THE EXPERIENCES OF TEACHERS PROVIDING FEEDBACK USING ONE-TO-ONE TECHNOLOGY ON TEACHER-STUDENT RELATIONSHIPS: A PHENOMENOLOGICAL STUDY

by

Robert Christopher Magee

Liberty University

A Dissertation Presented in Partial Fulfillment

of the Requirements for the Degree

Doctor of Education

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Abstract

The purpose of this transcendental phenomenological study was to describe teacher perceptions of teacher-student relationships while using one-to-one technology to provide feedback. The theory guiding this study was Vygotsky's theory of learning as it describes learning as a social process. A transcendental phenomenological design was used for this study with a social constructivist worldview as the study sought to understand the perceptions of teachers within the one-to-one learning environment and their relationships with students when providing feedback using one-to-one technology. The central question for this study was: How do teachers describe relationships with students while using one-to-one technology to provide feedback? Data collection included triangulation through individual interviews, focus groups, and journal prompts. Ten to fifteen participants were selected on a criterion basis from a sampling pool at a mid-western middle school. Through the collection and analysis of data, the themes that were identified were (a) efficiency in teaching and learning, (b) positive relationships, and (c) interactive assessments.

Keywords: relationships, grading, feedback, one-to-one technology, 21st century technology, Vygotsky's theory of learning, phenomenology

Dedication

To my wife, Kaitlyn. My rock throughout this process. To my children. My inspiration throughout this process.

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The writing and research of this dissertation could not have been completed without the contributions of many people throughout my doctoral journey.

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Table of Contents

List of Tables

List of Abbreviations

Central Research Question (CRQ)

Computer-Supported Collaborative Learning (CSCL)

English Language Learner (ELL)

English Language Arts (ELA)

Institutional Review Board (IRB)

Out-of-Class Communication (OCC)

Science, Technology, and Science (STS)

Sub-Question (SQ)

CHAPTER ONE: INTRODUCTION

Overview

With the constant changes in the outlook of the 21st century learning environment, Owusu-Ansah and Kyei-Blankson (2016) argued that teachers must continue to care, show concern, and interact with students. In addition, Owusu-Ansah and Kyei-Blankson (2016) also found that if positive relationships within the learning environment continue, student motivation will increase. The 21st century learning environment includes technology such as one-to-one technology and computation thinking skills. The implementation of 21st century technology and teaching of 21st century computational thinking skills requires a level of classroom pedagogy that involves student centric learning and hands-on approaches. Cooperative learning and student-centric learning allows students to interact with one another, construct new understandings, and explain new experiences with each other (Saad, 2020). According to Ditzler, et al. (2016) teachers must also have a deep understanding of the benefits of a one-to-one technology classroom; that includes student-centric learning. If this understanding occurs, teachers can maintain relationships and create connections with students while implementing one-to-one technology into the classroom learning environment (Ditzler et al., 2016). This first chapter of the study provides a background to the problem, the problem statement, the purpose statement, and the five research questions addressed in the study. The next sections include the terms and definitions pertinent to the study, and a chapter summary.

Background

Technology has a long and significant history in the world of education. Dating as far back as the 18th century, educational historians have noted the importance of technology within classroom literature from basic photographs to advanced computer programing. The evolution of

technology within the classroom learning environment has created significant change both in and outside of the classroom. Within the classroom learning environment, teachers have been introduced to new 21st century tools for the classroom. Outside of the classroom, the evolution of technology has created revolutionary social change. With constant developments in technology, both in and outside of the classroom, teachers and parents continue to find an increased adolescent reliance on technology (Ditzler et al., 2016).

