

TEACHERS' EXPERIENCES WITH INTERACTIONS IN ONLINE CLASSES: A CASE
STUDY

by

Adam M. Bozarth

Liberty University

A Dissertation Presented in Partial Fulfillment

Of the Requirements for the Degree

Doctor of Education

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APPROVED BY:

Daniel Baer, Ph.D., Committee Chair

Sarah Pannone, Ed.D., Committee Member

Abstract

The purpose of this qualitative case study is to describe the experiences of teachers interacting with students in an online learning environment at Township School District. The theory guiding this study is Moore's transactional distance theory as it examines how meaningful interactions can minimize the transactional distance in distance learning or remote learning environments. Data from teacher interviews, focus groups, and teacher generated writing samples were used to provide an understanding of how teachers support and promote interactions in online learning environments. Participants were teachers with at least one-year experience teaching remotely or online. All participants were from the same medium sized school district in central Illinois, with a student population of nearly 8,000. This study adds to the literature by sharing high school teachers' perspectives and experiences of creating and supporting interactions in an online learning environment. The central research question asked, "What are the experiences of high school teachers creating and fostering meaningful interactions in online learning environments?" NVivo coding was utilized to identify codes generated directly from participant responses. The results of the study indicated that teachers created and supported a variety of meaningful interactions. Teachers experienced challenges, adopted new teaching strategies, embraced interactive digital content, and gained a new perspective on students' home life.

Keywords: transactional distance theory, student-student, student-teacher, student-content, interactions, distance education, online learning, remote learning, teachers' experience, meaningful interactions

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Purposeful Interpersonal Interaction (PII)

Transactional Distance Theory (TDT)

CHAPTER ONE: INTRODUCTION

Overview

The transition to online or remote learning during the COVID-19 pandemic in the spring of 2020 brought in a new type of instruction that affected over 1.5 billion students (Arnett & Waite, 2020; Gallagher et al., 2020; Pollock, 2020; Santos & Reeve, 2020). Instruction over the Internet and not in the traditional classroom was the new standard and new type of instruction for many teachers (Bernstein & Isaac, 2018; Gudmundsdottir & Hathaway, 2020). In a remote learning environment, instruction and interactions might require different approaches and teachers must purposely plan and scaffold the types of instruction and interactions (Cho & Kim, 2013). However, interacting and engaging with students in online learning was difficult for many teachers because traditional teaching activities were all they knew (Gallagher et al., 2020; Hirsch & Allison, 2020). New understanding on the best practices of online teaching could be needed to help teachers provide quality instruction (Hirsch & Allison, 2020; Pollock, 2020).

This chapter provides a brief overview of the historical and social context of online learning at the K-12 level and identifies the importance of discovering best practices to enhance the online learning environment. The conceptual framework for this study is Moore's (1997) transactional distance theory, described in Chapter 2, and provides a lens for identifying concepts related to quality and meaningful interactions in a distance education or remote learning environment. The problem and purpose statements are also included in this chapter along with the research questions.

Background

The foundation of most K-12 school systems in the United States were built around the concept of students physically attending school (Demir & Akman-Karabeyoglu, 2016). From a

historical and traditional perspective, student success in school has been dependent on showing up to school and having positive attendance. However, in March of 2020, most school districts in the United States closed their doors and offered only remote or online learning opportunities (Arnett & Waite, 2020; Gallagher et al., 2020; Pollock, 2020; Santos & Reeve, 2020). During the COVID-19 pandemic, many teachers accepted and adopted the digital world and embraced the opportunities technology could help create (Cooper et al., 2020). Many teachers transitioned to complete online teaching without prior online teaching experience (Gudmundsdottir & Hathaway, 2020). With minimal training, some teachers used technology to restructure and redesign the traditional learning environment into a format that worked in an online environment (Berstein & Isacc, 2018). To improve the future of online teaching and learning, the experiences of online teachers must be collected and analyzed (Gudmundsdottir & Hathaway, 2020; Trinidad, 2021). Understanding teachers' experiences interacting with students in an online environment could be critical if online learning environments are to make a positive difference in the academic outcomes of all students. The following sections examined the historical, social, and theoretical aspects of distance education and online learning.

Historical Context

According to Rabinovich et al. (2017), the concept of distance education has been around for many years, even dating back to the 19th century. In the 19th century, distance education relied on printed and written materials along with correspondences. In the twentieth century and beyond, distance education heavily depends on virtual learning environments, the Internet, and web conferencing tools (Kang & Gyorke, 2008; Rabinovich et al., 2017). Tools such as the radio and television were also used in developing countries to extend the learning environment to students in remote or isolated areas (Kirshner, 2020). Even in the United States there have been

barriers to remote learning or distance education, barriers formed from where students lived or if students had access to resources such as the Internet or technology (Barbour & Harrison, 2016; Trinidad, 2021). Online learning may offer advantages to traditional learning, however, there are many factors that could enhance or diminish the online learning environment (Barbour & Harrison, 2016). When remote instruction depends on Internet access, students without stable Internet connection and access to technology resources have a huge disadvantage (Trinidad, 2021). Additional research is needed to help identify best practices of online teaching and learning.

School districts have utilized distance learning or distance education programs long before the start of the 21st century. Online learning programs or remote learning became the new form of distance education. Student enrollment in online learning programs nearly increased 600% from 2002 to 2010 (Cooper et al., 2020). According to Toppin and Toppin (2016), virtual schools were one of the most transformational trends in K-12 education. Student enrollment in virtual schools significantly increased over the last 20 years because of ongoing concerns associated with public school dropout rates, safety issues, bullying, curriculum, and course options (Toppin & Toppin, 2016). Online learning environments, also known as distance learning, online school, or remote learning, could reach beyond the boundaries of the traditional classroom. Online learning environments allowed students to receive academic support, guidance, and instruction from anywhere in the world. Remote or online learning environments also provided an opportunity for students to choose when and where to study (Falloon, 2011). With online learning, students or teachers that were not able to physically attend school could still participate in educational activities.

Online learning expanded course offerings to students and allowed teachers to interact with students from nearly anywhere in the world. Remote learning offered opportunities that did not previously exist to schools, students, and teachers (Arnett & Waite, 2020). Some school leaders used remote learning opportunities to improve communication channels, break away from the traditional seat time requirements, and help teachers discover innovative ways to incorporate online learning components into their teaching strategies (Arnett & Waite, 2020). Although there was a significant increase in the number of students that attended online or virtual schools over the last decade, there has been a desperate need to discover best practices of online teaching (Toppin & Toppin, 2016).

Social Context

During remote learning or online learning, a student's home environment was the student's learning environment and could significantly impact educational outcomes (Arnett & Waite, 2020). The teacher's teaching environment could also impact the online educational environment. Some teachers taught from home while others might have taught remotely from inside a traditional classroom. Online learning environments may have provided new ways to engage the disengaged student and may have provided new opportunities for teachers and staff to engage with chronically ill and chronically absent students (Zhu & Van Winkel, 2017).

According to Zhu and Van Winkel (2017), remote learning options could provide new opportunities for absent students and students with social and emotional issues to engage with their teachers and peers. Outcomes of Barbour and Harrison's (2016) study on teacher perception of K-12 online learning suggested online learning could benefit students who were considered at risk, chronically ill, gifted, shy, and responsible. Distance education or remote learning

opportunities could help students and teachers overcome barriers related to geographical distance which may impact traditional school attendance and achievement (Kim, 2020).

Although online learning environments extended opportunities for engagement and interaction, barriers and limitations of online learning remained (Kim, 2020). Unresolved problems that existed in the traditional learning environment carried over to the online learning environment (Hirsch & Allison, 2020; Pollock, 2020; Summers, 2020). Although technology could help students succeed, technology could also intensify traditional inequalities and create new problems (Hall et al., 2020). For online learning environments to have a positive impact on students, the *digital divide* must be addressed (Hall et al., 2020). The digital divide has evolved from a simple check of if students have access to technology resources, into a more complex understanding of the differences in motivation, skills, and usage of technology typically displayed by various groups of students (Hall et al., 2020; Hohlfeld et al., 2017). As teachers and students transitioned to online learning environments, the need for technology literacy increased. According to Marshall and Ward (2020), technology literacy extended beyond the knowledge of knowing how to use a computer; supporting technology literacy could help people understand the power and consequences associated of using technology in a real-world environment.

Teachers and the school environment were also included in the issue of digital divide (Pollock, 2020). Many low socioeconomic schools had plenty of computers for student use; however, Internet access was usually limited, and the devices were usually not modern (Hohlfeld et al., 2017; Surma & Kirschner, 2020). The usage and expectation of technology also varied between high socioeconomic schools and low socioeconomic schools (Surma & Kirschner, 2020). Schools with predominantly high socioeconomic students typically supported use of technology to create and support critical thinking skills (Hohlfeld et al., 2017). In comparison,

schools with predominately low socioeconomic students typically supported technology use in basic ways, such as how to operate the computer (Hohlfeld et al., 2017). In an online learning environment, creating equitable learning opportunities for all students was a challenge that needed to be addressed (Pollock, 2020; Summers, 2020; Surma & Kirschner, 2020). The digital divide may also have been present in rural school environments where Internet connectivity or other technology resources were scarce (Pollock, 2020; Surma & Kirschner, 2020). In addition, the sudden transition to online learning could have impacted students' readiness level for the upcoming school year. For certain content areas and grade levels, some students may have been a full year behind or only mastered part of the content (Pollock, 2020). Further research might be needed to identify what teachers have implemented in their online courses to overcome the barriers of online learning.

Theoretical Context

Within the theory of transactional distance, Moore (1997) suggested the cognitive proximity between a student and teacher influenced the learning process (Rabinovich et al., 2017). Moore (1997) examined transactions or *transactional distance* between teachers and students in distance learning environments. According to Rabinovich et al. (2017), "transactional distance refers to the cognitive space between the learners, the instructor, and the content" (p. 127). Moore (1997) suggested the physical distance between teacher and learner could lead to potential miscommunication or misunderstandings. As the transactional distance decreased, the probability that a student would misunderstand also decreased (Moore, 2017; Rabinovich et al., 2017). In distance education or virtual learning environments, learning was best supported when the cognitive gap or space between the teacher and student was minimized (Moore, 2017; Rabinovich et al., 2017). Moore's theory of transactional distance was a measure of probable

misunderstandings in distance learning environments and aligned to remote learning or online learning environments (Rabinovich et al., 2017).

The environment and educational tools in today's distance learning or online learning environment are not the same since Moore introduced the theory of transactional distance. However, the theory was still applicable and the importance of closing the transactional distance in today's online learning environments remains critical for student success. Moore (1997) used three factors to determine the transactional distance: dialogue, structure, and learner autonomy (Kang & Gyorke, 2008; Moore, 1997; Rabinovich et al., 2017). The factor of dialogue was considered an interaction between the student and instructor; this research study focused on the dialogue or interaction factor. The factor of structure was defined as the characteristics of the course, and the factor of learner autonomy was defined as the students' ability to control and direct their learning (Moore, 1997; Rabinovich et al., 2017). The theory also examined three variables: teacher, student, and methods of communication (Kang & Gyorke, 2008; Moore, 1997; Rabinovich et al., 2017). This research study focused on the variables of teacher and student.

The dialogue factor was composed of three types of interactions, student-content, student-teacher, and student-student (Moore, 1997; Rabinovich et al., 2017). Researchers suggested additional types of interaction exist such as student-interface and student-subject (Kang & Gyorke, 2008; Rabinovich et al., 2017). This study focused on student-teacher and student-student interactions; however, student-content was a reoccurring theme after data analysis. According to Falloon (2017), several studies supported the empirical status of the transactional distance theory. Applying the theory of transactional distance to evaluate the

factors of an online learning environment could help teachers increase student motivation, participation, and engagement (Rabinovich et al., 2017).

Problem Statement

The problem was many teachers had not been trained on how to create and foster meaningful interactions in an online teaching and learning environment (Marshall & Ward, 2020). The restrictive nature of online learning impacted teachers' ability to use traditional teaching methods (Montelongo, 2019). Ineffective dialogue or interactions in an online learning environment could lead to negative student outcomes (Johnson, Veletsianos, & Seaman, 2020). For many teachers in the United States, teaching in an online environment was a new concept that became the new norm overnight (Hall et al., 2020). Complicating the shift to online learning, many teachers and students lacked the technological skills to effectively interact within an online setting (Marshall & Ward, 2020). The sudden transition to remote learning prevented students from physically attending school, but quality dialogue and interaction were still needed (Johnson et al., 2020). The shift to remote learning changed the learning environment for millions of people (Johnson et al., 2020). With the change in learning environment, teachers needed to find new ways to interact with students and provide ways for students to interact with each other (Johnson et al., 2020). Regardless of the learning environment, online or in-person, student interaction may be critical for student success. Understanding teachers' experiences creating interactions in an online environment could lead to better outcomes for students and teachers.

Purpose Statement

The purpose of this case study was to describe the experiences and actions taken by high school teachers to create meaningful interactions in online learning environments for the Township School District (a pseudonym). Interactions within an online learning environment

were generally defined as any student-teacher or student-student dialogue. Interactions or dialogue may take place in many forms, such as, discussion boards, teacher or peer feedback, online check-ins or conferences, class announcements, and audio or video messages. The theory guiding the study was Moore's (1973) transactional distance theory as it identified the importance of interactions between teachers and students as they communicate through technology (Moore, 2018). Understanding how teachers created and fostered interactions in an online learning environment was important because teachers could impact student learning by controlling the quality and type of interactions (Kyei-Blankson et al., 1999).

Significance of the Study

Near the end of the 2019-2020 school year, over 50 million students suddenly became online learners (Kirshner, 2020). The problem of trying to interact and teach in an online learning environment was a problem for thousands of teachers (Nasr, 2020). Regardless of online teaching experience, many teachers were expected to teach online courses and help students succeed (Johnson et al., 2020). Discovering best practices and empirical research of what worked in an online environment could help enhance teacher instruction and student learning (Summers, 2020). This study added to the literature by sharing high school teachers' perspectives and experiences of creating and supporting meaningful interactions in an online learning environment. The outcomes of this study aligned to Moore's (1997) transactional distance theory because they focused on the interactions that took place in an online learning environment.

Current research failed to identify what K-12 teachers were doing to create and foster meaningful online interactions. Available research on K-12 online interactions was mainly limited to foreign language courses and student perceptions. Research on student-student interactions were very scarce; however, research was available and limited to areas in the United

States impacted by Hurricane Katrina (Johnson, et al., 2020). Extensive research was available on interactions at the university level and specific programs such as nursing programs (King & Nininger, 2019). Additional research examining the types of learning management systems or software utilized by online teachers was available (King & Nininger, 2019). Although current research explored the quantity of interactions and the various types, it fell short of discovering the actions and perceptions of online high school teachers (Johnson et al., 2020).

Teacher perception has been a valuable source of information (Johnson et al., 2020; Runions et al., 2020). This case study was designed to understand and describe teacher perception and experience creating interactions in an online setting. Meaningful dialogue or interaction in an online learning environment have been considered critical for student success, however, many teachers struggled with creating effective dialogue (Bernstein & Isaac, 2018). Discovering and identifying effective teaching strategies for online learning could enhance the teaching and learning for many teachers and students. Township School District along with hundreds of other school districts across the United States offered a combination of online and blended courses. In the United States, there were over 50 million students enrolled in public schools (Johnson et al., 2020). There were nearly 15 million high school students in the United States and Township School District served approximately 8,000 of them. Like many school districts across the United States, Township School District served a diverse student population. Enhancing educational student interactions at Township School District could help a variety of school districts. If the current trend of online learning options continues to increase, school districts may need to enhance their capacity to offer high quality distance education programs.

Research Questions

The research study utilized one central research question along with two sub questions. The questions focused on how meaningful interactions were created and teacher perception of meaningful interactions. Many teachers struggled with creating effective dialogue or interactions in the online teaching environment (Berstein & Isaac, 2018). Teachers needed support and help to enhance the learning experience; discovering what teachers did to create and foster interactions may help other teachers enhance the online learning environment (Arnett & Waite, 2020; Pollock, 2020). Past research that included teacher voice and teacher perspective provided relevant and meaningful information (Saunders et al., 2017). According to Runions et al. (2020) and Johnson et al. (2020), teacher perception has been a valuable source of information. Current research on teacher perception of online interactions at the high school level was limited, most research was limited to foreign language courses or students' perception (King & Nininger, 2019). Although research was available on online interactions at the university level, the current research did not address the perceptions of online high school teachers (Johnson et al., 2020). According to Martin et al. (2019), the transition to online teaching required new teaching methods and techniques. The following questions were utilized to guide the research.

Central Research Question

What are the experiences of high school teachers creating and fostering meaningful interactions in online learning environments?

Sub Question One

What are the perceptions of teachers on meaningful interactions in online learning environments?

Sub Question Two

What teaching methods promote meaningful interactions in online learning environments?

Definitions

1. *Educational technologies* – “Tools used in formal educational practice to disseminate, illustrate, communicate, or immerse learners and teachers in activities purposively designed to induce learning” (Garrison & Anderson, 2003, p. 34).
2. *Online learning* – Learning that takes place entirely or in a substantial portion over the Internet (Means et al., 2013).
3. *Blended Learning* – “Learning that happens in an instructional context which is characterized by a deliberate combination of online and classroom-based interventions to instigate and support learning” (Boelens et al., 2018, p. 2).
4. *Virtual School* – “A state-wide supplemental program in which students take individual courses, while also being enrolled in a physical school or cyber-school within the same state” (Lin et al., 2017, p. 735).
5. *Transactional Distance* – The cognitive and geographical distance between the student, the teacher, and the content (Rabinovich, 2017; Moore, 2018).
6. *Student-student interaction* - Interactions that take place between students, examples include students talking with one another, participating in group work, and responding to one another verbally or in discussion boards (Worku & Alemu, 2020).
7. *Student-teacher interaction* - Interactions that take place between a student and the teacher, typically characterized as bidirectional asymmetrical interactions (Katz, Jordan, & Ognyanova (2021).

8. *Student-content interaction* - When students independently participate in task-oriented activities, such as completing modules, reading text, utilizing study guides, analyzing questions, and completing assignments or simulations (Hernández-Sellés et al., 2019).
9. *Digital divide* - The differences in motivation, skills, and usage of technology typically displayed by various groups of students (Hohlfeld et al., 2017).

Summary

Many teachers struggled with teaching online because they did not have the necessary skills to create and foster meaningful interactions in an online environment (Marshall & Ward, 2020). The purpose of this case study was to describe the experiences and actions taken by teachers to create meaningful interactions in an online setting. Interactions could have a positive effect on educational outcomes (Joksimović et al., 2015). As technology continues to expand and become part of everyday life, schools need to expand and offer innovative ways to support and enhance student learning in the online setting (Berstein & Isaac, 2018). Teachers interacted with students in a variety of ways and had the unique position to inspire and motivate students to succeed. Most likely, several teachers had been using variety of methods to interact with students and engage students in the online learning process. Understanding how teachers interacted and supported students in an online setting could be vital to the success of many students (Berstein & Isaac, 2018). According to Berstein and Isaac (2018), teachers must find ways to engage with students and create meaningful dialogue. The purpose of this study was to describe what teachers do to create meaningful interactions in an online environment. The outcomes of this study may lead to new interventions and best practices online teaching.

CHAPTER TWO: LITERATURE REVIEW

Overview

The literature review consisted of three main sections: the theoretical framework guiding the study, related literature to the topic of the study, and a summary. Moore's (1989) transactional distance theory was used as a theoretical framework to guide the study. The study focused on how teachers support interactions in an online environment. Moore (1989) suggested quality interactions could enhance the distance education environment by reducing the transactional distance between teacher and learner. The theoretical framework section provided a brief examination of the various interactions that take place within an online learning environment. The related literature section provided an overview of online learning and distance education, factors associated with online teaching and learning, and the challenges of teaching and learning in an online environment. The chapter concluded with a synthesis of related literature on the topic of interactions in online learning environments.

