant: _____
Signature of Participant: _____
Date: _____

I confirm that the participant was given an opportunity to ask questions about the study, and all the questions asked by the participant have been answered to the best of my ability. I confirm that the individual has not been coerced into giving consent, and the consent has been given freely and voluntarily. A copy of this Consent Form has been provided to the participant.

Print or type name of researcher: _____

Signature of researcher: _____

PLEASE KEEP THIS INFORMED CONSENT FORM FOR YOUR RECORDS.

Appendix E: The Interview Guide

Student Interviews – Semi-Structured (Need Validation)

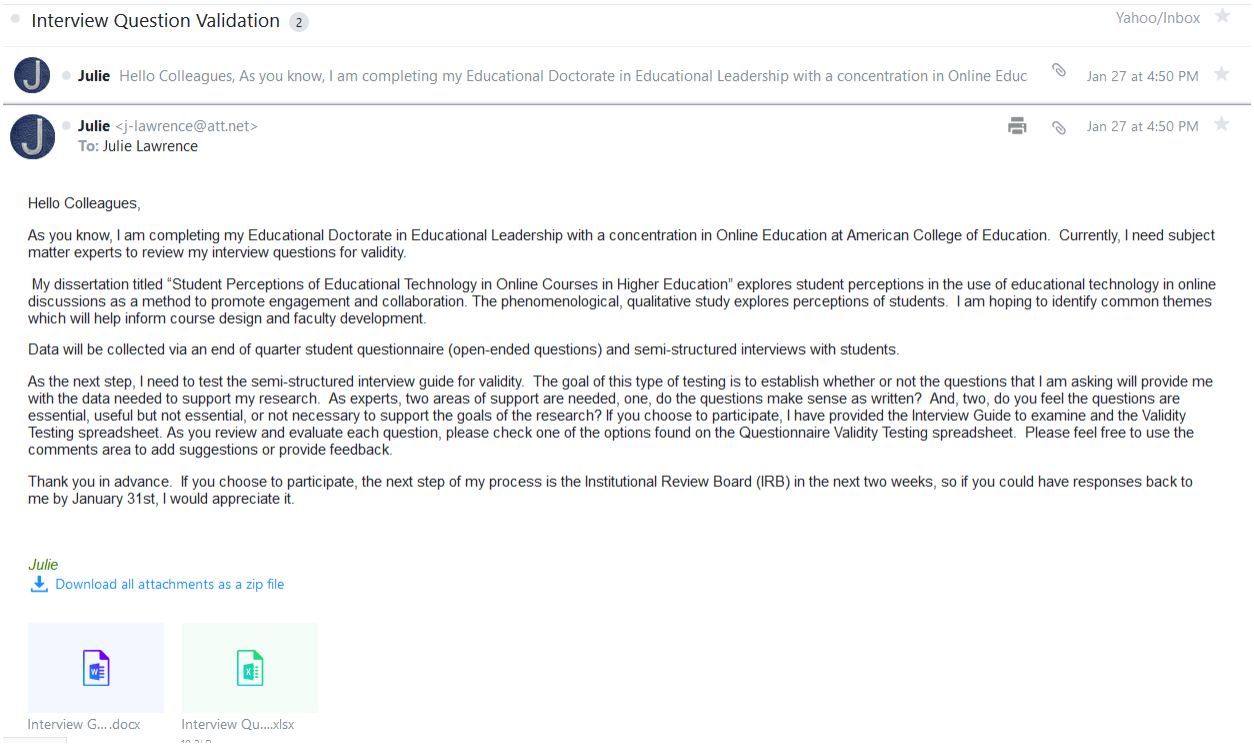
Demographic

1. *How long were you a student in online courses in higher education?*
2. *Did you take residentially before online?*

Content

1. *What drew you to taking the course fully online?*
2. *Talk to me about engagement and collaboration strategies you have experienced in online courses.*
3. *What are your thoughts on engagement and collaboration activities in online courses?*
4. *What do you view as the role of discussion forums in online classes?*
    a. *If experience in residential teaching-talk to me about discussions in face-to-face classes.*
5. *What were your thoughts of the threaded discussions where you post an initial written response and reply to peers throughout the week?*
6. *What were your thoughts of the discussion using educational technology?*
7. *Can you describe your preference for educational technology use?*
    a. *Diffusion of innovation - innovator, adapter, or lager in the use of technology*
8. *Share with me what you feel about educational technology in online discussions.*
    a. *Benefits*
    b. *Barriers*
9. *What else would you like to share about your experiences?*

Appendix F: Proof of SME Validation



Interview Question Validation 2 Yahoo/Inbox

Julie Hello Colleagues, As you know, I am completing my Educational Doctorate in Educational Leadership with a concentration in Online Educ Jan 27 at 4:50 PM

Julie <j-lawrence@att.net>
To: Julie Lawrence
Jan 27 at 4:50 PM

Hello Colleagues,

As you know, I am completing my Educational Doctorate in Educational Leadership with a concentration in Online Education at American College of Education. Currently, I need subject matter experts to review my interview questions for validity.