Historical Context

The history of technology in education dates back as early as the 18th century. Within the classroom learning environment, and throughout history, various types of technology have been introduced. This includes basic technology such as print, photographs, and illustrations to more advanced technology such as motion pictures, computers, the world wide web, and multimedia. With the introduction of 21st century technology, computer-based learning, educational television programming, and online courses have followed (Withrow, 1997). Textbooks from the 19th century began to discuss mankind's technological achievements (Cheek, 1997). Teachers and students throughout the 19th century investigated various types of technology through the use of technological artifacts and diagrams. In addition, 19th century teachers often assigned students with the task of building simple machinery and basic technological devices (Cheek, 1997).

As educational systems evolved, the approach towards technology in the classroom learning environment changed. By the 1940s and 1950s, the public's attitude towards technology was different. For years, public education turned its back on technology and many of the sciences. Beginning in the 1960s, and gaining momentum through the 1970s, was the K-12 science, technology, and society (STS) movement. Teachers within this technology movement

recognized the importance of technology within the field of education (Cheek, 1997). Next, the second half of the 20th century brought an advancement and growth of computer-based instruction into schools and educational learning environments. Throughout the 1980s and 1990s, stand-alone multimedia learning entered the classroom learning environment (Cheek, 1997).

In the early 1980s, as computers began to be implemented into the classroom learning environment, schools may have had a total of only four or five Apple II computers. These computers were often bought by the Parents' Association, and many times teachers were unsure of how to use them in their lesson plans (Budin, 1999). This led to the common solution of many principals grouping their computers together into what would be called "computer labs" (Budin, 1999). The computer lab was a solution to a problem of how schools could most easily deal with an innovation about which school personnel had little knowledge and a lot of anxiety. The solution to this problem was to isolate computers in their own spaces, with their own teaching personnel, and their own curriculum (Budin & Taylor, 1996). By the turn of the 21st century, educational leaders moved on to a new phase in which computers were entering regular classrooms in substantial numbers. Propelled by the accumulating weight of criticism of computer labs, and fueled by the continuing purchase and mounting number of computers, schools continued to increasingly place anywhere from one to five computers in each teacher's classroom (Budin, 1999). Additionally, the 21st century brought about online learning. This continued progression displays the rise of new technological tools in teaching and learning (Zawacki-Richter & Latchem, 2018).

Within a student-centric, one-to-one classroom, the teacher guides the students to success; however, this is one of the greatest concerns for teachers when implementing one-to-one

technology. Many teachers are digital immigrants. They were not born into this digital age; therefore, constant new technology is often a surprise or is overwhelming for these teachers. Additionally, teachers are often hesitant to switch from what they are accustomed to in a teacher-centric learning environment, to a 21st century, student-centric learning environment (Saad, 2020). Studies have shown that where one-to-one technology has struggled, there has not been proper training for teachers. Studies by Ditzler et al. (2016) and Bixler (2019) found that one-to one technology was helpful in the classroom when implemented correctly. It is important that teachers are properly trained with one-to-one technology before implementation. Throughout the 21st century, school districts have gone through a digital renaissance. This explosion of technology presents new technology to the classroom on an annual basis. As schools face a technological shift within the classroom learning environment, one-to-one technology is an important factor in student motivation and achievement (Harris & Adel Al-Bataineh, 2015). According to Molnar (2021) the history of computers in education has been variously characterized as more of an accidental revolution. Whether accidental or not, innovators in this field have created some of the most provocative and stimulating ideas in the history of education.

Social Context

Society is overwhelmingly emersed with new technology. Rapid technological developments are constantly presented. Dangerous technology addictions, in particular to cell phone devices, is a major topic of discussion among parents, teachers, and administrators (Martin, 2018). This is especially true as more schools continue to implement one-to-one technology into the classroom learning environment. According to a study conducted by Martin (2018), 17% of middle school students started using social media at age nine or younger, 40%

accepted friend requests from people they do not know, and 40% reported that their parents did not monitor their social media usage.