Theoretical Framework

Moore's (1989) transactional distance theory was used as a framework for this study to help identify the various dialogue or interactions that take place in distance learning or online teaching and learning environments. Transactional distance theory (Moore, 1989) could be used to discuss the effectiveness of online learning as it applies to distance education (Kyei-Blankson et al., 2019). Within a distance education environment or remote online educational environment, instructional methods and learning behaviors could be performed at different times (Moore, 1972). Moore (1972) also suggested communication in distance education environments required methods beyond face to face interactions, such as with printed materials or electronic systems. Based on the principles of transactional distance theory, increasing the number of interactions

while minimizing the transactional distance has been the most effective combination for learning (Kyei-Blankson et al., 2019).

Transactional distance encompasses the geographical distance and cognitive separation between student and teacher (Roberts, 2019). Several studies examined the role of interactions from the students' perception; however, more research was needed to examine the role of interactions from the teachers' perception. Pianta et al. (2020) suggested teacher-student interactions were malleable and could be enhanced with proper training and support. Once trained, teachers with limited technology skills may start to appreciate and incorporate more interactions or dialogue in the online environment. Discovering and understanding teachers' experiences with interactions in an online learning environment may be the first step in improving future online interactions. Limited opportunities for interaction in online learning environments could have a negative impact on student success (Lin et al., 2017). Interaction with students and teachers was one of the most critical factors influencing student success in an online learning environment (Cho & Kim, 2013). Student interaction was a vital component for course success and academic achievement (Hussin et al., 2019; Lin et al., 2017; Moore, 1989; Yu et al., 2020).

Online learning environments or distance education environments have three important dimensions: the structure of the teaching and learning process, the type of dialogue or interactions between teacher and students, and the degree of student autonomy (Kyei-Blankson et al., 2019). Moore (1989) grounded transactional distance theory on the relationship between individuals, environments, and interaction patterns (Yu et al., 2020). Although all three dimensions were important, this research study focused on the type of dialogue or interaction between teacher and students in an online setting. A critical element of online learning was

effective or meaningful interaction, meaningful interactions helped increase student satisfaction, promote active learning, and enhance student achievement (Purarjomandlangrudi, Chen, & Nguyen, 2016; Yu et al., 2020).

Transactional Distance

Moore (1989) suggested gaps existed between the teacher and student because of the physical distance involved in distance education environments. Moore (1989) believed increasing the frequency of interactions between teacher and student could reduce the distance and close the gaps. A lower transactional distance created a better learning environment (Forte, 2016; Kyei-Blankson et al., 2019; Roberts, 2019). The ideal learning environment had a balance between the structure of the course and the interactions within the course (Forte, 2016). Low or ideal transactional distance was characterized by on-going interaction between teacher and students (Kyei-Blankson, et al., 2019). As dialogue decreased and structure increased, the transactional distance between the teacher and student increased (Forte, 2016; Kyei-Blankson et al., 2019; Moore, 2010). For some teachers, maintaining a balance between structure and dialogue could be challenging, training and support are likely needed.

In distance education or online learning environments, transactional distance could be used to examine the relationship between interaction patterns and the participants in the learning environment (Yu et al., 2020). Interpersonal interaction could decrease the transactional distance in a distance education course and in turn, create a better learning environment for the student (Mehall, 2020; Roberts, 2019). Interpersonal interaction included both student-student and student-teacher interaction (Mehall, 2020; York & Richardson, 2012). Student participation or interaction within a learning environment could typically be characterized by students “cooperating, communicating, and interrelating with one another, their teachers, or with the

content” (Kyei-Blankson et al., 2019, p. 544). According to Laflen and Smith (2017), teachers may need to alter and modify traditional assignments to increase interaction between teacher and students in an online learning environment. Critical elements of the theory of transactional distance included interaction between student-teacher communication, student-student collaboration, and student-content engagement (Kyei-Blankson, et al., 2019). The three types of interaction included in the transactional distance theory were considered critical for creating meaningful and worthwhile online learning environments (Yu et al., 2020).

Student-Student Interaction

Three critical types of interaction were identified in the theory of transactional distance: student-student, student-teacher, and student-content. Student-student interaction referred to the interactions between students. Student-student interactions could help sustain cognitive development, develop critical thinking skills, promote richer learning, and foster motivational support (Lin et al., 2017). Moore (1989) suggested student-student interaction was essential for learning. Online learning environments with limited student-student interactions could lead to increased dropout rates for students and deep feelings of loneliness and frustration (Lin et al., 2017). Outcomes of Beldarrain’s (2008) study on virtual language courses supported the claim that student-student interaction have a positive impact on student achievement (Lin et al., 2017). The type of course or content could also impact the effectiveness of interactions (Lin et al., 2017). Learning a new language may not require the same dedication or attention to content or teacher directed instruction; depending on the content and familiarity with the subject, students may have a greater dependence on teacher interactions and content (Lin et al., 2017).

Student-Teacher Interaction

At the center of the learning process was the student-teacher relationship (Kasperski & Blau, 2020). Interactions between students and teachers are known as student-teacher interactions. Student-teacher interactions might create a sense of community or connectedness between the teacher and the student (Kyei-Blankson et al., 2019). In addition, positive student-teacher relationships and interactions could support and sustain cognitive development for students (Hershkovzt & Forkosh-Baruch, 2017; Kasperski & Blau, 2020; Pianta et al., 2020). Additionally, student-teacher interactions that supported conceptual understanding, provided individualized feedback, and fostered conversations were academically and emotionally beneficial to students (Pianta et al., 2020).

According to Moore (1989), high-quality student-teacher interactions were a characteristic of high-quality distance learning programs. Student-teacher interactions included a broad range of interactions, ranging from formal activities such as evaluation and feedback to informal activities such as support and motivation (Lin et al., 2017; Pianta et al., 2020). Student-teacher interactions could take place either synchronously or asynchronously (Lin et al., 2017). Examples of synchronous student-teacher interactions included video-conferencing and online chats; examples of asynchronous student-teacher interactions included emails and discussion boards (Kyei-Blankson et al., 2019; Lin et al., 2017; Zayapragassarazan & Thomas, 2020). Discussion board type activities provided students an avenue to interact with each other and the teacher, these interactions enhance learning and foster deeper understanding by helping students share and gain knowledge (Gao, Zhang, & Franklin, 2013; Zayapragassarazan & Thomas, 2020). Discussion board type activities enhanced learning by allowing students to articulate and demonstrate their understanding of course concepts, content, and related material (Blake &

Rapanotti, 2001; Zayapragassarazan & Thomas, 2020). Bernstein and Isaac (2018) considered online discussions critical for developing a foundation of knowledge and for fostering problem solving skills.

Student-Content Interaction

Moore (1989) considered student-content interaction a significant characteristic of education, without student-content interaction knowledge would not be transferred or created. In the early 2000s, the most widely anticipated and used form of interaction in online learning environments revolved around the concept of student-content interaction (Lin et al, 2017). Defined as when students participate in task-oriented activities, Moore (1989) considered student-content interaction a transfer of information from the content to the student (Lin et al, 2017). With the advancements in technology and online learning, student-content interactions became more advanced and meaningful (Çebi & Guyer, 2020; Garrison & Anderson, 2003). Although commonly seen as a one-way interaction between the student and content, advancements in technology may have allowed teachers to transform student-content interactions into two-way interactions.

Related Literature

Interaction between students and teachers in an online environment were crucial for learning and knowledge construction (Hussin et al., 2019; Kumar et al., 2019; Vonderwell & Turner, 2005). Student interaction in a learning environment was a valid predictor of student academic achievement (Yu et al., 2020). Student interactions were also correlated with additional factors that influenced learning such as emotional and social engagement, and sense of community (Wu et al., 2020; Yu et al., 2020). The value of interaction in learning environments, specifically online learning environments, received more attention in the last decade than ever

before (Mehall, 2020; Philipsen et al., 2019). Many types of interactions take place in a learning environment, the most critical interactions included student-student, student-teacher, and student-content (Yu et al, 2020). As online learning and distance education programs continue to expand throughout the world, identifying key factors associated with online learning and meaningful interactions could help to enhance the learning environment. The remaining sections of this chapter provided an overview of online and distance learning, factors associated with online teaching and learning, the various types of interactions, and the challenges of teaching and learning in an online environment.

History of Online and Distance Learning

Dating back to the mid-1990s, the potential impact online learning could have on the educational system became a popular topic and conceivable reality (Garrison & Anderson, 2003; Rowley, Lujan, & Dolence, 1998; Vonderwell & Turner, 2005;). Online learning environments and remote learning opportunities signified a new and improved era of distance education (Garrison & Anderson, 2003). Online learning was one of the fastest growing trends in the educational setting (Means et al., 2013; Piña & Bohn, 2015). The number and type of online courses available for K-12 students significantly increased over the last 20 years (Lin et al., 2017). At the higher education level, millions of students enrolled in distance education or remote learning courses over the last decade; in 2015 over 6 million students enrolled in some variation of distance education course (King & Nininger, 2019).

In 2009, nearly every state in the United States offered at least one form of K-12 online program, either a state virtual school, a state sponsored online program, or a complete online school (Means et al., 2013; Watson et al., 2009). K-12 students have attended various forms of distance education programs or online learning programs for decades (Piña & Bohn, 2015).

During the 2008-2009 school year, over 150,000 students were enrolled in the Florida Virtual School (Means et al., 2013). During the 2012-2013 school year, nearly 740,000 students were enrolled in a form of distance education program and during the 2013-2014 school year, over 315,000 students were enrolled in a fully online school (Lin et al., 2017). In 2016, teachers in the states of Georgia and Idaho could obtain teaching endorsements in online teaching after completing a certain number of graduate courses (Barbour & Harrison, 2016). Universities have also started to incorporate online teaching elements into regular teaching degrees (Barbour & Harrison, 2016). Although online teaching endorsements and programs existed, most likely, the majority of teachers transitioned to online teaching with minimal training.

Online Teaching and Learning

Online courses increased access to educational resources, expanded course options, and provided high-quality learning experiences (Lin et al., 2017; Piña & Bohn, 2015). Online learning has changed the format of traditional distance education programs, handwritten materials evolved to digital files and one-way communication formats morphed into live interactive learning sessions (Liu & Tomasi, 2015). However, the benefits of online learning may only be possible when teachers connect with students and engage them in the online learning process. Although technology played a critical role in online learning, technology itself did not enhance student achievement (Piña & Bohn, 2015). Discovering how to utilize technology to personalize learning and create accessible and equitable online learning environments should be a goal of many teachers and school leaders (Lenert & Janes, 2017). Student achievement and learning are ultimately influenced by teachers, how teachers utilized technology to extend learning and enhance student achievement needs to be identified.

Compared to traditional learning environments, online learning environments typically

required fewer physical resources, extended learning opportunities beyond the walls of traditional schooling, and enhanced the availability of teachers and students (Furda & Straka, 2016; Means et al., 2013; Philipsen et al., 2019). However, high-quality online learning environments required a significant resource of human capital; human capital included school leaders, teachers, instructional designers, technology support personnel, and more (King & Nininger, 2019). When properly supported and implemented, online learning environments had the potential to disrupt the traditional learning barriers of time and space by allow learning to take place anywhere and anytime (Garrison & Anderson, 2003; Piña & Bohn, 2015). Online learning environments enhanced the traditional distance learning format by capitalizing on the elements and power of the Internet and human capital (King & Nininger, 2019; Mehall, 2019). Remote learning or online learning environments allowed continuous learning and could enhance the learning process while also changing how students learn (Altinay, 2017; Garrison & Anderson, 2003; Lin et al., 2017).

According to Themeli and Bougia (2016), teachers could utilize technology and the Internet to improve the online learning experience by incorporating synchronous video communication. Incorporating educational technologies such as synchronous video communication could foster student to teacher relationships and support a sense of classroom community (Themeli & Bougia, 2016). Teachers could use other types of educational technologies to structure the online learning environment to allow less confident students more time to formulate responses and add to the discussion (Gao, Zhang, & Franklin, 2013; Kent, Rechavi & Rafaeli, 2019). Although the environment may have changed from in-person to online, traditional sound teaching principles such as student-teacher and student-student interaction, cooperation, active learning, timely feedback, and high expectations apply to all

teaching environments (Lenert & Janes, 2017).

Student enrollment in online learning or distance education programs continued to increase at the K-12 and college level (Liu & Thomas, 2015; Pedro & Kumar, 2020). However, the increase in enrollment was not always paired with advancement in online course design (Lin et al., 2017). According to Kumar et al. (2019) designing online courses could be difficult because of the many complex factors involved. Developing an online course and teaching the online course required more time compared to planning and teaching a traditional in-person course (Pedro & Kumar, 2020). Developing quality online courses required professional development training for subject matter experts, online course designers, and the teachers (Pedro & Kumar, 2020; Themeli & Bougia, 2016). Out of desire to improve online education at the college level, organizations such as the Online Learning Consortium, Quality Matters, and The International Council for Open and Distance Education were formed and have been updated over the last several decades (King & Nininger, 2019). Online teaching frameworks and standards were also established and adopted to improve the quality of online education, nearly all online teaching frameworks and standards highlighted the need for professional development designed to improve the online educational environment (Pedro & Kumar, 2020). Martin et al. (2019) suggested course design was vital for student success and should include activities that promote interaction. Although standards and frameworks exist to aid in developing quality online courses, some courses in virtual schools have operated like traditional courses and provided limited opportunity for interaction while other virtual schools supported student and teacher interaction with various technology tools and platforms (Lin et al., 2017).

Traditional teaching methods and traditional curriculum did not require the same skillsets as online teaching (Furda & Straka, 2016). In an online learning environment, teachers applied

different approaches to building and fostering student to teacher relationships (Laflen & Smith, 2019). Additional teacher skills and traits also influenced the quality of online teaching, such as communication, time management, and technical skills (Martin et al., 2019). Providing quality communication and regular interactions with guardians and students of online courses was vital for student success (Martin et al., 2019). Timely feedback to students and regular class announcements helped establish and increase student engagement and retention (Martin et al., 2019). A common barrier to quality online teaching was poor time management (Badiee & Kaufman, 2015). Compared to traditional classroom teaching, online teaching consumed more time and required different time management skills (Cavanaugh, 2005; Martin et al., 2019). Teacher readiness and knowledge level of instructional technologies were closely correlated with quality online course delivery (Al-Azawei, Parslow, & Lundqvist, 2016; Gay, 2016). Teachers that effectively provided peer interaction through online learning management systems enhanced the online educational environment (Reis et al., 2015). Providing technical support and resources to students also helped enhance the online learning environment by minimizing barriers related to technical problems (Martin et al., 2019).

Compared to colleges and the real-world business environment, K-12 school environments could do more to adapt the educational environment to meet the needs of the new generation of students that depend on technology (Altinay, 2017; Means et al., 2013). Today's students were raised in a digital rich and dependent environment that shaped how they function (Furda & Straka, 2016). Teachers and school leaders must consider how online learning environments could enhance the learning process for today's students (Garrison & Anderson, 2003). Student and teacher success in online learning environments depended on high quality interactions that fostered the learning process. Active and meaningful learning experiences could

be enhanced with online interactions because they provide students with a continuous learning experience and motivate them to succeed (Hussin et al., 2019). Although the opportunities for online learning continue to increase, more research is needed on how to best design and structure the online learning environment (Garrison & Anderson, 2003; Kyei-Blankson, Ntuli, & Donnelly, 2019; Montelongo 2019).

Effects and Factors of Online Learning

According to Bansak and Starr (2021), the educational disruption caused by the sudden transition to online teaching and learning could have negative long-term effects on students. Students in grades 3 through 8 may have been impacted the most, the educational disruption caused by the COVID-19 pandemic may have lasting effects on cognitive development and life opportunities (Bansak & Starr, 2021). The short-term effects caused by the sudden transition to online learning included grade level expectations not being met (Kuhfeld et al., 2020). A student's home environment also played a significant role in the effects of transitioning to distance learning. Factors that significantly impacted the educational outcomes for students during remote learning included the socioeconomic status of the family and the presence of supportive adults (Chetty et al., 2020). Students in higher-income families typically had more access to resources such as technology and Internet (Garcia et al., 2020). Students with supportive adults at home tended to perform better in online learning environments; when the supportive parents were college-educated the student tended to have even more support (Bansak & Starr, 2021). The level of access to teachers and school personnel also impacted the quality of online learning (Bansak & Starr, 2021). Parent engagement and support significantly increased when teachers and school personnel were available for tutoring or extended virtual office hours (Sethi & Scales, 2020; Takeuchi et al., 2019;).

Although current research suggested before the COVID-19 pandemic Black and Hispanic parents spent less time helping their children with school-work when compared to non-Hispanic parents, a large portion of Black and Hispanic parents had concerns regarding the negative impact on their child's education because of the COVID-19 pandemic and sudden change in learning environments (Brenen, 2020). During the COVID-19 pandemic, data analyzed from nearly 200,000 households suggested Black and Hispanic households spent more time helping students during the week compared to White non-Hispanic households (Bansak & Starr, 2021). External factors such as employment and sudden job loss due to COVID-19 issues may also significantly impact a student's home environment (Bansak & Starr, 2021). Additional household characteristics could impact the quality of remote learning, such as single-parent, married-couple, number and age of family members (Bansak & Starr, 2021). The outcomes of Bansak and Starr (2021) study suggested students were more likely to work on their own if they had received one-on-one support from a teacher or parent. Although research was still in its infancy, remote learning opportunities that blended traditional resources such as paper packets and textbooks along with digital learning components may enhance the educational outcome for students when compared to strictly online or digital tools (Bansak & Starr, 2021).

Issues and Challenges for Online Learning

Although schools closed, the problems and issues society battled continued like normal. The challenges and issues school districts faced before COVID-19 still existed and in some cases grew into bigger challenges and issues (Lambert et al., 2020). One concern and challenge for teachers and schools has always been student engagement, when schools closed and students were no longer required to attend school, student disengagement and disconnect from school intensified (Trinidad, 2021). Regardless of the learning environment, teachers and school

personnel were charged with making sure students were safe and engaged in the learning process (Joksimović et al., 2015). Attending an online class did not require students to physically attend school, but students still needed to be engaged in the learning process and monitored. In an online learning environment, the daily task of engaging students and evaluating their progress could be more difficult compared to in-person instruction (Joksimović et al., 2015). Taking accurate attendance in an online learning environment could also be a challenge, state and federal regulations regarding attendance in online courses may change and require students to do more than simply log-on to a learning management system or virtual teaching session (Piña & Bohn, 2015).

Other challenges existed with online teaching and learning, such as ensuring students and teachers always had access to content, technology support, and the Internet (King & Nininger, 2019). Online teachers may be required to alter their assumptions of teaching and develop new skills and knowledge in order to become skilled at teaching online (Philipsen et al., 2019). According to Scoppio and Luyt (2017), “new technological experiences challenge educators to reexamine their previous assumptions about technology and learning”. Additionally, the routines many students were accustomed to during regular or traditional school days suddenly changed when schools closed (Trinidad, 2021). The physical and mental health of students had always been one of the biggest concerns for school staff; however, the repercussions of school closing and social distancing guidelines could have exacerbated health issues (Trinidad, 2021). Students with mental health issues and special education needs may have relied on the school system for coping mechanisms and services; the transition to online learning may have impacted certain vulnerable students more than their peers (Trinidad, 2021).