My dissertation titled "Student Perceptions of Educational Technology in Online Courses in Higher Education" explores student perceptions in the use of educational technology in online discussions as a method to promote engagement and collaboration. The phenomenological, qualitative study explores perceptions of students. I am hoping to identify common themes which will help inform course design and faculty development.

Data will be collected via an end of quarter student questionnaire (open-ended questions) and semi-structured interviews with students.

As the next step, I need to test the semi-structured interview guide for validity. The goal of this type of testing is to establish whether or not the questions that I am asking will provide me with the data needed to support my research. As experts, two areas of support are needed, one, do the questions make sense as written? And, two, do you feel the questions are essential, useful but not essential, or not necessary to support the goals of the research? If you choose to participate, I have provided the Interview Guide to examine and the Validity Testing spreadsheet. As you review and evaluate each question, please check one of the options found on the Questionnaire Validity Testing spreadsheet. Please feel free to use the comments area to add suggestions or provide feedback.

Thank you in advance. If you choose to participate, the next step of my process is the Institutional Review Board (IRB) in the next two weeks, so if you could have responses back to me by January 31st, I would appreciate it.

Julie

Download all attachments as a zip file

Interview G....docx Interview Qu....xlsx

Appendix G: Codebook

Codes	Sub-codes	Quote	Theme
Requirements	Checkbox; attendance; authenticity; value; chores; busywork	"The purpose is really to recollect knowledge…synthesize and add our own perspective" (Participant 4).	Discussion Forums
Knowledge Checks	Regurgitation; reflection; valuable initial post; discourse	"if everybody's going to saying the exact same thing, then what's my impetus or my incentive to really engagement myself or immerse myself in the discussion?" (Participant 7).	
Social Presence	Networking; support; exchange; blended; isolation; perspectives		
Teacher Presence	Teacher presence; availability; feedback	"The most important part is maintaining that human interaction" (Participant 1).	Role of Instructor
Connections	Meaningful interactions; connections; canned curriculum	"It's important for even the professors to jump in and be a part of the discussion" (Participant 8).	
Technology Tools	Kahoot!; Flipgrid; video; audio; GoTo Meeting; Zoom; Adobe; OneNote; Google Tools	"Educational technology is only as good as the person using it. And if the instructor is not comfortable with the technology…then sometimes we lose the value of the content an instructor could share" (Participant 5).	Educational Technology
Accessibility	Internet; availability; accessibility; computer literacy	"Technology depends on the instructor using the technology, just because the technology is there doesn't mean that the instructor knows how to use it" (Participant 11).	
Digital Literacy	21st-century workforce; digital literacy; real-world; transferrable		
Innovation	Tester; adapter; adopter		
Peers	Interactions; support; engagement; collaborate; motivate; rely on others	"There's a tradeoff between the convenience of being an online learner, versus being an onsite learner and that tradeoff is that you lose the sense of community online but you gain convenience" (Participant 11).	Human Element
Social Presence	Face-to-face; networking; collaboration; help; perspectives; connections; isolation	"We banded together" (Participant 10). "If I wanted to collaborate and talk to people all day, I would go to class in a building where I had to talk to people and sit with them at a table" (Participant 5).	
Workforce	Workforce; presentation skills; real-world scenarios; authenticity; application	"This is just what 21st-century education is all about, and I think 21st-century way of life, quite frankly, know if we're serious about what we're preparing people to experience when they get out in the workforce… people have to have the ability to experience this as part of their education" (Participant 14).	Transferrable Skills and 21st-Century Workforce
Benefits	Motivation; engagement; 21st-century	"We need to overcome and stop assuming that everybody has an iPad" (Participant 11).	Technology
Barriers	Cost; accessibility; use; obstacles	"Appeal to different types of learners, different types of students" (Participant 12). "Classrooms designed for virtual worlds can become cumbersome" (Participant 9).	