Students indicated that they use social media most often to connect with their friends, share pictures, and find out what others are doing (Wang et al., 2018). As of 2017, 46% of Americans say they could not live without their smartphones (Beren, 2017). Students in grades K-12 have one-to-one technology at the grip of their fingertips. This is key within this digital age. As students' online activity has increased, so has the concern for students' online behavior (Martin et al., 2020). With online media and social network use becoming more widespread in society, it is important for teachers to have an understanding of digital literacy and digital citizenship (Martin et al., 2020).

According to Gleason and Von Gillern (2018) students increasingly spend an average of six hours of screen time per day, excluding school and homework. Therefore, it is critical that students develop skills that allow them to find, evaluate, and share information responsibly. It is also important that students engage in constructive conversations with others from diverse backgrounds through safe, ethical, and legal online participation. Digital citizens need thorough and complete knowledge, as well as technological access to the internet within this 21st century world. Due to this, teachers have a responsibility to lead students to become digital citizens (Kim & Choi, 2018). Gleason and Von Gillern (2018) also emphasized a need for digital citizenship programs for students that stress real-life experiences, values, and personal interests of young people. The core concept behind digital citizenship is the belief that all digital citizens should be positive contributors to our digital world. This includes interacting positively online, abiding by existing laws within the digital environment, and knowing how to best protect oneself in an online environment (Martin et al., 2020).

For many digital immigrants; however, 21st century technology in the classroom is a daunting task; this includes one-to-one technology. This is often due to the fear of the unknown. Khlaif (2018) found that there is a divide in attitudes towards one-to-one technology within the classroom. Educators with positive outlooks on one-to-one technology noted that devices such as laptops and tablets within the classroom are portable, accessible for students and educators, and have various amounts of multimedia features. Teachers with negative attitudes towards one-to-one technology within the classroom reported they confronted various challenges while using one-to-one technology during lessons (Khlaif, 2018).

Theoretical Context

Student-centric learning allows the student to take ownership over their learning through the use of one-to-one technology (Saad, 2020). Vygotsky's theory of learning argues that most development occurs as both a part and result of social interactions (Lewis, 2017). This includes the view that learners are the objects of the process of education (Davydov, 1995). Vygotsky's theory provides a profound understanding of teaching and learning that reflects the complexity of social and cultural contexts in the modern learner (Verenikina, 2010).

According to Vygotsky, a child is neither shaped by his or her educational environment into a social being, nor does the child display his or her potential adapting to the environment (Bodrova, 1997). The relationships between the child and the environment has a dynamic nature, different for different age periods, and for different cultural contexts. According to Bodrova (1997) the child plays an active role in this relationship, interacting with his or her environment, and modifying it with the help of internalized mental tools. For example, Vygotsky believed that children developed as a result of social interactions. According to Vygotsky, this was the "Zone of Proximal Development" which represents what we can do with the help of an adult, teacher,

or technology (Bodrova, 1997). Gredler (2012) stated it is important that constructing curricula according to Vygotsky's perspective must be a topic of discussion for educational leaders. In the educational learning environment, according to Vygotsky's theory of learning, students are perceived as individuals possessing natural functions of perception, memory, and problem solving that should be used for the transmission of learning (Kozulin, 1993). In the 21st century, the transmission of learning occurs through new innovative classroom learning in which all students are provided with their own laptop, digital notebook, tablet computer, or other mobile-computing device; also known as one-to-one technology (Kim et al., 2019).

Problem Statement

The problem is that technology within the classroom learning environment has a negative effect on classroom relationships and the classroom social climate (Soriani, 2019). Additionally, educators view technology as a valuable tool for the classroom; however, they have concerns. For example, educators question their students' maturity to use personal mobile devices (Soriani, 2020). According to Courtney (2019) increased media use and technology has now created a cyber effect which poses a new modern-day threat that can impede the development of healthy attachment relationships. A bioecological framework, many different types of technology, and multiple curriculums have been explored in relation to classroom technology and student engagement (Bond et al., 2019). There is, however, a gap in the literature when the effects of classroom technology on teacher-student relationships built through grading and feedback is researched.