Similar to concerns of student health and well-being, the topic of equity also intensified because of COVID-19 and the transition to online learning. Pre-existing problems in schools, such as academic achievement gaps, equitable discipline procedures, culturally relevant instruction, and granting students access to food, were still concerns and challenges during the COVID-19 pandemic (Lambert et al., 2020; Trinidad, 2021). With the sudden transition to online teaching and learning, the number of digital learning tools implemented, and student data uploaded, exponentially increased during the COVID-19 pandemic (Beerwinkle, 2020). Combined with the rise of digital learning analytical software and free trial versions of software and hardware granted to schools during the COVID-19 pandemic, K-12 students were at greater risk of having their data exploited (Beerwinkle, 2020). Data integrity procedures may not have been in place or properly followed, lack of student data safety procedures put K-12 student data in danger (Beerwinkle, 2020). Student data concerns existed before the COVID-19 pandemic but the sudden transition to online learning caused a surge in the adoption of digital learning tools and data security measures may not have been followed (Beerwinkle, 2020). According to Willis, Slade, and Prinsloo (2016), K-12 student data were very vulnerable to being manipulated and used in ways not intended by school districts. The COVID-19 pandemic and sudden transition to online learning further highlighted the need for local education agencies and regional education offices to continue evaluating and strengthening the methods used to protect student data (Beerwinkle, 2020; Willis et al., 2016).

Teacher Training

Remote learning and distance education programs continued to expand throughout the world by harnessing the power of the Internet to connect teachers, students, and content (Mehall, 2019; Themeli & Bougia, 2016). As school districts continued to offer a variety of distance

education or remote learning opportunities, the transactional distance between the teacher and student could continue to grow and create barriers for remote learning (Themeli & Bougia, 2016). To minimize the transactional distance and improve the online educational experience, new teaching skills, strategies, and educational tools may be needed (Laflen & Smith, 2019; Philipsen et al., 2019). Training and supporting teachers for online teaching could most likely be critical to ensure the benefits of online learning environments are extended to students. Many teachers tried to replace the dialogue and interactions from the traditional face-to-face learning environments with online discussion boards or other virtual activities (Lin, Zheng, & Zhang, 2017; Mehall, 2019). However, in a traditional learning environment many interactions between students and teachers happened naturally and unexpectedly; these interactions could be difficult to reproduce in an online learning environment (Laflen & Smith, 2017; Lin et al., 2017; Mehall, 2019).

The sudden transition to online teaching was a new experience and many teachers were vulnerable because traditional teaching methods were all they know (Mehall, 2020). For many teachers, proficiency in online teaching was a new expectation and reality they were not prepared for (Philipsen et al., 2019). The sudden transition to online teaching may have been extremely difficult for some teachers. For many teachers, professional development on online teaching strategies could help, however, teaching in an online setting continued to be a challenge for teachers and students (Hirsch & Allison, 2020; Pollock, 2020). Relying on traditional teaching and learning strategies was not recommended when teaching in an online environment (Garrison & Anderson, 2003; Philipsen et al., 2019). Online teaching required new skills and required more than simply making content accessible online (Philipsen et al., 2019). The transition to online teaching and learning required new approaches and methods of engagement, problems arose

when teachers attempted to incorporate traditional teaching strategies in the remote environment (Cho & Kim, 2013; Martin et al., 2019; Mehall, 2020).

Before the COVID-19 pandemic, professional development and training for teachers was an important resource. Continued training and professional development on online teaching strategies could be critical if teachers are to enhance the educational environment (Pedro & Kumar, 2020; Scoppio & Luyt, 2017). Teachers need training on how to incorporate new teaching strategies to increase student engagement and student achievement in online learning environments (Montelongo, 2019). Outcomes from Scoppio and Luyt's (2017) study on higher education online teaching suggested hands-on professional development that offered teachers a chance to practice, make mistakes, and work directly with course designers or trainers could be very valuable. Using technology platforms to provide synchronous and asynchronous interactions, store and deliver content, and utilize aspects of learning management systems could be new to some teachers and require extensive training. The professional development for online teachers may pay dividends in student achievement and engagement. In an online environment, regular synchronous interactions between teachers and learners may improve attitudes, increase on-time assignment completion, enhance scores on assessments, and foster a rich learning environment (Schullo et al., 2007).

Understanding teachers' experiences with teaching in an online environment may lead to better outcomes for students, teachers, and schools (Gudmundsdottir & Hathaway, 2020; Montelongo 2020; Trinidad, 2021). To further validate the importance and need of training and professional development for teachers, student's success may depend on the actions and abilities of the teacher (Kumar et al., 2019; Liu & Tomasi, 2015; Montelongo, 2019). To prepare students for success in an online learning environment, teachers must be prepared to deliver high quality

and engaging instruction designed for online learning environments (Kumar et al., 2019; Montelongo, 2019). However, providing professional development that meets the needs of everyone's professional and personal needs was difficult (Cook et al., 2017). Although professional development on online course design was important, Piña and Bohn (2015) suggested improving the actions of the teacher during instruction should be the focus and goal to improving online education. According to Lenert and Janes (2017), teacher actions that contributed to a quality online educational experience included teacher availability to interact with students in discussions and synchronous chats, teachers that demonstrated a sense of caring also enhanced the online educational environment.

Active Learning and Critical Thinking

A required component of active learning and critical thinking was interaction (Bernstein & Isaac, 2018; Vonderwell & Turner, 2005). According to Joksimović et al. (2015) an extensive level of interaction between students and teachers was needed to support critical thinking. Dunlap and Grabinger (2000) used meaningful social interactions as one of the components in their Active Learning framework (Vonderwell & Turner, 2005). Student interactions could help support active learning by transforming traditional passive learning activities into activities that create knowledge (Kumar et al., 2019). According to Vonderwell and Turner (2005), meaningful interactions set the stage for active learning. Interaction in a learning environment could be represented in many ways, such as through collaboration, negotiation, debate, peer editing, and guidance (Dunlap & Grabinger, 2000).

Although several types of interaction supported active learning and enhanced the educational outcomes of students, ensuring teachers know how to offer and support interactions could be difficult. Bernstein and Isaac (2018) suggested many teachers used traditional teaching

strategies in an online environment which could hinder students' critical thinking capacity. Increasing teachers' capacity of how and why to structure opportunities for interaction was important because many teachers were teaching remote or online classes (Kumar et al., 2019). Broadbent and Poon (2015) suggested online discussion boards promote active participation which might significantly improve academic outcomes. However, further research was needed on what types of interactions best supported active learning and critical thinking.

Barriers of Interaction

There were many barriers that prevented or made interaction difficult in an online setting. The most common barriers of interaction in an online environment included issues related to technology, tension between teacher and student, poor collaboration between team members, and poor course design (Altinay, 2017; Hwang & Song, 2018). Designing an effective online course could be difficult and without training or experience, teachers might not design the most effective courses (Kumar et al., 2019). Lack of interaction with teachers and classmates in an online learning environment was a main source of student dissatisfaction (Cole, Shelley, & Swartz, 2014). Cole et al. (2014) examined university students as did the study by Muuro et al. (2014); outcomes from both studies supported the importance of interpersonal interaction in online learning environments. Teachers and students seemed to understand the significance of interpersonal interaction; however, neither knew how to enhance the level of interactions in an online environment (Mehall, 2020).

In an online learning environment, recognizing student presence might be difficult without a form of student participation, involvement, or interaction (Hwang & Song, 2018). Lack of emotional connections or community and poor course design might also impede interactions (Kyei-Blankson et al., 2019). Additional barriers of interaction could be caused by

poorly designed interactions, designing online courses with varying levels of interactions might help reduce student boredom and enhance engagement (Dunlap, Sobel, & Sands, 2007).

Saturation of Interaction

Few studies focused on the quality of interactions in an online learning environment; instead, many studies focused on the quantity of interactions (Mehall, 2020). The outcomes of Agudo-Peregrina et al. (2014) study showed a positive relationship between the quantity of interactions and success in online courses; the quantity of student-student and student-teacher interactions were a significant predictor of success in online courses. However, finding the right balance of interaction in an online environment was important, simply increasing the frequency of interactions in an online environment could have negative outcomes (Northrup, Lee, & Burgess, 2002).

The quality and type of interaction were more important than the quantity of interactions (Garrison & Cleveland-Innes, 2005; Lin et al., 2017; Mehall, 2020). There was an optimal range of meaningful and appropriate interaction in learning environments (Mehall, 2020; Northrup et al., 2002). Additional studies suggested the saturation point of meaningful interactions was right before the educational benefit passed; once students had the information or knowledge needed to complete a task, students may disengage from remaining interactions (Mehall, 2020). Point value on assignments might be another factor that impacts student interaction.

Purposeful and Meaningful Interactions

A review of the literature highlighted the importance of meaningful and purposeful interactions within an online learning environment (Lin et al., 2017). Meaningful student-teacher interactions could help increase the frequency of student completion rates on course work (Lin et al., 2017). The most important interaction in an online learning environment was debatable;

however, student-teacher interactions were one of the most significant variables regarding the success of a student in an online learning environment (Hwang & Song, 2018; Yu et al., 2020). Student-teacher interactions were vital to student success because the interactions provided motivational and emotional support (Pianta et al., 2020; Yu et al., 2020).

Interpersonal interaction in online or virtual learning environments was correlated with increased perceived learning, higher levels of student and teacher satisfaction, and enhanced student achievement (Mehall, 2020). Purposeful Interpersonal Interaction (PII) was composed of three types of interaction: purposeful interpersonal instructional interaction, purposeful social interaction, and supportive interaction (Mehall, 2020). Meaningful interactions allowed students and teachers to interact with one another on a level that fostered deeper understanding of the course content (Berge, 1999; Mehall, 2020). Student success in an online learning environment might depend on the teacher's ability to motivate students and engage in meaningful interactions (Garrison & Anderson, 2003).

Providing opportunities for students to purposefully and meaningfully interact with each other could enhance the learning environment (Mehall, 2020). According to Garrison and Cleveland-Innes (2005), purposeful and meaningful interaction had a "qualitative dimension characterized by interaction that takes the form of purposeful and systematic discourse" (p.135). In comparison, a simple or non-meaningful interaction was free from teacher presence and lacked alignment to the course. Regardless of the learning environment, interactions did not always foster student learning. Interactions could be distractions and easily steer the conversation away from the planned content or lesson. However, interactions that were not aligned to the course content might still be beneficial for students and teachers (Mehall, 2020). Interactions that helped build a sense of security and social bond between student and teacher might not include

content specific dialogue, however, these type of interaction could still be purposeful and enhance the learning environment (Mehall, 2020).

Teachers and course designers need to plan and properly support opportunities for meaningful interactions (Garrison & Cleveland-Innes, 2005; Kumar et al., 2019). Properly designed courses influenced students to interact meaningfully and purposefully (Kumar et al., 2019; Martin, Parker, & Deale, 2012). Teachers might need help in structuring online courses to allow and support meaningful interactions (Montelongo, 2019). Online courses should be structured to allow students to have authentic interactions with each other, the teacher, and the content (Mehall, 2020). A purposeful learning environment could enable students to take responsibility for their learning and interact with each other. The environment and organization could also help increase engagement and increase the frequency of teacher-student and student-student interactions (Zayapragassarazan & Thomas, 2020). Providing feedback could be an example of a meaningful interaction and could be critical for student success (Hussin, et al., 2019; Laflen & Smith, 2017; Mehall, 2020). Mehall (2020) considered the pedagogical practice of providing students with feedback a critical component of all learning environments. Research identifying effective teaching strategies that could be used in the traditional learning environment as well as the online environment might be needed to help teachers with hybrid or blended courses.

There were varying degrees of purposeful and meaningful interactions in an online learning environment. Purposeful and meaningful interactions were characterized by authentic exchanges of information that enhance student achievement or social bonds (Mehall, 2020; Woo & Reeves, 2007). Quality interactions could enhance critical thinking skills by allowing students to voice their opinion, debate ideas with their peers, and collaborate with each other (Hussin et

al., 2019). According to Mehall (2020), purposeful interactions were combined of three factors: instructional interaction, social interaction, and support interaction. These interactions aligned with the same interactions identified throughout the literature as critical for student success.

Interactions and Transactions

According to Garrison and Anderson (2003), interactive or transactional processes consume the educational environment. John Dewey (1938) considered an educational experience a transaction or exchange taking place within a learning environment. The transaction was the most critical component of the educational process; the transaction occurred when students transformed passive information into knowledge (Garrison & Anderson, 2003). Vygotsky also stressed the importance of interaction in the social constructivism theory; Vygotsky believed social interaction led to higher order thinking (Hussin et al., 2019). Interaction was essential because it allowed students to engage with other students and observe different perspectives (Hwang & Song, 2018). Additional types of interactions included student-interface, student-self, and student-content (Hussin et al., 2019). Interaction between students, teachers, and content took place in a variety of ways and was correlated with higher levels of student engagement (Laurillard, 2000; Hussin, et al., 2019). Discovering best practices of how to enhance the interactions in an online environment might lead to better student outcomes.

Student-Teacher Interactions

Student-teacher interactions might foster academic benefits such as active learning and emotional engagement (Dwyer, 2017; Kyei-Blankson et al., 2019; Molinillo et al., 2018; Yu et al., 2020). Meaningful student-teacher interactions could also enhance the outcomes of student-student interactions (Hernandez-Selles, Munoz-Carril & Gonzalez-Sanmamed, 2019). However, interactions required proper support from teachers and did not usually happen spontaneously

(Hernandez-Selles et al., 2019). Teachers had the potential to significantly influence the degree and quality of interactions throughout their course. Student-teacher interactions could provide valuable emotional and academic support to students (Hernandez-Selles et al., 2019; Pianta et al., 2020). Student-teacher interactions, sometimes referred to as teacher presence, could help students overcome feelings of isolation and promote feelings of belongingness and satisfaction (Hernandez-Selles et al., 2019). Examples of student-teacher interactions that promote teacher presence and foster cognitive learning opportunities included individualized feedback on assignments and discussion board replies (Hernandez-Selles et al., 2019). Feedback that was specifically crafted for individual students and intended to promote understanding was critical for student success (Pianta et al., 2020). Teachers could enhance interactions by increasing their presence in the course, clearly stating the class expectations, and providing on-going opportunities for interaction (Braun et al., 2019; Kyei-Blankson et al., 2019).

According to Gao et al. (2013), asynchronous student-teacher activities helped engage the teacher and student while also supporting critical thinking and problem-solving skills; this was possible because time and space limitations were lifted, and multiple communication channels could be utilized. However, student-teacher interactions did not happen by chance. Teachers must encourage and support student-teacher interactions in order to help students succeed (Furda & Straka, 2016). Teachers that struggled with creating and fostering meaningful student-teacher interactions could improve with proper support and training (Pianta et al., 2020).

Student-Student Interactions

Although student-student interactions did not require teachers and could take place in asynchronous or synchronous exchanges, teachers had to set the stage for these interactions to take place (Yu et al., 2020). Teacher presence and support of interactions were needed because

student-student interactions were only beneficial when student collaboration was required (Kuo et al., 2014). Although not universally accepted, Kyei-Blankson et al. (2019) suggested student-student was the most important type of interaction within an online learning environment. Student-student interaction could motivate students to work together and improve critical thinking skills (Hussin et al., 2019; Hwang & Song, 2018). Examples of student-student interaction in an online environment included students responding to each other and exchanging resources (Hussin et al., 2019). Of the various types of interaction, student-student interaction or collaboration had the most current literature. Student-student interaction helped provide the foundation for deep learning and collaboration in an online learning environment (Kyei-Blankson, et al., 2019). According to Lin et al. (2017), some students enrolled in online programs even recognized the importance of student-student interactions and prioritized the interactions. Teacher presence was still an important factor in student-student interactions because a teacher might need to model and scaffold student-student interactions throughout an online course.

Student-Content Interactions

Current research on student-content interaction in K-12 online learning environments was limited; however, research on student-content interaction at the university level was well documented (Lin et al., 2017). The limited literature on student-content interactions at the K-12 level suggested students benefit and prefer activities that promote student-centered interactions (Lin et al., 2017).

Within online learning environments, students spent substantial amounts of time engaged in tutorial and video activities (Çebi & Guyer, 2020). One of the major elements for success in online learning environments was meaningful student-content interaction (Dunlap, Sobel, &

Sands, 2007; Ertmer, Sadaf, & Ertmer, 2017). In online learning environments, students interacted with a variety of different content; content could be in the form of sound, video, graphics, text, and other multimedia (Kyei-Blankson, 2019). A review of the literature suggested an increase in effective student-content interaction could enhance the learning environment and increase student satisfaction (Krudysz & McClellan, 2017; Kyei-Blankson, 2019; Yu et al., 2020;). According to Yu et al. (2020), student-content interactions might also include using study guides, completing assignments, and reading textual content.

Kumar et al. (2019) suggested student-content in the form of interactive videos helped transform passive learning into active learning. When students interacted with content, students used previous knowledge to construct, organize, and reflect on new knowledge (Yu et al., 2020). Yu et al. (2020) also suggested meaningful student-content interactions could reduce anxiety and boredom, which might lead to higher levels of student satisfaction and active learning (Yu et al., 2020). Student-content interaction was significantly dependent on the student's motivation, learning style, and resource management skills (Cho & Kim, 2013). Cho and Kim (2013) also noted the role of the teacher as a significant factor in the frequency and quality of interaction.

Additional Interactions

Interaction was one of the most vital aspects of online learning (Hwang & Song, 2018). Several types of interactions exist, including teacher-student, student-student, student-content, teacher-content, teacher-teacher, and content-content (Garrison & Anderson, 2003; Hwang & Song, 2018; Palloff & Pratt, 1999; Wu et al., 2020). Teacher-content interaction referred to the actions a teacher performed to prepare for the course and teacher-teacher interaction described the collaboration between teachers (Hwang & Song, 2018). Wu et al. (2020) recognized another type of interaction, vicarious interaction. Vicarious interaction took place when students

observed others and absorbed or created knowledge without directly participating or interacting (Wu et al., 2020). Additional research on teacher-content and teacher-teacher interaction regarding online course design might help teachers create more effective online courses.

Student-interface interactions accounted for the interactions between students and the various mediums teachers and students used in the online learning environment (Hwang & Song, 2018). In online learning environments, student-interface and student-content interactions might be interchangeable because of the methods used by teachers to incorporate various file formats into content (Hwang & Song, 2018). Teachers might utilize an audio recording or podcast to deliver content, teachers might also utilize the use of a video or image to deliver content. Hirumi (2002) identified student-other as an additional type of interaction. Student-other interactions occurred when students interacted with people not directly enrolled in the course, such as family members or friends (Hwang & Song, 2018).

On a very broad level, interactions could be human or non-human in nature. Human and non-human interactions were integral and reciprocal components of a quality online or remote learning experience (Garrison & Anderson, 2003). Communication within an online learning environment was sometimes referred to as computer-mediated communication and was required for any type of human interaction (Kyei-Blankson et al., 2019). Non-human interactions included student-interface, student-content, and student-environment interactions; student-environment interactions took place when students used tools or other equipment to complete or augment the learning experience without the use of their computer or mobile device (Hwang & Song, 2018).

Evaluating Interactions

According to Dunlap, Sobel and Sands (2007), the effectiveness of interactions could be determined by how well the interactions engaged students in critical thinking. Recently, the

concept of online learning interaction content (OLIC) had been used to evaluate the quality of interactions (Wu et al., 2020). Online learning interaction content was formed throughout different types of online learning interactions and could support knowledge creation and sharing (Wu et al., 2020). Evaluating the quality of interactions was important because interactions might affect the quality of learning and teaching. Other instruments were also used to measure student-teacher interactions, the Classroom Assessment Scoring System (CLASS) evaluated 11 dimensions using a seven-point scale to determine the quality of student-teacher interactions (Braun et al., 2019; Pianta et al., 2020). Many researchers suggested interactions improve learning outcomes by motivating and supporting students (Kurucay & Inan, 2017; Lin et al., 2016; Wu et al., 2020).

Student perception was also commonly used to assess the quality of interactions in an online learning environment (Mehall, 2020). The online learning interaction inventory (OLLI) evaluated student perception of interactions in an online learning environment. According to Northrup et al. (2002), students and teachers desire feedback and considered it the most valuable type of interaction. Students also appreciated and valued the meaningful interactions between students and teachers in online environments (Northrup et al., 2002). Additional researchers also suggested the importance of interaction. Of the seven principles or best practices Chickering and Gamson (1987) recommended, four of the principles focused on student-teacher interpersonal interactions: encourage contact between students and teachers, develop reciprocity and cooperation, provide timely feedback, and communicate high expectations (Mehall, 2020). Although student perception was important, teacher perception of interactions in an online learning environment is needed to complete the scope of improving distance or online learning environments.

Researchers might also use the Collaborative Learning Conversation Skill Taxonomy (CLCST) to evaluate student-student interactions within a collaborative learning situation (Kyei-Blankson et al., 2019; Soller, et al., 1999). Researchers could use the CLCST to help identify characteristics of effective student-student interactions (Soller et al., 1999). Soller et al. (1999) provided five characteristics or techniques for supporting effective student-student interactions: encouraging participation, social grounding or assigning specific roles and responsibilities, active learning demonstrated by all students engaged and participating, entire group participation in analysis, and reoccurring promotion and support of interaction. Researchers that used the CLCST suggested teachers significantly impacted the type and quality of interactions through course design and presence (Kyei-Blankson et al., 2019; Soller et al., 1999).

To reduce the gap in identifying how student-content interactions could support various levels of critical thinking skills, Dunlap, Sobel, and Sands (2007) created the Student-to-Content Interaction Strategies Taxonomy based off Bloom's Taxonomy. Student-content interactions have also been categorized into additional categories: enriching, supportive, conveyance, constructive, triggering, exploration, integration, resolution, reflective inquiry, and metacognitive (Garrison & Anderson, 2003; Stouppe, 1998). Dunlap, Sobel, and Sands (2007) also created the Student-to-Content Interaction Design Matrix to help track and reflect on course and assignment design. When used properly, the interaction taxonomy and interaction design matrix could help create online courses that require significant student-content interaction. Although the study by Broadbent and Poon (2015) examined online learning at the higher education level, the outcomes of the study suggested peer learning or student-student interactions had a significant impact on academic outcomes.

Additional Factors - Social Presence, Perception, and Community

An increase in social presence and peer interaction could create a sense of belonging or community and enhance the educational outcomes (Joksimović et al., 2015). A higher sense of community could lead to higher satisfaction with course content, relationship with peers and teachers, and overall learning (Joksimović et al., 2015; Liu et al., 2009; Tao, 2009). According to Garrison and Akyol (2013), social presence was enhanced through meaningful and purposeful interactions. The meaningful student-student and student-teacher interactions might be necessary to provide the foundation for social presence and sense of community. Online learning environments required careful consideration and planning to enhance community and social presence; online courses must have clear expectations, interactions must be purposefully planned, and online teachers must be highly qualified (Garrison & Cleveland-Innes, 2005). Shea and Bidjerano (2009) also validated the importance of social presence and suggested a heightened sense of teacher presence in an online course could foster meaningful interactions. However, certain interactions might have a negative impact on introverted students, varying the type of interactions and providing options for students might benefit all types of learners and personalities (Ascough, 2002; Roberts, 2019).

Differences associated with online learning could impact students, there was a difference between student expectations in a traditional learning environment compared to an online learning environment (Lafren & Smith, 2017; Vonderwell & Turner, 2005). In an online learning environment, students must take responsibility for their own learning and fulfil higher expectations compared to many traditional learning environments (Vonderwell & Turner, 2005). Course content might also influence the student workload expectation, such as in English

courses, students were expected to write more, and teachers might spend more time providing feedback (Lafren & Smith, 2017).

Positive academic emotions such as enjoyment and happiness could also lead to an increase in teacher-student interactions (Pianta et al., 2020; Yu et al., 2020). Negative academic emotions such as anxiety and boredom could reduce the frequency of interactions and impede the learning environment (Yu et al., 2020). Teachers could provide interactional support to students by focusing on student-oriented interactions and maintaining timely feedback (Pianta et al., 2020; Yu et al., 2020). Increasing the frequency of interactions with modern communication technologies could enhance the sense of online community and enhance the online learning environment (Yu, et al., 2020). There were many factors that influenced the quality and outcome of interactions in online learning environments.

Summary

Teaching and learning in an online setting might be difficult and very different compared to traditional classroom environments; online learning and teaching could be complex and affect both the teacher and student (Philipsen et al., 2019; Wu et al., 2020). Teaching in general might be stressful; research suggested teachers' emotional well-being was correlated with the quality of teacher-student interactions (Braun et al., 2019). The best practices of teaching in an online setting are still being discovered (Hwang & Song, 2018). Online learning environments will continue to play a large role in the K-12 educational setting (Furda & Straka, 2016). Proficient online teachers could use online learning environments to offset the loss of instructional time, expand opportunities for credit recovery, increase course offerings, and enhance differentiation measures (Furda & Straka, 2016). Teachers most likely used a variety of teaching strategies within the online learning environment to promote interaction and foster student growth.

Understanding how teachers supported interactions in an online learning environment might help teachers develop the skills needed for teaching in an online environment. This study might also increase the capacity for school leaders to support online teaching and learning.

CHAPTER THREE: METHODS

Overview

There was a need for understanding how teachers created and supported meaningful interactions in online learning environments. The purpose of this case study was to describe the experiences and actions taken by high school teachers to create meaningful interactions in an online learning environment. Understanding teachers' experiences supporting interactions in an online learning environment might help identify new teaching strategies and methods. Chapter 3 provided an outline of the case study design, explained the role of the researcher, and described the methodological approach. The remaining sections outlined procedures for participant selection, instrumentation, and data collection. The chapter concluded with a review of the significant points and a plan for data analysis.

Research Design

A qualitative case study method was used for this study to describe and understand how teachers support and create meaningful interactions in online learning environments. This study also described teachers' perception of meaningful interactions in online learning environments. Qualitative case studies support the discovery of the beliefs and perceptions that people align to current events and experiences (Creswell & Poth, 2018). Furthermore, case studies allow researchers to collect, share, and analyze data generated from the viewpoint of the participants (Ebneyamini & Sadeghi-Moghadam, 2018; Yin, 2018). The findings of this study could support a better understanding of how teachers support and create meaningful interactions in an online or remote setting. In this single case study, participants were a purposeful sample of 13 high school teachers from a school district in Illinois. The contemporary phenomenon of the sudden transition to online teaching was a global issue and warranted further investigating and

understanding. Investigating teachers' actions and perceptions of teaching online could help others understand how to support and enhance online teaching and learning.

According to Yin (2018), there were five rationales for single case designs: critical, unusual, common, revelatory, and longitudinal. The common rationale aligned to this research because the objective of the study was to understand the daily actions and decisions of online high school teachers. This single case study highlighted and analyzed the actions of teachers working to create or enhance dialogue, in the form of interactions, between student-teacher and student-student. Outcomes of this study might help future teachers transform the online teaching and learning environment. The research design followed the general recommendations of Yin (2018), highlight decisions taken, review the implementation process, and analyze the results of the decisions. In this study, the decisions of teachers were analyzed, and teachers were asked to share the results of their actions and decisions. Teachers' experiences and perceptions were examined to identify how teachers structured the online learning environment to support and foster interactions.

A quantitative design could be used to identify the number of interactions in an online learning environment; however, the purpose of this study was to identify how teachers support and foster interactions. According to Yin (2018), case studies might provide a strategic advantage over different research designs. Case studies could help researchers explain complex real-world events, describe any interventions, and illustrate critical factors (Yin, 2018). Case studies might be difficult to conduct, and proper planning is critical (Yin, 2018); however, qualitative case studies could provide new understandings and uncover possible causal relationships (Merriam, 1998). Although transforming the research and multiple sources of data into a meaningful report that generates new knowledge could be difficult (Rowley, 2002),

multiple sources of data were utilized to generate accurate and thick descriptions of the phenomenon (Merriam, 1998; Yin, 2018).

Research Questions

Central Research Question

What are the experiences of high school teachers creating and fostering meaningful interactions in online learning environments?

Sub Question One

What are the perceptions of teachers on meaningful interactions in online learning environments?

Sub Question Two

What teaching methods promote meaningful interactions in online learning environments?

Setting and Participants

When schools were forced to close doors and switch to remote or online learning, students at Township School District (a pseudonym) attended school remotely for nearly a year. Township School District transitioned to a complete online learning environment during the second half of the spring 2020 semester and continued to offer online learning options during the 2020-2021 school year. Prior to March 2020, all instruction at Township School District was done in-person and inside the school. Halfway through March 2021, a limited number of students were permitted to attend school in-person. Because of the sudden shift to online instruction, every teacher at Township School District had experience teaching online or remote high school courses.

Site

The district was an appropriate site for the study because all teachers in the district transitioned to online teaching in the spring of 2020 and continued to teach either completely online or a hybrid of online and in-person courses for the 2020-2021 school year. Prior to the COVID-19 school closure during the Spring of 2020, all teaching was done in-person and students physically attended school. The high school district served a diverse student population of nearly 8,000 students. The majority of the student population identified as Hispanic and students that identified as White outnumbered students that identified as Black. During the 2020 school year, Hispanic students represented 51.7% of the student population, White students represented 24.5%, and the next largest subgroup were Black students at 19.8%. Low income students made up 61.4% of the student population and the district had an average class size of 27 students.

The district had an 80% graduation rate and a chronic absenteeism rate of about 30%. The communities served by the district represented a blend of urban and suburban characteristics. Nearly 350 teachers and over 1,000 staff members contributed to the mission of the school district. The district had a \$120 million budget and spent an average of \$14,000 per student. Each student and teacher had a school issued computer. The district had supported a 1:1 computer program for nearly a decade. During the 2019-2020 school year, the school district participated in two Internet hotspot programs designed to provide free Internet to students. Mobile hotspots were available at the beginning of the 2019-2020 school year and available for pickup even when school was closed due to COVID-19.

The district was committed to enhancing the online learning experience and formed committees to review and improve the online teaching and hybrid teaching experiences. The

district had a strong teacher union presence and many of the district's decisions have been influenced by the teachers' union. During the 2020-2021 school year, class period length was shortened and overall course load per teacher was reduced. The reduction in class time and course loads were designed to enhance online teaching and ultimately impact student achievement. The daily and weekly schedules also changed. Near the beginning of the 2020-2021 school year, teachers were told to plan for providing in person and online instruction. Before the start of the 2020-2021 school year, plans included students physically attending school one day a week. Originally, students were to be divided into four attendance cohorts, an online only cohort with the remaining students divided into thirds and physically attending school on either Tuesday, Wednesday, or Thursday. However, in-person instruction was not permitted during the first semester of the 2020-2021 school year. District administration actively monitored COVID metrics of the local community and used the data to guide the possibility of offering in-person instruction. From March 2020 to March 2021, the majority of the student population at Township School District received instruction completely online.

Participants

Teachers from Township School District ensured the study had quality participants with experience teaching in online learning environments. The study included a purposeful sample of teachers from a public high school district in Illinois. According to Creswell and Poth (2018) a purposeful sample enables a researcher to gather accurate information about the research topic being investigated. Teachers at Township School District were selected because most of the teaching and learning from March 2020 to March 2021 took place remotely or through online learning environments. Before the shift to online teaching in the Spring of 2020, all teaching was done in-person and inside the school. Teachers selected for the study represented a variety of

content areas and a mix of veteran and novice teachers. A purposeful sampling technique was utilized to acquire participants with experience teaching in online settings. Purposeful sampling could be vital to research studies because quality participants might provide the most accurate information to researchers and best support answering the research questions (Creswell & Poth, 2018).

During the 2020 school year, Township School District had 345 full time teachers. The majority of teachers at Township School District were white, representing 88.5% of the teacher population. Hispanic teachers represented the second largest teacher ethnicity subgroup at 5.9%, followed by Black teachers at 4.5%. The majority of teachers at Township School District were females, making up nearly 65% of the teacher population. Nearly 75% of the teachers at Township School District had a master's degree or higher and the district had nearly a 90% teacher retention rate.

Researcher Positionality

As technology continues to evolve, I want to make sure teachers are embracing and utilizing technology to prepare students for success in school and for life. With the advancements in technology, hopefully the power and importance of education and knowledge will always remain sacred. With the advancements in technology, how we learn, and access information may continue to evolve as our dependency on technology continues to increase. Our students will always need teachers to help them and motivate them to learn, but how we teach and the tools we use may change. This study may help discover new best practices on ways to enhance the educational experience for all students. I believe students can learn in multiple environments and that schools should embrace online learning environments and continue to offer online school

options. Online learning or distance learning may not be suitable for every student, however, requiring students to physically attend class may not be suitable for every student either.

Schools should prepare students for success in life; however, certain school policies do not reflect the reality of many activities and events outside of the K-12 environment.

Understanding and describing teachers' experiences teaching in an online environment will help identify the realities of teaching high school online. The following sections elaborate on the interpretive frameworks and philosophical assumptions guiding this study.

Interpretive Framework

The interpretive frameworks guiding this study were a blend of post-positivism and pragmatism frameworks. I do not believe in absolute cause and effect, instead, I believe probability plays a role in how things happen. I also believe in following a series of logical steps to collect and analyze data. I value multiple perspectives and might use computer programs to aid in data analysis. However, I also agree with the pragmatic characteristic of not committing to one type of philosophy, using multiple methods of data collection, and conducting research to find solutions to real-world problems.

Philosophical Assumptions

Philosophical assumptions are the positions of the researcher which provide direction for the study (Creswell & Poth, 2018). Three main philosophical assumptions include ontology, epistemology, and axiology. Ontology refers to the researcher's view of reality, epistemology refers to how the researcher knows reality, and axiology refers to the values that guide the researcher (Creswell & Poth, 2018). The next three paragraphs elaborate on my ontological, epistemological, and axiological assumptions.

Ontological Assumption

Multiple perspectives and opinions exist regarding a universal reality compared to multiple realities. I believe God's truth is the only reality and only explanation of the world. However, as a researcher I will be in close contact with people that have contrasting perspectives and beliefs. Even though my perspectives and opinions may be challenged or in the minority, I reported all perspectives and themes. I believe in the importance of reporting multiple realities and perspectives, but also value the importance of interpreting the viewpoints and expressing my own values.

Epistemological Assumption

I relied on the participant interviews and document analysis to supply the data and used the data to produce the findings. Participant generated responses were used to formulate data codes and overall themes. Although participants were not observed, I used multiple data collection methods to collect participant's personal experiences and perceptions.

Axiological Assumption

As a former teacher, school district leader, and instructional technologist, I understand the role and expectations of teachers. I also understand the impact teachers could have on students and the importance of not pushing agendas or political beliefs. When analyzing the data and constructing themes, I restricted my bias and perspective of teaching to ensure I accurately reported the data.

Researcher's Role

Concerns about issues of power or risk over collecting data in an organization I am familiar with was minimal. I never had a leadership position within the organization, nor did I have authority to evaluate or discipline staff. Although my position had access to various

teaching components such as grade books, communication logs, online learning management systems and discipline records, only the data approved for the study were collected and incorporated into the study. My position was responsible for supporting teachers and troubleshooting problems associated with various instructional technologies. To help increase the dialogue between the research participants and myself, I shared my background and experience in teaching, school administration, and educational technology.

Multiple sources of data were used to triangulate the data and identify common themes and patterns. I was the only person responsible for collecting data. Contradictory themes and patterns were incorporated in the findings. As a former teacher and instructional technologist, I routinely used the same technology tools as teachers. My background and education were not in information technology or computer science, I taught myself a variety of technology related skills and learned from others along the way. Overcoming my bias that teachers should take time on their own to learn and master new technology related skills was controlled throughout the research process. I have been responsible for providing professional development on a variety of educational technologies. If common themes included not enough technology professional development or training on technology, I would have included the themes and not let my assumptions or bias discredit the data or findings. To further validate the data, participant feedback or member checking were requested.

My experience working in the technology department of school districts has increased my capacity to understand how teachers and school leaders can leverage technology to enhance communication and interaction. I believe interactions in online learning environments could be enhanced with technology and could be equally meaningful, if not more meaningful compared to traditional interactions in a face-to-face environment. Because I mainly worked with adults, my

view of how to support interactions in an online learning environment might be different compared to high school teachers. I was not a research participant in the study. Gaining teachers' perceptions and experiences on supporting interactions in online environments could increase my capacity to support and understand how high school teachers work with students in online learning environments.

Procedures

A request to perform research and collect data was sent to the district's superintendent and approval was granted (Appendix A and B). Approval from the Institutional Review Board (IRB) at Liberty University was met before data were collected (Appendix C). The purpose of obtaining IRB approval was to document the ethical design of the research study and to reassure all participants the research study was safe and had been well-planned (Creswell & Poth, 2018). To avoid concerns regarding the case study design and to increase reliability, the procedures, methods, and data collection techniques were explicit and transparent (Yin, 2018). An invitation to participate in a research study was posted on the district's main internal message board (Appendix E). All interested participants had access to preview the research design and procedures. Participants were informed that participation in the study was voluntary and their consent was requested (Appendix D). All personal information of the participants was kept confidential.

Participants were asked to email the researcher if interested in participating in the study. Participants were asked to complete and digitally submit a consent form (Appendix D). Interviews were completed virtually via the Zoom platform, lasted approximately 30 minutes to one hour, and consisted of 10 open-ended questions (Appendix F). Before interview questions were finalized, a group of experts reviewed the questions and provided feedback. Once interview

questions were approved, the finalized and approved list of interview questions were utilized.

Participants were given the opportunity to participate in a focus group to discuss the research study and provide responses to three open-ended questions (Appendix G). According to Yin (2018), focus groups allow participants to provide feedback on certain aspects of the study. The feedback generated from the focus group on the research study and interview questions were incorporated into the study. In addition to the interviews, participants were asked to submit a writing sample (Appendix H). Document analysis was utilized to collect data from the writing samples. According to Yin (2018), documental analysis can be applied to a variety of document formats; specific examples may include personal documents such as diaries and notes, or more formal documents such as emails, letters, or memos.

Permissions

Permission to perform research and collect data from the Township School District were requested and granted by the district's superintendent (Appendix A and B). Before the official request to perform research and collect data were sent, an informal email was sent to the superintendent and assistant superintendent to identify if the district would have problems serving as a research site. After the superintendent requested a copy of and reviewed Liberty's IRB process, site permission was granted.

Recruitment Plan

An invitation to participate in doctoral research was posted on the district's main internal message board (Appendix E). Teacher data were collected once approval was granted. Participants were informed of the purpose of the study and given access to preview the interview questions and research process. Participant screening protocols were limited since all teachers employed with Township School District had experience teaching online classes. Creswell and

Poth (2018) suggested a sample size of 5 – 25 participants should provide opportunity to discover common themes and patterns. The research site had a sample pool of approximately 350 participants, a sample size of 12 – 15 participants was the goal for the study. The sample of participants represented a purposive sample because all teachers in the district had experience teaching online. The purposeful sample could enhance the quality of information collected (Creswell & Poth, 2018). All interested participants were reminded their participation was voluntary, allowed to preview the research process, and asked to provide their consent.

Data Collection Plan

Data for this study were collected from semi-structured interviews, focus group interviews, and document analysis. Semi-structured interviews helped create a less formal experience by resembling a normal and fluid conversation (Yin, 2018). To aid the researcher in collecting relevant data from the interview process, interview questions were open-ended and non-threatening (Yin, 2018). The additional sources of data, focus group interviews and document analysis, complemented the interview data and helped increase the quality of the research as well as the validity of the study (Yin, 2018). A case study database was created using Microsoft Word and utilized throughout the data collection process to organize the data (Yin, 2018). The case study database helped keep the raw data separated from research interpretation or bias and helped increase the reliability of the research study (Creswell & Poth, 2018; Yin, 2018).