The 21st century brought about consistent and constant change to how educators teach their students and how students learn the material. It is important for educational leaders and classroom teachers to remember that as education consistently changes, it is not only about the

pedagogy, but about the systems implemented into the classroom that will help the student learn. For example, the one-to-one learning environment creates an autonomous learning environment for students and a more engaging classroom for both students and educators (Higgins & BuShell, 2017). Student engagement in the one-to-one learning environment looks far different than the traditional learning environment. With the implementation of one-to-one technology, today's students need a student-centric learning environment to properly create increased levels of engagement. With the ever-changing world of technology, classrooms are gaining more technology and having to incorporate it into student learning (Carstens et al., 2021). The student-centric, one-to-one learning environment creates a learning environment in which teachers must provide feedback digitally through one-to-one devices.

Purpose Statement

The purpose of this transcendental phenomenological study was to describe teacher perceptions of teacher-student relationships while using one-to-one technology to provide feedback at Sands Middle School and Heeler Middle School in Nebraska. One-to-one technology is generally defined as a learning environment that provides all students with their own laptop, netbook, tablet computer, or other mobile-computing device (Kim et al., 2019).

Significance of the Study

This study's significance was examined using empirical, theoretical, and practical perspectives. Increasing the body of research on this topic could add to teachers' knowledge concerning relationships within the one-to-one learning environment and the effects of providing

feedback through one-to-one technology. It may also lead to both teachers and parents having a deeper understanding of technology implemented into the classroom learning environment.

This study sought to add to the literature on one-to-one technology, particularly from the viewpoint of middle school teachers and their experiences. The theory that guided this study was Vygotsky's theory of learning as it states that social interaction provides the foundation for sophisticated cognitive development, since such experiences appear to be necessary for subsequent developments to occur (Lewis, 2017). According to Lewis, Vygotsky suggested that while development is partially a product of exploring one's environment it also depends upon the maturation of innate mechanisms that correspond to certain stages of development. These social interactions include relationships with teachers and peers within the classroom learning environment. This study seeks to understand the relationships created within the one-to-one learning environment.

The literature regarding the use of one-to-one technology to provide feedback is lacking. Empirically, this study adds to other studies as it seeks to narrow a gap in the research on one-to-one technology. For example, current research on one-to-one technology finds the effectiveness of technology and the proper training that is required for it to be effective (Ditzler et al., 2016). Current research also states how one-to-one technology is used within the classroom learning environment, the impact one-to-one technology has on the learning environment, and its effects on instruction. Research finds perceptions of both teachers and students in regards to one-to-one technology in the classroom learning environment. For example, Jaafar et al. (2021) found that with the implementation of one-to-one technology students now have the world at the push of a button within the classroom. According to Zheng et al. (2016), there is still a question if the increase in one-to-one technology improves the learning environment for students. It is important

to understand the experiences with providing feedback and grading through one-to-one technology as it may give educators and educational leaders insight into the best ways to both assess students and create relationships through providing feedback in the one-to-one learning environment.

Research Questions

The questions formulated for this transcendental phenomenological study were derived from the theoretical framework, guided by Vygotsky's theory of learning. The research questions began with a central research question based on teacher experiences with the one-to-one learning environment. Sub-questions were derived from Vygotsky's theory of learning as they looked to question one-to-one technology's effects on teacher-student relationships built through feedback within the one-to-one learning environment.

Central Research Question

How do teachers describe relationships with students while using one-to-one technology to provide feedback?

Sub-Question One

How do teachers describe the feedback process in the one-to-one classroom?

Sub-Question Two

How do teachers describe their interactions with students while using one-to-one technology to provide feedback?

Sub-Question Three

How do teachers describe ways to create relationships with students in the one-to-one classroom?