Individual Interviews

Interviews were scheduled during a time that was convenient for the participant. Participants completed the interview online using the Zoom platform. The audio from the interviews was recorded and later transcribed. The interview process was semi-structured,

consisting of pre-determined and open-ended questions (Appendix F). The semi-structured interview allowed for flexibility and if needed, better clarification or more information (Smith & Osborn, 2015). Each participant was informed of the reason for the research, guaranteed confidentiality, and given opportunities to end participation at any time throughout the study. Interviews lasted approximately 30 - 45 minutes and consisted of 10 questions. To maximize engagement and quality responses, minimal notes were taken during the interviews (Vagle, 2018).

According to Yin (2018), recording the interview could provide a more accurate interpretation of the interview compared to taking notes and the recording might be very valuable if the researcher needs to revisit the interview. After each interview was completed, the recorded interview was viewed, and verbal responses were transcribed. The recorded interviews were transcribed into a Microsoft Word document and copied into a Microsoft Excel spreadsheet for manual coding.

Individual Interview Questions

1. As a reminder, all names and personal identifiable information will remain confidential. Please introduce yourself by answering the following: number of years you have taught, content area you teach, and number of years you have taught online prior to the COVID-19 pandemic. CQ
2. Interactions or dialogue between students and teachers can vary greatly in format and context, the list not exclusive but examples could include student-teacher, student-student, student-content, or teacher-teacher. How would you describe or summarize what positive or meaningful interactions look like in your online teaching sessions? SQ1

3. During your online teaching experience, think about a few of the most meaningful interactions you were involved with or experienced. The experiences may vary greatly in context and format, such as discussion board posts, peer editing assignments, student conferences, live teaching sessions, teacher feedback, etc. What made these interactions meaningful? SQ1
4. Thinking of the same experiences and meaningful interactions from the previous question, what procedures or planning were involved to make these interactions possible and successful? SQ2
5. What format, such as discussion boards, live conferences, peer review assignments, etc., seemed to work the best to foster meaningful interactions? SQ2
6. Why do you think _____ work the best or has the most success? CRQ
7. How have successful interactions affected your lesson planning or teaching style? Describe changes, if any, you made to your courses, assignments, expectations, interventions, teaching strategies, and/or availability to students. CRQ AND SQ1
8. How would you describe the role or importance of meaningful interactions in an online learning environment? SQ1
9. How do you think meaningful interactions in a learning environment impact student success? SQ1
10. Last question, what else would you like to share about the role of interactions in an online learning environment? Are there suggestions you would like to share that may help other teachers create and support interactions in an online environment? CRQ

Question one was designed to be an easy question to answer and provide a simple start to the interview process. The rest of the questions were designed to help the participant think about

their experiences teaching online and how they supported meaningful interactions in an online teaching and learning environment.

Question two aligned with research sub question one because participants described their interpretation of what meaningful interactions look like. Participants also provided examples of meaningful interactions. Question three aligned with research sub question one because teachers shared their perceptions of meaningful interactions by describing what made the interactions meaningful. By describing what made interactions meaningful, teachers shared their view and opinion of what meaningful interactions are.

Question four aligned with sub question two and built on the previous question. Question four allowed participants to share their experiences and opinions about the procedures and planning required to support meaningful interactions. Participants shared their experiences creating and fostering meaningful interactions. Question five built on participant responses to questions three and four and aligned to sub question two. Question five asked participants to identify the formats or activities that appeared to best support and foster meaningful interactions. A few teachers provided information on why a certain format worked better compared to other formats or activities.

Question six built on participant's response to question five. Question six was designed for teachers to explain why they think certain teaching and learning activities supported meaningful interactions. Question six aligned to the central question. Question seven was reflective in nature and asked teachers to describe how previous meaningful interactions impacted their lesson plans or teaching style. Participants were asked to describe changes to assignments, expectations, teaching strategies, or interventions. Question seven aligned to the central research question and sub question one.

Question eight aligned to sub question one and allowed participants to share their perception of meaningful interactions. Participants may feel meaningful interactions are not important or required and this question gave participants the opportunity to expand on their thoughts about meaningful interactions. Question nine was aligned to sub question one and allowed participants to describe how meaningful interactions impact students. Question nine built on question eight and was designed to gain more understanding of teachers' perception of meaningful interactions. Question 10 aligned to the central research question and allowed participants to share anything they felt was important regarding meaningful interactions in an online learning environment.

Individual Interview Data Analysis Plan

Coding methods consisted of NVivo Coding and Initial Coding techniques. Initial Coding methods of pre-coding the data were utilized to generate possible codes and allowed the researcher to become familiar with the data (Saldaña, 2009). NVivo coding was utilized to identify codes generated directly from participant responses. The use of NVivo Coding helped preserve the participant's perspective and reduced researcher bias or misinterpretation (Saldaña, 2009). Participant interviews were transcribed and entered in Microsoft Word and Microsoft Excel. Manual pre-coding was performed on interview data to identify and recognize participant answers that had significance or rich descriptions (Saldaña, 2009). Pre-coding was done in Microsoft Excel; three columns were utilized to hold the following forms of data: raw data, pre-coding or preliminary codes, and final codes (Saldaña, 2009). According to Saldaña (2009), NVivo Coding is suitable for qualitative studies and can be utilized along different coding methods (Saldaña, 2009).

Document Analysis

The second type of data collection was document analysis of participant generated writing samples. Participants were asked to respond to three prompts:

1. Summarize an intervention or strategy you used to create or support meaningful interaction between you and a student in an online learning environment.
2. Explain how teaching remotely has impacted your ability to create or support meaningful interactions?
3. Describe the perfect online learning environment that would best support meaningful interactions between you and your students?

According to Bowen (2009), document analysis is a systematic method for evaluating documents and text. Participant writing samples were analyzed to identify patterns and themes associated with supporting or encouraging interactions. Participants were given access to the three questions at the beginning of the study via e-mail. Participants were allowed to submit their writing samples via email any time during the study. Weekly emails were also sent to encourage participants to answer the questions. Data generated from the document analysis were added to the case study database.

Document Analysis Data Analysis Plan

NVivo Coding and Initial Coding methods were utilized to generate initial data codes and themes. NVivo coding was utilized to identify codes generated directly from participant responses. The use of NVivo Coding helped preserve the participant's perspective and reduced researcher bias or misinterpretation (Saldaña, 2009). Participant responses to the questions were copied and pasted in Microsoft Excel. Manual pre-coding was also performed on participant responses to identify answers that had significance or rich descriptions (Saldaña, 2009). Manual

pre-coding was done in Microsoft Excel.

Focus Groups

Participants were given the opportunity to participate in a focus group interview. Focus groups allow multiple viewpoints of the same experience to be shared and discussed (Fusch & Ness, 2015). A structured focus group protocol was followed (Appendix G). An opening script consisting of an introduction, review of the topic, and focus group guidelines was shared. The purpose of the focus group was to gain a deeper understanding of the participant's perceptions and experiences of creating and supporting meaningful interactions in online learning environments. After the focus group interview was completed, participants were sent a transcription of the focus group interview and asked to provide feedback and review the accuracy of the transcription. Participants received the transcription via email. Seeking participant feedback on the accuracy of the focus group responses was a form of member checking and helped ensure participant responses were understood and received correctly (Creswell, 2014). Member checking allowed for reflection and enhanced validity and reliability of the data (Merriam, 1998). According to Fusch and Ness (2015), 6-12 participants are needed to establish a quality focus group. The focus group for this study consisted of six participants and took 30 to 45 minutes to complete.

Focus Group Questions

1. What is needed to ensure meaningful interactions take place within online learning environments? SQ1 and CRQ

2. Think of your experience teaching online or remotely. What were the biggest barriers to creating and supporting meaningful interactions? CRQ and SQ2

3. What strategies or interventions have been successful in creating and supporting meaningful interactions? CRQ and SQ2

4. Describe the impact meaningful interactions have on students? SQ1

Question one might require participants to reflect on their online teaching experience and think about what was needed for meaningful interactions to take place. Question one might also cause participants to share their perceptions of meaningful interactions. Question two required participants to think about their past online teaching experience and share problems they experienced with trying to create and support meaningful interactions. Question three allowed participants a chance to share their stories of successful meaningful interactions and share how they made the interactions a success. Question four was designed to gain teacher perception about meaningful interactions.

Focus Group Data Analysis Plan

NVivo Coding, Initial Coding, and Themeing the Data methods were utilized to generate initial data codes and themes. NVivo coding was utilized to identify codes generated directly from participant responses. Participant responses to the questions were copied and pasted in Microsoft Excel for coding purposes. Manual pre-coding was also performed on participant responses to identify answers that had significance or rich descriptions (Saldaña, 2009).

Data Synthesis

All interview questions, focus group questions, and writing samples were grouped based on how the data collection methods and questions aligned to the main research questions. All questions that aligned to sub question one were grouped together, questions that aligned to sub question two were grouped together, and all questions that aligned the central research question were grouped together. The data codes and themes generated from each participant response

were included when questions were grouped based on alignment to research questions. A new Excel file was created to preserve the original data codes and themes generated from data analysis. Codes and themes aligned to each research question were reviewed and compiled. The list of codes and themes were reviewed for similarities and the most frequent emerging themes were designated. The top five emerging themes were utilized to form a single set of themes.

Trustworthiness

According to Amankwaa (2016), the researcher controls the level of trustworthiness and validity by analyzing and reporting on the true data. Trustworthiness was a critical component of the research process. Several methods were used throughout the study to support the trustworthiness of the study. Trustworthiness is a process that involves establishing and fostering credibility, dependability, confirmability, and transferability (Amankwaa, 2016). Apart from triangulating the data, member checking or participant feedback methods were utilized. Although the interview questions were designed to guide the participants and provide possible follow-up questions, member-checking was also utilized to ensure the researcher summarized participant answers correctly while extending the opportunity for participants to provide clarity (Creswell, 2014). In the current research study, data were triangulated, and member checking was utilized for further clarification.

Credibility

According to Yin (2018), a significant threat to credibility and validity is inaccurate interpretations. To minimize threats of credibility, member checking was utilized after each interview to allow the participant to provide feedback on the accuracy of the interview. The research study used appropriate participants which aided the external validity (Yin, 2014). External validity was also increased from the feedback received from the focus group. Additional

factors to promote credibility were utilized, such as prolonged engagement in the research (Amankwaa, 2016). Participants chosen for the study had experience teaching in an online setting. Peer debriefing was also utilized to ensure participant responses were interpreted and understood correctly. Before analyzing the data, I reviewed different methods of analyzing data from archival sources and documents.

Transferability

Transferability and reliability concern the replication of the study. A higher level of transferability is desired. By explaining in detail, the data analysis techniques and processes, other researchers should be able to perform the same study under similar circumstances. For research findings to be transferable and applicable in other settings, the original researcher should provide a thick description of the phenomenon (Amankwaa, 2016; Creswell & Poth, 2018). The research study followed a standardized case study process to collect, code, and analyze data from interviews, and writing samples.

Dependability

Audits and audit trails could help establish dependability (Amankwaa, 2016; Creswell & Poth, 2018). An audit trail was established for this current study. Audit trails are records that describe the research steps throughout an investigation and might also be used by the researcher to follow up on key findings or areas of concern (Amankwaa, 2016). The audit trail included raw data, data analysis steps, data conversion to themes and patterns, and researcher journaling. Although larger sample sizes enhance the generalizability, this study analyzed large amounts of data to offset a smaller sample size. The dissertation committee and the Qualitative Research Director also enhanced the degree of dependability by completing thorough reviews of the research process.

Confirmability

Triangulation of the data and audit trails enhanced the confirmability of the study. Data were collected from multiple sources and codes were identified and generated from participant responses. Using participant language and responses to form data codes helped minimize researcher bias. The research was not funded and there was no motivation for findings to sway one way or the other. In addition to the audit trails, the researcher practiced reflexivity during data analysis.

Ethical Considerations

As a former school employee, I had access to a variety of information on teachers and their courses; however, for the purpose of this study, only information approved through the IRB was utilized. The study was conducted, and data were collected after approval from the IRB. District approval was requested and granted. The research study was designed with participant safety in mind, no participants were harmed and all participants received a consent form. During the study, all participant data remained confidential. Participant names were replaced with pseudonyms to ensure anonymity. Participants involved in the study knew ahead of time what data were being collected and what sources were being utilized. All data collected were secured in an OneDrive folder with dual authentication security protocols enforced.

During in-person interviews, only the participant and interviewer were scheduled to be present. However, there was no control over who was present or in the background at the participant's location. Minimal field notes were taken during interviews, handwritten notes were secured in the researcher's locked file cabinet and digital field notes were secured in the researcher's OneDrive folder. Confidential data shared during interviews remained confidential

and only included if pertinent to the topic. Participants did not report any problems or concerns with the research questions.

Summary

This qualitative case study highlighted the lived experiences and actions taken by high school teachers to create and support interactions in online courses. The study was conducted using individual interviews, a focus group interview, and document analysis of participant writing samples. The interview questions focused on understanding teacher's experiences and perceptions of the role of interactions in an online learning environment. Manual coding methods were used to identify common themes, data codes, and patterns.

CHAPTER FOUR: FINDINGS

Overview

The purpose of this case study was to describe the experiences and actions taken by teachers to create meaningful interactions in an online setting. The research questions focused on the teachers' experience, perception, and teaching methods. This chapter includes the participant descriptions, themes from the data, and responses to the research questions. Data from individual interviews, focus group interviews, and document analysis were reviewed, analyzed, and combined to formulate the contents of this chapter.

Participants

Table 1

Participants

Teacher Participant	Years Taught	Years Taught Online Prior to COVID-19	Content Area
Hudson	5	0	Science
Jamie	2	0	Math
Robert	8	0	Math
Brian	17	3	Social Studies
Tomi	10	0	Social Studies
Carlos	12	0	Math
Jonny	17	2	Special Education (Science)
Mike	10	0	Math
Rick	21	0	English
Jan	4	0	Science
Erin	16	2	Special Education (Math)
Jeffrey	24	0	English
Riley	9	0	Special Education (English)

Table 1 contains a brief overview of the participants in the study. Pseudonyms are used in place of real names. Participants represented five different content areas, including three from Special Education. For the majority of teachers, their online teaching experience started when in-person teaching and schools were closed due to the COVID-19 pandemic of 2020. The only exceptions to this were two participants with online teaching experience at the college level, and one participant who had experience teaching online at the high school level.

Participant Descriptions

Hudson. Hudson is an American male and is 30-40 years old. He had only taught at Township School District. He is considered a go-to teacher for technology integration. Teaching was his second career.

Jamie. Jamie is an American female and is 20-30 years old. She had only taught at Township School District. She was a sponsor of two extracurricular student groups. She was part of the focus group.

Robert. Robert is an American male and is 35 – 45 years old. The majority of his teaching career had been at Township School District. He was considered an instructional leader among Math teachers.

Brian. Brian is an American male and is 40 – 50 years old. His online teaching experience included teaching for a private university. He was a sponsor for two extracurricular student groups.

Tomi. Tomi is an American female and is 30 – 40 years old. She was a sponsor of two extracurricular student groups. She was part of the focus group.

Carlos. Carlos is an American male and is 30 – 40 years old. He had been teaching at Township School District for two years. He was part of the focus group.

Jonny. Jonny is an American female and is 40 – 50 years old. Her online teaching experience included teaching for a local private university. She was a sponsor for two extracurricular student groups.

Mike. Mike is an American male and is 35 – 45 years old. He had been teaching at Township School District for two years and held different roles for the district before he started teaching. He was part of the focus group.

Rick. Rick is an American male between 50 – 60 years old. He had been teaching at Township School District for 22 years.

Jan. Jan is an American female between 20 – 30 years old. She had worked for the district prior to becoming a teacher. She was part of the focus group.

Erin. Erin is an American female between 35 – 45 years old. She had taught at Township School District for three years. She had experience teaching online courses for a private company.

Jeffrey. Jeffrey is an American male between the ages of 40 – 50 years old. He had been working at Township School District for the past five years.

Riley. Riley is an American female between 35 – 45 years old. The majority of her teaching career had been at Township School District. She was part of the focus group.

Results

The purpose of this case study was to describe the experiences and actions taken by teachers to create meaningful interactions in an online setting. Data were collected from individual virtual interviews, document analysis, and virtual focus groups. Data were transcribed, organized, manually coded, and themes were identified. The following section includes the major themes and subthemes generated from analyzing the raw data. Each theme is supported

with direct quotes from the participants. The table below displays the major themes, sub-themes, and accompanying key words or codes.

Table 2

Themes

Data Codes and Key Words	Sub-themes
Theme 1: Meaningful Interactions	
Live teaching sessions, entire class instruction, student conferences, break-out sessions, student check-ins, feedback, little independent work, building rapport, one-on-one, adult they can trust, supportive, educator they can trust, key to success	Student-teacher
Group work, break-out rooms, discussion boards, un-mute, contribute via posting, collaborative, back and forth, boosted their confidence, feedback, motivating	Student-student
Interactive websites, interactive tools, interactive content, compete in games, online games, forms, polls, interactive games, surveys, instant feedback, technology is big, interactive or engaging activity	Student-content
Theme 2: Teaching Strategy	
Changed the way I taught, new strategies, instruction vs facilitating, rules, coach, switch mentality, outside the box, change expectations, change lessons, change delivery model, student pace	Change
Student choice, flexibility, student paced, student voice, answer on own time, complete based on their schedule, data reporting, relevant, support role, self-paced, real life, student interest	Student Led
Theme 3: Challenges	
Who was paying attention, more engaged, spark interest, interactions, motivating, more prep work, limited time, competition, meaningful lessons and activities,	Student Engagement
Barely showed up, online attendance worse, attendance policy, encourage positive attendance, schedule, commitments	Student Attendance
Theme 4: Online Learning Environment	
Reliable connection, communication, one-to-one, blend online and traditional, websites, email, gradebook, Infinite Campus, Remind	Digital Preparation

Technology is big, digitize everything, planning ahead, testing and troubleshoot, converting to digital, technology, meaningful lessons and activities, purposeful and appropriate content, online games, surveys, web conferencing	Digital Tools
Outlier Theme: Student Home Life	
Student perspective, parents, family members, parents as teachers, student needs, parent needs, support, parent conferences, parent/guardian included student-parent-teacher	Environment

Meaningful Interactions

Teachers experienced a variety of interactions while teaching online, including student-teacher, student-student, student-content, and even interactions with student's family members. All teachers stressed the importance of student-teacher interactions and many of the teachers stressed the importance of student-content interactions. Although all teachers recognized the importance of meaningful interactions and the majority of teachers were able to create meaningful interactions, one teacher was not successful. When asked to describe what meaningful interactions looked like in their online teaching sessions, Rick shared he did not have any meaningful interactions. Rick also stated, "the only time that I got much feedback from the kids that showed up was during live teaching sessions." Several of the teachers, 7 out of 13, shared experiences of student-student interactions. Most of the student-student interactions occurred in breakout rooms or in discussion board posts. Several of the teachers, 9 out of 13, shared experiences of student-content interactions. Most of the student-content interactions involved students using interactive websites and online games or responding to online polls.

Some of the interactions were a mix of student-student and student-teacher; sometimes the interactions occurred naturally and were not focused on school or content. Robert shared, "some of the most meaningful interactions might not even be content specific, instead maybe something about school or a new milestone for someone. Sure, there are things that probably

shouldn't be shared but that happens every day during in-person classes.” Jamie shared her perception of meaningful interactions:

I think a meaningful interaction between a student and teacher can make a world of difference for certain students. Just like in regular learning environments, in a school, sometimes the teacher is the only positive adult the student interacts with.

Jamie also experienced a blend of student-teacher and student-student interactions during live teaching sessions. She said, “sometimes during the live teaching sessions student would ask questions and that would create a good interaction between me and other students.”

Student-Teacher

Teachers reported student-teacher interactions happened while addressing the entire class, individually meeting with students, and replying to student questions via online communications. Erin had success with creating meaningful interactions by working with students one-on-one to complete activities. Erin shared, “I think the most meaningful were, when the student and teacher were completing an activity together... the student is accurately answering questions or conversing with me. Very little independent work is done on the student’s part.” While some teachers experienced success with student-teacher interactions, other teachers struggled. Rick rarely experienced meaningful interactions and shared “live teaching sessions, the only time I got much feedback or interaction from the kids that showed up was during live teaching sessions.” However, the majority of teachers had success making meaningful interactions in the form of student-teacher interactions. Robert shared the following about student-teacher interactions during live teaching sessions:

Live teaching sessions have probably offered the most meaningful interactions because depending on who is there and paying attention on the other end, you

could have a different audience from the day before. If something locally or national made news for whatever reason, the students could respond to it in a variety of ways and depending on how you run your classroom, you could use that at your advantage and give students a chance to talk about things.

Robert also shared the variety of ways he created student-teacher interactions. Robert stated, “either during small break-out sessions with just me and the student or with me talking to a student during a live session. Could be just a quick shout out or check with them to see if they are there and understanding what we are doing.” Jeffrey experienced meaningful interactions during student conferences and shared why he thought the student conferences were successful:

It let me see what they were working on, what they were doing, let me focus just on that student and their work. The student, maybe too, got to focus just on their work or what they had done. After the first meetings students realized the one-on-one conferences could be meaningless if they had not done any work or if their work was bad and they just wanted to get something done. So, at first or even on-going, not all the conferences are meaningful, some are a waste of time because there is nothing to discuss.

Student-Student

Student-student interactions occurred most often within breakout rooms when students were grouped for various assignments. Teachers reported observing student-student interactions when visiting breakout rooms and also during regular live teaching sessions. Tomi considered a student-student interaction as meaningful “when students are talking to one another and the topic or focus of the conversation is somewhat related to what we are learning in class.” Tomi also stated, “there are plenty of student-student interactions in an online class, however, not all the

interactions are good or focused on our content.” Another teacher also shared their experience with student-student interactions. Riley said:

Group work is easier said than done. But for the students that wanted to learn or at least enjoyed the content and topic of the day, going into a breakout room and hearing students talk about the lesson or asking questions about the material, that was pretty neat and meaningful to me.

Teachers reported that students had the opportunity to talk with one another in small groups within breakout rooms and sometimes during live teaching sessions. Jan experienced meaningful student-student interactions within online discussion board posts. Jan stated, “students were more willing to participate, maybe because, feeling they weren’t on the spot and could contribute via writing in or posting online instead of talking in person.” Jan also suggested the success with discussion boards came from giving students “the availability to answer schoolwork on their own time.” Mike also experienced success with student-student interactions when interactive games or websites were involved.

Student-Content

Many teachers agreed interactive content was needed to maintain student engagement and create a learning environment where students would want to participate and interact with one another. When asked what format or strategy seemed to best foster meaningful interactions, Carlos suggested, “interactive student-to-content activities...using online surveys, polls, interactive websites and games helped create the dialogue and topics during teaching sessions.” Teachers utilized online polls and surveys to provide feedback on what students were engaged and paying attention, compared to what students may have been passively logged into the virtual teaching session. Carlos shared his experience using interactive content:

If it was some sort of survey or poll or game or something, it kept them engaged and they couldn't tune out and they got to see each other's responses instead of just hearing one response in a classroom. They now get to see 18 of their peers respond to the same question. Plus, with the surveys or polls, I knew who was paying attention and actually on the other end of the computer.

Mike also shared his experience with student-content interactions. Mike stated, "I used online games to motivate my students to learn and practice new content." A different teacher also commented on student-content interactions and the need for interactive material. Brian stated:

Some of the modules I created a presentation and recorded, incorporated audio or video clips...I had to find these things, interactive websites or questions they had to answer along the way. I had to tie activities to assignments after the modules were completed to show me what the students learned but also be somewhat engaging and motivating for the students to complete.

During the focus group, two teachers shared experiences with student-content interactions. Riley stated, "After I figured out how to convert some of my paper worksheets to digital forms and online surveys, I realized how simple for the students it could be. I could easily send a link to a survey or quickly check to see if a student turned something in or not." Tomi also commented on student-content interactions, however, she wanted a different learning experience for students. Instead of focusing on digital or online components, Tomi wished the online learning environment could provide "an environment that is free of distractions and offers students a blend of online learning experiences and traditional learning experiences, such as worksheets or hands on activities without a computer to compliment the digital screen or tool."

Teaching Strategy

Teachers may utilize a variety of teaching strategies. According to the teacher responses, many teachers shared how they changed or adopted new teaching strategies to create better interactions while teaching online. When speaking about his experience teaching online, Jeffrey shared, “I made several changes and hopefully they were for the best...my delivery methods or teaching strategies and maybe even expectations changed.” Several of the teachers, 9 out of 13, described how they either changed or adopted new teaching strategies. A few of the teachers also shared their experiences adapting curriculum to better meet the needs of students in an online learning environment.

Change

Several teachers experienced change in their teaching style, classroom management, or lessons. Tomi shared, “I guess my teaching strategies have changed, in how I present information and overall classroom management.” Other teachers also shared how their teaching style slowly changed throughout the online teaching experience. At first, Robert was in total control of everything, significantly limiting student interactions. However, he realized by restricting certain features during online teaching sessions, students could not message one another, ask questions, or have their voice heard. Robert realized restricting student interaction was not helpful and change was needed:

With Zoom and as the host of the meeting, I can control things, who gets to talk, video, chat, lots of stuff. At first, I kept a lot of things locked down and students had little input or way to communicate with one another...Once rules and such were in place, I loosened the reigns a bit and removed some of the restrictions that

prevented students from talking to one another. I still used the restrictions or blocks but allowing the students to talk to one another is important.

Jeffrey also commented about the different dynamics teaching online had regarding teacher control when compared to in-person or traditional classrooms. Jeffrey shared, “No more bell to bell or holding the students’ captive in my classroom, if there was independent work to be done, I would let the students go that wanted too and stay around for the students that wanted to stay.”

Tomi shared her experience regarding less control in the online learning environment. Tomi stated, “I feel as if I have less control in the online learning environment. Less control over what students are doing, talking about, or even if students are there in my online class.”

Student Led

Tomi shared how she adapted lessons to include opportunities for students to “talk about the content or material and if possible, compare it to modern day or apply it to something relevant in their own situation.” Another teacher shared how they adapted lessons and assignments to allow students to collaborate. Brian stated he adapted lessons so students could “use their own interests and experiences to complete the modules and apply the learning to their life.” He also shared how he changed his lessons and teaching style to allow “flexibility on the student side to complete the module and assignment.” Brian also shared, “all assignments applied to the student’s interests or real-life situations, at least I tried to make it. Different then the in-person class assignments, different environment so I had to change things, took the opportunity to try something new.” Mike also shared how he tried adapting lessons and assignments to reflect more student self-paced modules.

Mike shared the changes he made when teaching online, “I went away from as much teacher lead instruction and tried to direct things more to student led. They, the students, were more in charge of their own learning and own success.” When asked to describe the perfect online learning environment, Jamie shared, “a flexible classroom that involved one-on -one, group, self-paced, types of learning activities so that all types of students can join and participate in what works best for them.”

Challenges

Many teachers were challenged when it came to creating meaningful interactions with students and teaching online. Over half of the teachers, 8 out of 13, experienced challenges associated with low levels of student engagement and teaching online. Erin stated, “at first it was a challenge to take what I would normally do in person and turn it into a digital format.” Another teacher also commented on the difficulty of making meaningful interactions in an online environment. Jeffrey shared, “meaningful interactions in an online learning environment, they can be tough to create, even in-person...you have limited time to connect with students or it’s just difficult to get a student to talk.” Finding ways to engage students that were virtually present during teaching sessions was difficult for teachers; getting students to attend virtual teaching sessions was also difficult. Tomi experienced difficulty connecting with her students. She said, “connecting with students is difficult and trying to connect with all my students in a strictly online environment might be even more difficult.”

Student Engagement

Many of the teachers believed student engagement to be necessary for meaningful interactions and student learning. When asked about the impact of meaningful interactions, Jan suggested lessons must be engaging for students to learn. She said, if students “aren’t engaged

and getting something out of the lesson, then they aren't going to learn." Many teachers agreed successful online learning requires student engagement and purposeful interactions. Robert shared his experience trying to increase student engagement with students that were struggling or frequently not participating. Robert stated:

I just tried to connect with students that were struggling academically. It was tough... chances are the student was struggling because they did not attend class. So, if they didn't attend an online class, the odds of me getting to talk to them during a different online meeting was not good. I tried to connect with students during regular class time, especially students that were routinely absent or routinely did not respond. Using regular class time to try to connect with a student meant the rest of the class would be left doing independent work but that happens in a regular in-person class as well.

Another teacher shared their experience with trying to increase student engagement. Hudson said, "If a student had their camera enabled and I could see them, based on their reactions and facial expressions, I could tell if they were paying attention to me or were distracted with other things." Robert shared similar challenges of trying to engage students. He said, "sometimes, I would get no reply from students, their screen name or username would be there...but no one would respond. Class would be over, or I'd let all the students out early and they would still be there...clearly they weren't paying attention."

Student Attendance

Absent students were a problem for several of the teachers. The biggest barrier to creating meaningful interactions for one teacher was students not attending class. Rick said, "getting students to show up... getting kids to show up is the first step, teaching online was difficult because most of my students, even though in-person attendance isn't all that great either,

but online attendance was even worse.” Other teachers had similar experiences with disengaged students and attendance problems. Jamie said, “with 30 plus students on your roster, and you only see 15 or 20 logged on to your teaching session...that is a problem.” Another teacher suggested stricter attendance policies might improve online teaching and learning. Robert shared his frustration and experience with student attendance and student engagement:

Better way to track attendance or participation, not that attendance always means success but for me as a teacher, I want to know who is actively paying attention, who is there and trying, compared to who logged into the session but is playing a video game instead of watching class. In regular or in-person classes, taking attendance was simple but for whatever reasons I struggled with taking attendance in the online learning environment.

Riley commented on the amount of time spent waiting for students to attend teaching sessions or student conferences. Riley said, “the biggest time commitment I spent was staying on Zoom waiting for students who didn't show up.” Another teacher shared the frustration they experienced with disengaged or absent students. Hudson said, “there is only so much you can do for that student or students that do not participate, if they don't respond and their camera is off, you have no idea where they are.”

Online Learning Environment

All the teachers used video conferencing platforms such as Zoom and Google Meet to conduct live teaching sessions, student conferences, student group work, and parent conferences. Technology played a critical role in online learning. When asked to describe the perfect online learning environment, several teachers mentioned access to technology. Jonny said, “reliable internet and technology in the homes of all students.” Mike also shared similar thoughts about

technology. Mike said, “I learned how important technology really is in this generation and the necessity to incorporate it more in the online and in-person classroom or learning environment.”

Digital Preparation

According to Tomi, “it was work, creating the content or finding the content that would spark interest and grab attention.” Other teachers agreed that creating interactions in an online environment required careful planning. Many of the teachers mentioned how their planning or adapting of lesson materials were impacted by teaching in an online learning environment. Erin said, “I plan a lot, I plan for the activity and make sure the student had adequate access to engage and complete the activity.” Jamie also shared similar challenges regarding access to quality material. Jamie said, “lack of digital content, quality content. All the worksheets or forms I used with students were not digital.” Jamie suggested the school was partially to blame for some of the challenges associated with online learning. She said, “lack of understanding on the school district side, lack of understanding the technology needs and support needs of the student.”

Teachers had to rely on various online communication channels to communicate with students and send information. Hudson shared his concern with only being able to communicate with students online. Hudson said, “just because I sent a message, could be through our gradebook system or email, I have no idea if the student actually read the message.” Many teachers embraced the online learning environment and recognized the need for digital content. However, when asked what type of online learning environment would best support meaningful interactions, one teacher suggested a hybrid learning environment. Tomi said:

An environment that is free of distractions and offers students a blend of online learning experiences and traditional learning experiences, such as worksheets or hands on activities without a computer to compliment the digital screen or tool.

Digital Tools

One teacher suggested student engagement increased because students could use computers to complete the digital forms the teacher converted from in-person handouts. Erin said, “at first it was a challenge to take what I would normally do in person and turn it into a digital format...I find that students are motivated when using the computer and I tend to get more buy in and more actively engaged students, sometimes.” Other teachers also shared their experiences using digital content. Carlos suggested, “use an online form to your advantage and use as much digital content, digital engaging content and engaging materials as you can.” Carlos also stated:

If it was some sort of survey or poll or game...it kept them engaged and they couldn't tune out. And they got to see each other's responses instead of just hearing one response in a classroom they now get to see 18 of their peers respond to the same question. Plus, with the surveys or polls, I knew who was paying attention and actually on the other end of the computer.

Mike also shared his experience using digital tools during teaching sessions and commented on what teaching strategies and methods seemed to work best. Mike stated, “A live teaching group session that incorporated online digital activities that every kid can participate in at the same time.”

Another teacher shared their experience using web conferencing software to share resources and content with students. Erin stated, “I took a self-advocacy worksheet and turned it into a digital form that the student can fill out via remote control access...Zoom session. Normally something they would write down but now something they can do on the computer.” A different teacher shared a similar experience using multiple digital tools. Mike stated:

I would start the session by sharing the results, when the students finish the games they would want to know how they did against their classmates...to see if they were doing better compared to their friends. At that point I hooked them into being there and then would review the topics that were not done as well.”

Mike also shared how using digital tools helped him check student progress and reduced the amount of time needed to compile student scores. Mike stated, “Online math games...Most of the time, the system or game charted the scores for me and I did not have to actually compile the scores. Made it very easy for me.” Carlos also recognized the importance of digital tools. He stated, “I had to take my lessons and make sure I had some sort of interactive tool ready to go so students could interact with one another during each session.”

Outlier Data and Findings

This section contains one unexpected theme. All three of the special education teachers mentioned family or parent involvement in several of their responses. Two regular education teachers also commented on the impact a student’s home environment might have on remote or online learning. During the focus group, one teacher shared how parents were sometimes to blame for online class interruptions. Tomi stated, “I would have parents interrupt or ask questions while I was trying to teach. Little brothers and sisters in the background, sure, that was to be expected but sometimes the adults or parents were the worst.”

Student Home Life

Online teaching and learning converted home spaces to classrooms. Jonny said, “I had my eyes opened to the realities of what home life looks like for my students and families.” When microphones and web cameras are enabled, teachers and students can see and hear what is

happening in the home environment. Another teacher commented on student home life when thinking about the impact of meaningful interactions. Jamie said:

The family life and dynamics of the student and their home are sometimes shared or exposed during online teaching sessions. I, we forget, teaching in a classroom is teaching in a learning environment but teaching in my home, to a student that is at their home, or who knows where, puts a different spin on things.

A different teacher also suggested how important meaningful interactions can be depending on a student's home environment. Jan said:

For certain students, probably they need it. Teachers might be the only adults; classmates might be the only people they interact with. If the parents or guardians work during the day and the kid has no brothers or sisters, has no job and doesn't go anywhere, the interactions in the online class are extremely important.

Another teacher also commented on a student's home life. Jamie said, "Forcing students to attend a teaching session during a certain time frame can be challenging and does not account for the schedule of the student."

Teacher to Parent and Student Interactions

All the special education teachers in the research study mentioned the presence of parents when sharing their experience with meaningful interactions. Jonny said, "parent and student meetings worked best because parents needed support becoming the teacher for their child at home." Teaching and interacting online with students and parents also gave Jonny a new perspective. Jonny also shared, "I had my eyes opened to the realities of what home life looks like for my students and families." A different teacher also shared their experience interacting with parents. Erin believed communicating with the parents was beneficial because it allowed

her to find out what the parents needed. Erin said, “parents needed support becoming the teacher for their child at home...I was now the listener trying to figure out the needs specific for that home environment.” Erin also said, “I had the most success with students making growth if I was listening to the parent needs as well as the students.”

Research Question Responses

The following section answers the three research questions. Data codes and themes from the previous section were used to help answer the research questions.

Central Research Question

What are the experiences of high school teachers creating and fostering meaningful interactions in online learning environments? Nearly all the teachers experienced a variety of meaningful student-teacher, student-student, and student-content interactions. One teacher reported no meaningful interactions occurred in their online teaching sessions. Rick contributed the lack of meaningful interactions to low levels of student engagement and student attendance. Rick said, “Getting students to show up is the first step. Teaching online was difficult because most of my students, even though in-person attendance isn't all that great either, but online attendance was even worse.”

However, the majority of teachers experienced success with creating meaningful interactions. Erin described a meaningful interaction as when “the student is accurately answering questions or conversing with me.” Tomi characterized meaningful student-student interactions as when students talked with one another about the lesson or classroom content. Robert also shared his experience with meaningful interactions. Robert said, “live teaching sessions probably offered the most meaningful interactions...Some of the most meaningful interactions might not even be content specific, instead maybe something about school or a new

milestone for someone.” Robert also recognized the importance of giving students a voice and allowing them to share their thoughts. He said it was important to provide “students a chance to talk about things.” Robert also shared his experience using feedback as a tool to provide meaningful interactions:

I think the feedback I give to students...is important. I realize how important feedback can be, regardless of the learning environment either in-person or online, the feedback can serve as that meaningful interaction and if a teacher has 30 plus kids for 6 to 7 classes a day, that can be tough to have a meaningful interaction with everyone, at least in person it would be really tough. The feedback, even though small, could go a long way in letting a student know you are there to support them.

The use of feedback is an example of student-teacher interaction and can also be student-student interaction.

Meaningful interactions may happen unexpectedly. However, one teacher shared his experience with making meaningful interactions happen in the online learning environment. Jeffrey said, “teaching remotely has made me more appreciative of the meaningful interactions that happen without planning in a regular, in-person environment.” He also shared similarities between in-person and remote learning. Jeffrey said, “since we are a one-to-one district, every student usually has a computer with them in class, in a lot of ways, things were not different once we started online teaching.” Another teacher shared three examples of meaningful interactions.

Riley said:

Positive interactions differed from student to student...one included a student taking pictures of his homework...and sharing his screen. Another was just a social-emotional check-in where the student said they didn't have any homework or need help but would

always connect just to say hello. The last student...is one that thrived at home away from peers...we were almost always celebrating what she was getting done on her own away from the distractions that are presented to her at school.

A few of the teachers experienced meaningful interactions with the parents of the students. Jonny shared her experiences interacting with parents. She said, “the engaging conversations had to be with the parents because some of my students were not able to do much engaging online.” Jonny also said, “most meaningful interactions were teacher to student with a parent or guardian involved.” Riley also shared experiences interacting with parents. She said, I had conversations with parents ahead of time to find out what the needs were...and how I could best support the parents and student in the home for learning.”

Teachers also changed or adapted their teaching style to create meaningful interactions. Jan said, “I changed the way I taught online and in-person based on this experience of teaching online. I’m taking my knowledge of discussion board questioning that promote meaningful interactions and include them in my regular in-person questions.” Mike also adapted his teaching style to be more student centered. He said, “I went away from as much teacher lead instruction and tried to direct things more to student led...The students were more in charge of their own learning and own success...I knew I could only hold their attention for so long in the online environment.” Another teacher adapted their lessons to better work with parents as teachers. Jonny said:

I threw out all my lesson plans...once I realized what was necessary and appropriate and correct in teaching lessons in my classroom was not going to work with parents as teachers...I had to switch my mentality to what they needed in their home to be successful with a parent teaching and with less support, no teacher aides, no therapists, no

peers.