Definitions

1. *Vygotsky's theory of learning*– argues that most development occurs as both a part and result of social interactions (Lewis, 2017).
2. *One-to-one technology*– the learning environment that provides all students with their own laptop, digital notebook, tablet computer, or other mobile-computing device (Kim et al., 2019)
3. *Student-centric learning*– a cooperative learning environment which allows students to interact with one another, construct new understandings, and explain new experiences with each other (Saad, 2020).
4. *Teacher-centric learning*– a traditional learning environment in which the teacher takes ownership over student learning (Saad, 2020).

Summary

The purpose of this transcendental phenomenological study was to describe teacher perceptions of teacher-student relationships while using one-to-one technology to provide feedback at Sands Middle School and Heeler Middle School in Nebraska. Research was conducted through teacher experiences with the theory driven by Vygotsky's theory of learning. The problem was that technology within the classroom learning environment has a negative effect on classroom relationships and the classroom social climate (Soriani, 2019).

The 21st century has created a renaissance era of new technology, which constantly surrounds teachers and students in the classroom learning environment. With a push for one-to-one technology in the classroom, there has been a shift to the student-centric learning environment in which students take ownership over the learning environment. Within the student-centric learning environment, teachers act as facilitators over the learning as students

work towards meeting their objectives and mastering the content. Classrooms with one-to-one technology capability allow each student to have their own personal digital device within the learning environment. Access to a tablet or laptop computer allows for instant access to resources that a teacher-centric learning environment could not provide. This technology allows digital natives to learn within their current culture. As teachers shift from a classroom learning environment focused on them, to a classroom learning environment with a focus on technology and driven by the student, social interactions within the learning environment change. This makes it ever more critical that teachers work to build positive relationships with students through positive interactions (Owusu-Ansah & Kyei-Blankson, 2016).

CHAPTER TWO: LITERATURE REVIEW

Overview

A review of the literature was conducted to explore the role of one-to-one technology within the secondary education classroom as it relates to student-teacher relationships. Additionally, the effectiveness of one-to-one technology, its impact on the educational learning environment, and the perceptions of both students and teachers was also reviewed. In the first section, the theories related to teacher's experiences with one-to-one technology are discussed. Next, a synthesis of recent literature in regard to perceptions of one-to-one technology in the classroom, relationships with students, and the impact of one-to-one technology are discussed. Finally, a need for the study is identified with a presentation of a gap in the literature.

Theoretical Framework

One-to-one technology is a learning environment that provides all students with their own laptop, digital notebook, tablet computer, or other mobile-computing device (Kim et al., 2019). Vygotsky's educational insights and theory of learning views the educational process as a source rather than a consequence of the development of cognitive and learning skills (Kozulin, 1993). Also, Vygotsky's theory explores the individual functions and relationships with others. His theory examines the change in these relationships among individual functions in formation of new psychological systems. For example, in a school setting, the student is exposed to specific activities for classroom lessons and instructional lesson plans. The everyday thinking of a student is based on experience changes to form what is termed a "true" concept (Shabani, 2016). One-to-one technology has created a new educational process within the classroom learning environment. With the use of Vygotsky's theory of learning as a framework, this study aims to gather an understanding of teacher experiences within the one-to-one educational process and the

relationships they create with students through the use of technology; specifically through grading and providing feedback.

Technology in the classroom is nothing new. For generations, educators have looked to implement and teach using technology in the classroom. Since the turn of the century, the implementation of 21st technology into the classroom learning environment has been a constant debate and topic of research, as researchers seek to understand the effects of technology in the classroom and the experiences of both teachers and students (Hershkovitz & Karni, 2018). Research by Kim et al., (2019) contributed to the effectiveness of one-to-one technology in the classroom, especially regarding student engagement. For example, one-to-one technology has various advantages regarding mobility and multifunctionality for creating a digital and student-centric learning environment.