Sub Question One

What are the perceptions of teachers on meaningful interactions in online learning environments? Many of the participants perceived meaningful interactions in an online learning environment to be important and have the potential to make a positive impact on some students. Jonny said, “interactions have to be meaningful, or the students are not learning.” Another teacher also commented on the importance of meaningful interactions. Hudson said, “if interactions are not meaningful, then you are just wasting everyone’s time.” Creating the meaningful interactions in an online learning environment were difficult for many of the teachers. Tomi said, “meaningful interactions in an online environment are important, even in the regular classroom when in-person instruction is taking place, the interactions are important and can be difficult to create.” Tomi also suggested, “some students will have success without meaningful interactions...but I think meaningful interactions can make a huge difference for certain students.” Another teacher shared how meaningful interactions could benefit a variety of students. Robert said, “not just students that are struggling but for a variety of students, from the shy student to students that work slower or are simply never there, the right meaningful interaction between a student or a teacher can make a huge difference.”

One teacher also suggested meaningful interactions were even more important when teaching online. Riley said, “I think meaningful interactions might be more important for online learning than classroom learning...if you have a positive relationship with a student, they are more likely to work harder in your class.” Many teachers also perceived meaningful interactions to be difficult to create in any learning environment. Jeffrey said, “meaningful interactions in an online learning environment, they can be tough to create, even in-person...you have limited time

to connect with students or it's just difficult to get a student to talk." Teachers had similar views on the impact of interactions in online learning environments. According to Mike, "meaningful interactions...help get the kids engaged in the conversation or involved in the learning process." One teacher's perception of meaningful interactions included meaningful lessons and meaningful activities. Brian said, "...don't know if I would describe my experience as specific interactions or meaningful interactions but more so meaningful lessons and meaningful activities that allow for student learning to occur in the online learning environment." A different teacher shared a similar perspective on the importance of meaningful interactions. Robert said, "meaningful interactions can help the student realize someone is there to support them...if the interactions are between students, it lets students know they are not alone with their problems." Robert also suggested a meaningful interaction could be something simple. He shared how he made "a conscious effort to call on or at least acknowledge a students' presence when entering the online learning session or for past work." Robert also suggested letting students know you see them and value them. He said, "don't embarrass them but at least let them know you see them and are glad they are there." Another teacher also suggested a meaningful interaction could be something simple. Carlos said, "feedback, even though small, could go a long way in letting a student know you are there to support them."

Sub Question Two

What teaching methods promote meaningful interactions in online learning environments? Teachers shared similar success stories of creating meaningful interactions by using a combination of interactive content, one-on-one conferences with students, discussion board questioning, and adopting new teaching styles. For many of the teachers, creating meaningful interactions meant changing how they taught and required planning to accommodate

the change in teaching style. When asked how successful interactions impacted their teaching style, one teacher shared what made them alter their teaching style. Jonny said, “I had to switch my mentality to what they need in their home to be successful with a parent teaching and with less support, no teacher aides, no therapists, no peers.” Another teacher shared how teaching online changed his teaching routines. Brian said, “definitely felt like a lot more prep work in getting the lesson prepared. A lot more on the back end when it comes to reviewing assignments and grading.”

A different teacher shared how he changed his teaching style to give students more control over their learning. Mike said, “I went away from teacher led instruction and tried to direct things more to student led...The students were more in charge of their own learning and own success... I tried to be more to the point in getting the content across.” Another teacher suggested working with students individually was the key to creating meaningful interactions. Riley said, “as much one-on-one that you can do with the student the better. You will learn lots of things about them and maybe they will feel compelled to perform well for you.” Another teacher also commented on the success of working with students individually. Erin said, “do what works for each individual student, it takes time and effort but try and do what works for each student.”

Another teacher changed their teaching style to include more student led activities along with more interactive content. Carlos said, “I started to do less teacher led in the online environment and started to incorporate interactive activities.” Carlos also suggested interactive student-student activities helped increase meaningful interactions. However, meaningful student-student interactions can take time to create and may require planning. Some of the teachers used discussion board type activities to create meaningful student-student interactions. Jan said,

“make sure the discussion board questions or prompts were related to the teaching topic and relevant. But also were motivating enough to get students to discuss back and forth with one another, not simply throw up an answer by posting quickly and be done.”

Summary

Teachers tried to increase meaningful interactions by adopting new teaching strategies, increasing student engagement, utilizing interactive content, integrating more digital content into their lessons, and allowing students more control over their learning. Teachers expressed making meaningful interactions could be difficult. For many of the teachers, creating meaningful interactions required time to review, plan, and create lessons and digital content. Many teachers also shared similar experiences regarding an increase in time commitment, such as waiting for students to enter live teaching or tutoring sessions. However, the teachers agreed meaningful interactions were important and could positively impact students. Nearly all the teachers were successful in creating meaningful interactions in their online learning environment. Although teachers suggested online learning might not be the best environment for every student, teachers also suggested some students thrived in the online learning environment.

CHAPTER FIVE: CONCLUSION

Overview

The purpose of the study was to understand teacher experiences with creating and supporting meaningful interactions in online classes. This chapter includes a summary of the themes discussed in Chapter 4, an interpretation of the data, implications for policy and practice, theoretical and methodological implication, limitations and delimitations, and recommendations for future research. The chapter closes with a summary of the entire research study and includes the most important findings.

Discussion

The study used Moore's (1997) transactional distance theory to guide the research questions. The following research questions were addressed:

Central Research Question: What are the experiences of high school teachers creating and fostering meaningful interactions in online learning environments?

Sub Question 1: What are the perceptions of teachers on meaningful interactions in online learning environments?

Sub Question 2: What teaching methods promote meaningful interactions in online learning environments?

One of the most important factors influencing student success in online classes are interactions (Borup et al., 2013; Croxton, 2014; Lin, Zheng, & Zhang, 2017). Students taking online classes may have fewer opportunities to interact with teachers and peers compared to students taking in-person classes (Martin & Bollinger, 2018). Creating and supporting opportunities for interactions in online classes are critical for student learning (Borup et al., 2013; Croxton, 2014; Martin & Bollinger, 2018). According to the data in this current research,

teachers used a variety of methods to increase the opportunities for interactions in their online classes.

Interpretation of Findings

Themes developed from the data include meaningful interactions, teaching strategy, challenges, online learning, and student home life. Sub themes for meaningful interactions include student-teacher interactions, student-student interactions, and student-content interactions. Sub themes for teaching strategy include change and student led. Sub themes for challenges include student engagement and student attendance. Sub themes for online learning include access and digital content. An outlier theme of student home life was also included and consisted of the sub theme parent-student-teacher interaction.

Summary of Thematic Findings

Interpretations of the themes from Chapter 4 are included in this section. Interpretations of the data are grouped into four sections: meaningful interactions, increasing interactions, student engagement, and teaching strategies. A theme from Chapter 4, challenges, was not included in the list of interpretations because many of the challenges teachers faced were correlated with increasing student engagement and interactions. Another theme from Chapter 4, online learning environment, was also not included in the list of interpretations because the focus of the study and the findings were aligned with how teachers created or supported meaningful interactions.

Meaningful Interactions. Students that experience reoccurring meaningful interactions with teachers are more likely to succeed (Harper, 2018; Hawkins et al., 2013). In the current study, Riley expressed how interactions must be meaningful for students to learn and make progress. The definition of a meaningful interaction may vary by individual, context, and

environment. Understanding how to create and support meaningful interactions can be complicated because there is no universal definition of a meaningful interaction (Kato, Spring, & Mori, 2016). Riley also stated, “if the interactions are not meaningful then you are just wasting everyone’s time, no one is walking away with the ability to process or apply the information.” Other teachers also associated meaningful interactions with student learning, however, meaningful interactions may also involve non-curricular benefits or topics.

Measuring the effect or quality of a meaningful interaction can be a challenge (Le et al., 2017). One teacher perceived interactions as meaningful if students were answering questions correctly; another teacher perceived interactions as meaningful if students were talking to one another about what they were learning in class. An interaction is generally considered meaningful if the interaction benefits student learning (Kato, Spring, & Mori, 2016). Additional characteristics of meaningful interactions may also include high-quality participation from students, when students feel compelled to communicate, and an element of control over the content by the student (Kato, Spring, & Mori, 2016; Woo & Reeves, 2007). Jonassen et al. (2008) suggested there are five critical elements that must be present for teachers to utilize technology to support meaningful engagement: tasks must be active, constructive, intentional, authentic, and cooperative (George & Sanders, 2017; Jonassen et al., 2008).

Similar to meaningful interactions, researchers labeled interactions between teachers and students as caring if one or more of the following conditions were met: teachers acted in the best interest for the student, teachers were receptive of a students’ perspective, students acted in the best interest for the teacher and themselves, and students were receptive of different viewpoints (Velasquez, Graham, & Osguthorpe; 2013). Through the various interactions, one teacher in the current study realized their students’ perspective of technology. The teacher realized how

important technology was to his students. Regardless of the exact definition, many researchers agree meaningful interactions in online learning environments may help enhance the academic outcomes of students (Borup et al., 2013; Kato, Springs, & Mori, 2016).

Increasing Interactions. Teachers have a limited amount of time to interact with students and create a positive teacher to student relationship. Creating or increasing the frequency of meaningful interactions can be a challenge, however, “maintaining a positive relationship requires ongoing positive interactions with students” (Cook et al., 2018, p. 229). Teaching online requires the use of technology and mastering new technologies and teaching strategies (Davis & Roblyer, 2005; Kato, Springs & Mori, 2016). Understanding how teachers create and support interactions in an online learning environment may be critical to improving student success in remote and online learning environments. Understanding what teaching strategies are successful and why they were successful may help other teachers increase student interactions and student success. In the context of online learning or distance education, three types of interactions exist between the student and teacher: student-content, student-student, and student-teacher (Moore, 1989; Zhang & Lin, 2019). Increasing the frequency of meaningful interactions can promote higher-order thinking skills of students, encourage active learning, offer students effective guidance, and enhance the overall online learning environment (Zhang & Lin, 2019).

Technology may also play a role in mediating interactions; social media may help increase meaningful teacher-student interactions (Harper, 2018; Matzat & Vrieling, 2016). Technology may certainly enhance or make new interaction opportunities available, however, technology alone does not replace the need for teachers (Harper, 2018). Teacher-student interactions are needed to promote student learning and are vital for students to take control of

their learning and be successful (Harper, 2018). Teacher-student interactions may be defined as direct communication during a live teaching or tutoring session, a reply from a discussion board post, feedback on an assignment, and other types of communication (Zhang & Lin, 2019). One teacher experienced the realities of trying to create meaningful interactions and positive relationships with all their students. The teacher shared it was difficult connecting with all their students and doing so online may have made things more difficult.

Student Engagement. Student engagement is correlated with knowledge construction along with deep and meaningful learning (George & Sanders, 2017). In the current study, many teachers suggested student engagement was a key element for creating interactions in an online learning environment. Many teachers also believed the majority of meaningful interactions in their online environment were student-teacher interactions. Student-teacher interactions can motivate students and have a positive effect on student grades (Borup et al., 2013; Cavanaugh, 2005). Although many teachers in the current study believed student-teacher interactions were important, the teachers also recognized the importance of student-content interactions in the form of interactive content. Throughout the interviews, interactive content and student engagement were repeated and deemed necessary for creating interactions. Interactive content supports student-content interactions and can create powerful learning opportunities for students (Harper, 2018). Certain content, such as interactive content or various types of multimedia, allow students to control the pace of their learning (Steele, Robertson, & Mandernach, 2018). One teacher in the study recognized the importance of student engagement and used interactive content to increase engagement levels. The teacher shared how they made sure to incorporate an interactive element in lessons. Other teachers also shared student engagement was necessary for creating interactions and using online surveys and interactive games helped create dialogue.

When teachers engage and participate in the learning activity with students, a better learning environment may be formed (Harper, 2018). Online discussion boards or online forums can be engaging for some students and may provide an environment for meaningful interactions to occur and for teachers to participate (Velasquez, Graham, & Osguthorpe, 2013). However, teachers must plan accordingly and model the expected behavior (Velasquez, Graham, & Osguthorpe, 2013). Online discussion boards may provide an avenue for the shy or usually disengaged students a chance to participate and add to the conversation and learning.

Teaching Strategies. Teaching online may change the way teachers prepare and deliver lessons (Harper, 2018). Many teachers may change their teaching strategy when teaching online, however, teachers should still practice thorough pedagogical instructional techniques even when heavily relying on technology (George & Sanders, 2017; Harper, 2018; Subramaniam, 2016). George and Sanders (2017) suggest constructivist based pedagogical instructional techniques paired with technology best support meaningful learning environments. Teaching online and being completely dependent on technology may influence teachers to adopt new roles such as facilitators (Harper, 2018). Teachers as facilitators may be a new role for teachers, however, the teacher's role as a facilitator can be critical for student success (Boardman, Boele, & Klinger, 2017; George & Sanders, 2017).

Teaching online and heavily using technology may lead to new forms of instruction and more meaningful forms of teacher to student interaction (Hamalainen & De Wever, 2013; Harper, 2018). Interactions between students and teachers can be “enhanced if teachers can capture the spontaneous nonverbal behaviors of their students in real time” (Hung, et al., 2017). Teaching online can be a challenge for teachers because teachers must be knowledgeable of several instructional techniques, comfortable with using certain educational technologies, and

prepared to engage students differently compared to in-person teaching (Davis & Roblyer, 2005; Kato, Springs, & Mori, 2016). Teachers may also use technology to enhance the online learning environment by minimizing the efforts and time needed to perform non-teaching activities and responsibilities, such as managing student behavior (George & Sanders, 2017; Harper, 2018). Many teachers may also experience less control when teaching online compared to in-person teaching. However, teaching completely online may create new teaching opportunities that never existed before (Harper, 2018; Phirangee, 2013).

Several participants in the study commented on the element of control regarding teaching online and trying to support interactions. Online teaching and learning aimed at increasing interactions may give students more control compared to in-person learning. One teacher in the current study shared how they gave students more control and became more direct with their delivery and content. When student-teacher interactions increase, lessons may become more targeted (Van Leeuwen & Gabriel, 2007). Other teachers in this study recognized the importance of giving students more control. One teacher shared they felt teaching in the online environment gave the teacher less control compared to in-person teaching, however, the perceived loss of control did not impede on student learning.

Teachers utilize technology to interact with students one-on-one and create student-centered learning arenas (Harper, 2018; Zhang & Lin, 2019). Teachers can also utilize technology to create student-centered lessons where the student is responsible for their own learning and can progress through content on their own (Harper, 2018; George & Sanders, 2017). Effective online teaching is correlated with student-centered learning and teachers as facilitators instead of transmitters (George & Sanders, 2017; Hamalainen & De Wever, 2013; Harper, 2018). When high quality digital content is used, new forms of instruction can be utilized to help

enhance teacher-student interactions and support student-centered learning opportunities (George & Sanders, 2017; Harper, 2018).

Implications for Policy and Practice

The findings from this case study may have several implications for school districts, virtual schools, teachers, school leaders, and parents. Educational policy makers may also benefit from reviewing the findings. The following sections address the policy and practice implications of the study.

Implications for Policy

According to George and Sanders (2017), large amounts of money and resources have been invested in technology for education. The belief that technology can transform teaching and learning has been the driving force behind the push for more digital learning and adoption of educational technologies (George & Sanders, 2017). Many believe an increase in technology usage in schools will improve the quality of teaching and learning (George & Sanders, 2017). However, technology alone will likely not improve teaching and learning. The capabilities of technology have surpassed the latest educational software developments, leaving the task up to teachers to fill the gap and “design technology-based educational tasks” (George & Sanders, 2017, p. 2873). School districts and other learning centers may need to identify ways to support teachers in developing high quality technology-based lessons.

During the COVID-19 pandemic of 2020, many schools may have switched to remote learning without proper policies, plans, and expectations in place. Policies and expectations regarding attendance, communication, behavior, technology, and learning environment may be needed to help guide future online teaching and learning. One teacher in the current study suggested the communication process between the school and families could have been better.

Hudson said, “Communicating with students...I-campus, Remind, E-mail, Google Classroom, there's a bunch. Plus, the district might send a mass communication via Messenger or Remind, there's the website, phone calls home...might have been overwhelming to the families.” School leaders and educational policy makers could benefit from listening to parents and community members regarding communication practices.

Implications for Practice

Ensuring teachers are well prepared to work with educational technologies and in remote learning environments is critical for improving online teaching and learning (George & Sanders, 2017; Koh, Chai, Lim, 2017). Based on the findings of the current study, teachers need help creating meaningful interactions and using digital content to increase student engagement. Before teaching online, teachers may want to explore teaching strategies that support student centered learning. Teachers may need help integrating technology into educational activities because many teachers do not have the skills and knowledge to design effective online activities (Koh, Chai, Lim, 2017). Teachers may also want to explore teaching strategies that utilize interactive content and that have shown success increasing student engagement. Teachers’ perception, belief, and skill level play a critical role in learning and adopting new teaching strategies (George & Sanders, 2017). Some teachers may need help practicing new teaching strategies and developing technology oriented engaging activities.

Professional development focused on creating meaningful interactions and increasing student engagement may help enhance online teaching and learning. However, professional development does not always improve teaching. Past professional development aimed at improving teachers’ ability to use educational technologies has not been successful (Bakir, 2016; George & Sanders, 2017; Shepherd et al. 2016). For professional development to be effective,

teachers must first understand what can be accomplished by using or adopting new strategies or tools (George & Sanders, 2017). Effective professional development is also correlated with being needs-based; identifying the needs of the teachers and developing the professional development based upon the needs of teachers has shown to be most effective (George & Sanders, 2017).

The findings in the current study suggest teachers viewed meaningful interactions in online learning environments as important and critical for student success. Teachers also suggested meaningful interactions are important for in-person learning. However, the problem is teachers need help creating and supporting meaningful interactions. Understanding the elements that create and support interactions in online learning environments may help create interactions in other learning environments. Understanding how teachers create and support interactions in online teaching may help guide future teachers. Based on the findings in this study, schools would benefit from helping teachers create engaging digital content.

Teachers could also use help becoming more efficient and effective with their technology usage. During the focus group, one of the teachers shared how technology played a role in online teaching. Hudson said, “Technology is big. From using a web conferencing platform such as Google Meet or Zoom and learning how to use the different features. Training was great, but you just really need to use it and figure out what features you want to use.” Rick shared how his experience and skill level with technology may have impacted his ability to teach online. Another teacher struggled with taking attendance in a virtual environment. Robert said, “In regular or in-person classes, taking attendance was simple but for whatever reasons I struggled with taking attendance in the online learning environment.” The teacher may have struggled because taking attendance in a virtual environment required simultaneously interacting with

multiple technologies; the teacher had to interact within the virtual learning environment, verify student presence, then utilize the student information system to mark attendance.

Helping teachers become more effective with technology and giving teachers time to adopt the new technology could enhance the learning environment and benefit students and schools (George & Sanders, 2017). Increasing technology literacy may also help teachers communicate better with students and parents. One teacher from the current study had concerns with communicating with students in a remote environment. Hudson shared, “Just because I sent a message, could be through our gradebook system or email, I have no idea if the student actually read the message.” Another teacher commented about expectations of teachers to be available for students. Rick shared, “making yourself too available can be draining; from Remind, email, one-on-one conferences, Infinite Campus...it gets tiring checking everything and trying to reply.” Coincidentally, if teachers make themselves too available, the quality of student-teacher interactions may suffer (Harper, 2018). Before teaching online, teachers may benefit from enhancing their technology communication skills and reviewing research on teacher experiences with online learning.

A few of the teachers in the current study commented on student attendance issues. Rick shared, “I think if there was an attendance policy that encouraged positive attendance and impacted grades, then the teaching and learning during remote learning would be better.” Another teacher shared similar experiences regarding student attendance and disengagement. Jamie said, “With 30 plus students on your roster, and you only see 15 or 20 logged on to your teacher session...that is a problem.” In-person student attendance is not perfect; however, many teachers experienced an increase in student absenteeism during remote learning. Teachers may

need to find new ways to increase student interest in online learning or consider alternate ways of tracking student attendance.

Theoretical and Empirical Implications

In the current study, teachers experienced a variety of meaningful interactions while teaching online. The interactions varied between student-teacher, student-student, and student-content. Meaningful interactions are important because they could help minimize the transactional distance between the teacher and student (Mehall, 2020; Roberts, 2019). The interaction between teacher and student is considered one of the most critical interactions needed for a successful online learning experience (Kasperski & Blau, 2020; Moore 1989). Meaningful interactions between the teacher and student could help create a sense of belonging and support student cognitive growth (Herskovzt & Forkosh-Baruch, 2017; Kasperski & Blau, 2020; Pianta et al., 2020). All of the teachers in the current study suggested meaningful interactions could have a positive impact on student learning and that meaningful interactions could benefit certain students more than others.

Teachers' perception of meaningful interactions was in-line with elements of Moore's (1998) transactional distance theory. Although the current study was not intended to examine ways teachers minimized the transactional distance, the study was designed to understand teachers' experience and perception of meaningful interactions. A main element of Moore's transactional distance theory is examining meaningful interactions in remote or distance education environments. Many of the teachers in the current study recognized the need for content and activities that were high quality, interactive, digital, and engaging. High quality interactive content is an example of student-content interaction and a main element of the transactional distance theory.

Many of the teachers in the current study faced challenges with creating and supporting meaningful interactions in the online learning environment. Previous research also suggested teachers struggled with creating meaningful interactions in online learning environments (Berstein & Isacc, 2018). The biggest challenges associated with creating meaningful interactions stemmed from adopting new teaching strategies and engaging with students. Effective online teaching could require new teaching skills aimed at increasing student engagement and designing high quality content (Martin et al., 2019; Mehall, 2020; Philipsen et al., 2019).

Many of the teachers in the current study transitioned to the role of facilitator as their teaching style slowly became more student centered and student led. According to Harper (2018), many teachers assumed a new role as a facilitator when teaching online. Researchers aligned teachers adopting the role as a facilitator as a critical component for student success (Boardman, Boele, & Klinger, 2017; George & Sanders, 2017).

Additional themes and outcomes of the current study aligned with outcomes from previous research. Teachers in the current study used a variety of teaching and instructional methods to increase interactions and student engagement. In the current study, teachers developed an enhanced appreciation for student-content interactions. Student-content interactions are considered a major and necessary element for cognitive development (Moore, 1989). Student-content interactions have also become a major and necessary element for online learning (Lin et al., 2017). With the aid of technology, teachers have improved student-content interactions and made them more meaningful (Cebi & Guyer, 2020; Garrison & Anderson, 2003).

In the current study, some of the teachers experienced meaningful interactions with the student and the student's parents. The interactions with students and parents, student-teacher-

parent interactions, gave some of the teachers a new perspective on student home life. Martin et al., (2019) suggested regular interactions with parents and guardians was a critical component of student success in online courses. The current study and previous research suggested the home environment could play a major role in the quality of online learning. Factors such as the socioeconomic status, supportive adults, education level of parents, and occupation status of parents could significantly impact the online learning experience (Bansak & Starr, 2021; Chetty et al., 2020; Garcia et al., 2020).

Previous research highlighted barriers and challenges to online or remote learning. Teachers in the current study also experienced challenges with teaching online. Challenges associated with remote learning included limited access to technology resources, Internet connection, home learning environment, and student disengagement (Barbour & Harrison, 2016; Trinidad, 2021). Challenges with in-person teaching also existed in the virtual environment such as disengaged and absent students. Creating meaningful interactions with disengaged or absent students may be nearly impossible. In the current study, teachers also experienced challenges associated with using traditional teaching methods in the online teaching environment. According to Montelongo (2019), traditional teaching methods are not suitable for online teaching. The transition to remote learning and teaching online required new teaching methods and many teachers struggled because they had limited or no experience teaching online (Hall et al., 2020; Marshall & Ward, 2020; Martin et al., 2019). In the current study, teachers also experienced an increase in time commitment to accomplish teaching tasks. According to Cavanaugh (2005) and Martin et al., (2019), online teaching required a larger time commitment compared to traditional teaching.

Although challenges existed with online learning, challenges also existed with traditional in-person learning (Kim, 2020). Teachers in the current study experienced challenges associated with poor student attendance and low levels of student engagement. Student attendance and student engagement problems are not isolated to online learning; challenges and problems that existed in the traditional in-person learning environment could carry over to the online learning environment (Hirsch & Allison, 2020, Summers, 2020). However, online learning may have created new learning opportunities that did not exist in the traditional learning environment (Zhu & Van Winkel, 2017). Online learning could be very beneficial for a variety of students, including those at risk, chronically ill, responsible, gifted, and shy (Barbour & Harrison, 2016; Zhu & Van Winkel, 2017). Understanding students' perception of online learning may help identify the factors influencing disengagement and absenteeism. Some students may not see or understand the value of attending virtual teaching sessions or completing assignments for online classes. Although some of the teachers changed their teaching style and adapted curriculum, the changes may have been too late for students to notice.

A few of the teachers used discussion board type activities to promote interaction and student learning. According to Gao et al., 2013, discussion board activities can offer students and teachers an opportunity to interact with one another while also improving learning outcomes. Discussion board activities, if designed correctly, could give students a chance to elaborate and reveal their understanding of course content (Blake & Rapanotti, 2001; Zayapragassarazan & Thomas, 2020). Although every teacher in the current study did not utilize discussion board activities, Berstein and Isaac (2018) considered online discussion activities a critical component for learning.

For teachers and students, online learning significantly changed the teaching and learning environment (Johnson et al., 2020). Online learning suddenly changed the learning environment from the public school classroom to the private home, bedroom, or basement. The change in learning environment forced teachers and students to adopt new teaching and learning methods; teachers and students were forced to interact with one another in new ways using new technologies (Johnson et al., 2020). According to Arnett and Waite (2020), the change in learning environments could have a substantial influence on educational outcomes. Regardless of the learning environment, quality interaction and teacher presence are necessary components for student learning (Johnson et al., 2020). Increasing the technology literacy capacity of teachers and students may enhance the online learning environment (Marshall & Ward, 2020). Additional research on creating meaningful interactions in online learning environments could help improve the future of online teaching and learning.

Limitations and Delimitations

Limitations of the study include the timing of data collection, sample size, instrumentation, and data analysis techniques. Data were gathered near the end of the fall semester and teachers may have been concerned with finals and grading. The experiences shared by the teachers were at least six to seven months old. Teachers may have remembered online teaching experiences differently than what really happened. If there was an incentive for teachers to participate in the study, a larger sample could have been possible and screening protocols could have been implemented. The qualitative findings were based on a small sample and the findings may not apply for other teachers in different environments. The data were analyzed and collected by a first time researcher, a more experienced researcher could have obtained higher quality data and themed the data differently. The instrumentation and data collection methods

were also limitations of the study. Although all the instrumentation questions were open-ended, the researcher assumed all participant responses were truthful.

Delimitations of the study include the limited region of the site. The study was delimited to the central Illinois area. The study was also delimited to high school teachers. Only teachers with experience teaching at the research site were eligible to participate. Lastly, the study was delimited to a sample population of 350 participants. The generalizability of the study could be enhanced by expanding the region, participant eligibility, research site, and sample population.

Recommendations for Future Research

Teachers' perception of meaningful interactions may be different compared to the perception of students. Comparing perceptions of teachers and students from the same course could be useful. A comparison of grade book activity during online teaching versus in-person teaching may provide useful data on what teachers may have changed to increase interactions for online teaching. Future research could include different forms of data: online teaching sessions, recorded teaching sessions, and discussion board posts. Interviewing students for their perception of meaningful interactions may also provide useful data. Participants for this study represented a variety of content areas and included regular education and special education teachers; isolating content areas and teacher type may be useful for future research. Participants from a different research site could be useful. Teachers from an established online school or virtual school may provide different insights and experiences into creating meaningful interactions in an online teaching environment.

Conclusion

A variety of interactions take place within the online learning environment. Moore's (1998) transactional distance theory was used to guide this study because it includes the

following types of interactions: student-teacher, student-student, and student-content. The transactional distance theory examines how meaningful interactions can minimize the transactional distance in distance learning or online learning environments. Online learning environments may continue to increase in the future and student enrollment may also continue to increase. Identifying ways to support the various types of interactions between teachers and students may improve the online learning environment and should be a goal for everyone in the education arena. Understanding the elements that create and support interactions in online learning environments may help teachers create interactions in other learning environments. Future teachers and future students may also benefit from understanding how meaningful interactions are supported in online learning environments. This study included teacher perception and experience; both can be critical elements to include when trying to enhance student learning. This study hopefully added to the ongoing research and goal of enhancing teaching and learning in the online learning environment.

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Appendix A

Permission Letter from School District

June 22, 2021

Adam Bozarth
[REDACTED]

Dear Adam Bozarth:

After careful review of your research proposal entitled Teachers' Experiences with Interactions in Online Classes: A Case Study.

I have decided to grant you permission to conduct your study at [REDACTED] District. You have permission to contact our teaching staff and invite them to participate in your study.

Check the following boxes, as applicable:

- The requested data WILL BE STRIPPED of all identifying information before it is provided to the researcher.
- I am requesting a copy of the results upon study completion and/or publication.

Sincerely,
[REDACTED]

Appendix B

Letter Requesting Site Permission

May 27, 2021

██████████
Superintendent
██████████

Dear ██████████:

As a doctoral student in the School of Education at Liberty University, I am conducting research as part of the requirements to complete my EdD in School Administration. The title of my research project is Teachers' Experiences with Interactions in Online Classes: A Case Study. The purpose of my research is to describe the experiences of high school teachers interacting with students in an online environment for the Township School District (a pseudonym).

I am writing to request your permission to conduct my research at ██████████ and contact teachers at your school to invite them to participate in my research study. No student data, messages, grades, or student personal identifiable information will be collected.

Participants will be asked to complete an in-person interview, participate in an optional focus group interview, and complete a short writing activity. Data will be collected and analyzed to identify common themes and strategies used by teachers to increase interactions in an online learning environment.

Participants will be presented with informed consent information prior to participating. Taking part in this study is completely voluntary, and participants are welcome to discontinue participation at any time. All participant information and data will remain anonymous.

Thank you for considering my request. If you choose to grant permission, please provide a signed statement on official letterhead indicating your approval.

A sample permission letter document is attached for your convenience.

Sincerely,

Adam Bozarth

Appendix C

Consent Form

Title of the Project: Teachers' Experiences with Interactions in Online Classes: A Case Study

Principal Investigator: Adam Bozarth, Liberty University

Invitation to be Part of a Research Study

You are invited to participate in a research study. In order to participate, you must be 18 years old or older and have experience teaching high school students in an online or remote setting. Taking part in this research project is **voluntary**. **Please** take time to read this entire form and ask questions before deciding whether to take part in this research project.

What is the study about and why is it being done?

The purpose of the study is to understand teacher experiences with creating and supporting meaningful interactions in online classes. For the purpose of this study, interactions include student-student and student-teacher interactions.

What will happen if you take part in this study?

If you agree to be in this study, I would ask you to do the following things:

1. Contact me via email to schedule an interview. Interviews via Zoom will last approximately 30 minutes to 1 hour.
2. Participate in an optional focus group interview with other research participants via Zoom
3. Submit a writing sample by answering three open-ended self-reflective questions about your perception of meaningful interactions in an online learning environment.

How could you or others benefit from this study?

Participants may receive ideas and tips on how to increase interactions in an online learning environment from taking part in this study. Benefits to society include increasing the quality of online educational environments.

What risks might you experience from being in this study?

The risks involved in this study are minimal, which means they are equal to the risks you would encounter in everyday life. Mandatory reporting requirements will be followed, this includes following procedures for child abuse, child neglect, elder abuse, or intent to harm self or others.

How will personal information be protected?

The records of this study will be kept private. Published reports will not include any information that will make it possible to identify a participant. Research records will be stored securely, and only the researcher will have access to the records.

- Participant responses will be kept confidential through the use of pseudonyms and codes.
- Data will be stored on a password-locked computer and may be used in future presentations. After three years, all electronic records will be deleted.

- Recordings will be stored on a password locked computer for three years and then erased. Only the researcher will have access to these recordings.
- Confidentiality cannot be guaranteed in focus group settings. While discouraged, other members of the focus group may share what was discussed with persons outside of the group.

Does the researcher have any conflicts of interest?

None

Is study participation voluntary?

Participation in this study is **voluntary**. Your decision whether to participate will not affect your current or future relations with Liberty University. If you decide to participate, you are free to not answer any question or withdraw at any time without affecting those relationships.

What should you do if you decide to withdraw from the study?

If you choose to withdraw from the study, please contact the researcher at the email address/phone number included in the next paragraph.

Whom do you contact if you have questions or concerns about the study?

The researcher conducting this study is Adam Bozarth. You may ask any questions you have now. If you have questions later, **you are encouraged** to contact him at [REDACTED] or [REDACTED]. You may also contact the researcher's faculty sponsor, Dr. Daniel Baer at [REDACTED].

Whom do you contact if you have questions about your rights as a research participant?

If you have any questions or concerns regarding this study and would like to talk to someone other than the researcher, **you are encouraged** to contact the Institutional Review Board, 1971 University Blvd., Green Hall Ste. 2845, Lynchburg, VA 24515 or email at irb@liberty.edu

Your Consent

By signing this document, you are agreeing to be in this study. Make sure you understand what the study is about before you sign. You will be given a copy of this document for your records. The researcher will keep a copy with the study records. If you have any questions about the study after you sign this document, you can contact the study team using the information provided above.

I have read and understood the above information. I have asked questions and have received answers. I consent to participate in the study.

_____ Printed Subject Name

_____ Signature & Date

Appendix D
IRB Approval

LIBERTY UNIVERSITY
INSTITUTIONAL REVIEW BOARD

September 24, 2021

Adam Bozarth

Daniel Baer

Re: IRB Application - IRB-FY21-22-180 TEACHERS' EXPERIENCES WITH INTERACTIONS IN ONLINE CLASSES: A CASE STUDY

Dear Adam Bozarth and Daniel Baer,

The Liberty University Institutional Review Board (IRB) has reviewed your application in accordance with the Office for Human Research Protections (OHRP) and Food and Drug Administration (FDA) regulations and finds your study does not classify as human subjects research. This means you may begin your project with the data safeguarding methods mentioned in your IRB application.

Decision: No Human Subjects Research

Explanation: Your study is not considered human subjects research for the following reason:

(2) Your project will consist of quality improvement activities, which are not "designed to develop or contribute to generalizable knowledge" according to 45 CFR 46. 102(f).

Please note that this decision only applies to your current application, and any modifications to your protocol must be reported to the Liberty University IRB for verification of continued non-human subjects research status. You may report these changes by completing a modification submission through your Cayuse IRB account.

Also, although you are welcome to use our recruitment and consent templates, you are not required to do so. If you choose to use our documents, please replace the word *research* with the word *project* throughout both documents.

If you have any questions about this determination or need assistance in determining whether possible modifications to your protocol would change your application's status, please email us at irb@liberty.edu.

Appendix E

General Recruitment Post

Invitation to Participate in Doctoral Research Study

My name is Adam Bozarth and I am a doctoral student at Liberty University. Part of the graduation requirement is to complete a research study. The purpose of my study is to understand teachers' experiences with creating and supporting **meaningful** interactions in online classes. Teachers with experience teaching in remote or online settings are eligible to participate in the study. If you are interested in sharing your experiences teaching online, please consider participating in the study. Participation in the study will include completing a virtual in-person interview, an opportunity to participate in a virtual focus group with other participants, and submitting a writing sample by answering three open-ended self-reflective questions about your perception of meaningful interactions in an online learning environment. Participation in this study is **voluntary**. All participant data will remain anonymous.

If you would like to preview the questions, please email me at [REDACTED] and I will provide a preview of the interview questions and research design.

To indicate your participation in the study and to schedule an interview, please email me at [REDACTED] or call me cell phone at [REDACTED].

You can also email or call me if you have questions or concerns.

Thank you for your time,

Adam Bozarth

Appendix F

Interview Questions

Standardized Open-Ended Interview Questions

1. As a reminder, all names and personal identifiable information will remain confidential. Please introduce yourself by answering the following: number of years you have taught, content area you teach, and number of years you have taught online prior to the COVID-19 pandemic.
2. Interactions or dialogue between students and teachers can vary greatly in format and context, the list not exclusive but examples could include student-teacher, student-student, student-content, or teacher-teacher. How would you describe or summarize what positive or meaningful interactions look like in your online teaching sessions?
3. During your online teaching experience, think about a few of the most meaningful interactions you were involved with or experienced. The experiences may vary greatly in context and format, such as discussion board posts, peer editing assignments, student conferenced, live teaching sessions, teacher feedback, etc. What made these interactions meaningful?
4. Thinking of the same experiences and meaningful interactions from the previous question, what procedures or planning were involved to make these interactions possible and successful?
5. What format, such as discussion boards, live conferences, peer review assignments, etc., seemed to work the best to foster meaningful interactions?
6. Why do you think _____ work the best or has the most success?

7. How have successful interactions affected your lesson planning or teaching style?

Describe changes, if any, you made to your courses, assignments, expectations, interventions, teaching strategies, and/or availability to students.

8. How would you describe the role or importance of meaningful interactions in an online learning environment?

9. How do you think meaningful interactions in a learning environment impact student success?

10. Last question, what else would you like to share about the role of interactions in an online learning environment? Are there suggestions you would like to share that may help other teachers create and support interactions in an online environment?

Appendix G

Focus Group Protocol and Questions

Opening Script

The purpose of this focus group discussion is to further understand the perceptions and experiences of creating and supporting meaningful interactions in online learning environments. I want each of you to feel comfortable sharing your experiences and want you to know that I value your time, input, and privacy. Although I cannot prevent participants in this focus group from sharing information to individuals not in attendance, I can guarantee that your responses and comments will remain confidential throughout my reporting. I have renamed each participant's username to display an anonymous identifier. As you enter the virtual focus group session, your anonymous identifier will be displayed to other participants.

In a few moments I will begin asking questions. When you feel comfortable, please answer honestly. I may ask follow-up questions for more information and will record only the audio of today's session.

1. What is needed to ensure meaningful interactions take place within online learning environments?
2. Think of your experience teaching online or remotely. What were the biggest barriers to creating and supporting meaningful interactions?
3. What strategies or interventions have been successful in creating and supporting meaningful interactions?
4. Describe the impact meaningful interactions have on students?

Closing Remarks

Thank you very much for your time and for sharing your experiences. All responses will be transcribed and used as data in my research. When the transcription is complete, everyone in today's session will receive a copy. Please read through the transcription and let me know if something needs to be changed or corrected. Please send feedback and corrections to [REDACTED]. Please keep everything shared in today's session private. Thank you again for your participation.

Appendix H

Writing Sample

Please answer the following questions and once completed email to [REDACTED].

1. Summarize an intervention or strategy you used to create or support a meaningful interaction between you and a student in an online learning environment.
2. Explain how teaching remotely has impacted your ability to create or support meaningful interactions?
3. Describe the perfect online learning environment that would best support meaningful interactions between you and your students.