The mobility of one-to-one technology expands the physical boundaries for learning and allows students to engage with learning materials using a wide range of apps and connectivity anywhere, not just in the classroom (Kim et al., 2019). Also, the mobility of these devices allows a wider range of learning activities than that which routinely occurs in the classroom. An example of this includes moving learning to other locations, such as outdoors, where learners can engage in activities using a tablet. Second, multifunctionality, a key characteristic of one-to-one devices, provides various services including educational apps and multimedia apps. These features provide flexible and personalized support for students based on their needs. Third, the one-to-one learning environment offers greater access to a more widely distributed social intelligence when students are able to communicate with peers and experts quickly (Kim et al., 2019).

Additionally, studies by Ditzler et al., (2016) further analyzed the direct application of one-to-one technology and how it is used in the classroom. Ditzler et al., found in their studies that when one-to-one technology is implemented into the classroom learning environment, most teachers like having the one-to-one devices and considered them useful for education; however, there were a number of concerns, particularly with learning to use the tablet technology and distractions created by having the device. Carstens et al., (2021) and Reisdorf et al., (2020) further contributed to teacher experiences with one-to-one technology in the classroom as their studies identified the impact of one-to-one technology on the classroom learning environment. Findings by Carstens et al., (2021) showed more training for teachers and students is necessary to better implement technology in the classroom. New information could greatly add depth to a topic that has been researched for years. However, little research has been done on the impact of one-to-one technology on the teacher-student relationships built through grading and feedback. This new and current research would provide insight into the effects one-to-one technology has on the relationships created through feedback and grading.

The research findings discussed in this review support Vygotsky's theory of learning. While the current research mentions the implementation of one-to-one technology into the learning environment, there is a lack of specific research that describes teacher experiences with providing feedback through one-to-one technology and its effects on the teacher-student relationship.

Related Literature

The effects of one-to-one technology on student-teacher relationship and the experiences teachers have with one-to-one technology once implemented into the classroom can be explored by looking at related literature. The literature intersects in areas related to how one-to-one

technology affects the classroom learning environment. Literature related to one-to-one technology, how one-to-one technology is used in the classroom, and teacher-student relationships will be reviewed in this section.

One-to-One Technology in the Classroom

Student engagement in the one-to-one learning environment looks far different than ever before as today's students need a student-centric learning environment with one-to-one technology devices for increased levels of engagement. The 21st century brought about consistent and constant change to how educators teach their students and how students learn material. The digitalization of K–12 education has developed rapidly worldwide through one-to-one computing initiatives based on one laptop or tablet for each student (Islam & Grönlund, 2016). It is important for educational leaders and classroom teachers to remember that as education consistently changes, it is not only about the pedagogy, but about the systems implemented into the classroom that will help the student learn. Researchers such as Fantozzi (2017), have shown that young students can use technology for multiple active means. Elementary aged children have used technology to interact with others and extend play. In addition, the tablet design affords a medium that is simpler for young students. The touch screen proves to be easy for students to navigate, and the portability allows for flexibility in use; it can be taken into a play space or used in circle time (Fantozzi, 2017). This creates a learning environment not offered before as technology is provided to students directly at their fingertips. in ways a personal computer cannot. Further, the camera app allows students to capture and discuss images from their own lives, which can serve as engaging focal points for discussion (Rowe & Miller, 2016).

Understanding the overall impact of such educational tools is important for both educators and policy makers, with implications on several levels (Hershkovitz & Karni, 2018). For instance, introduction of one-to-one technology into the middle school classroom has changed the way middle schoolers are learning (Jaafar et al., 2021). For example, teachers are now asking students to conduct research through the use of online videos, collaborate with peers digitally, and solve problems using technology, which can often leave teachers uncertain of their role in the learning process (Jaafar et al., 2021). Students now make sense of the world around them through one-to-one technology, texting, using social media, listening to podcasts, and utilizing Google Applications (Jaafar et al., 2021). Kwon et al. (2019) found that at the middle school level, teachers' belief regarding the usefulness of mobile technology was closely associated with the use of technology.

Fantozzi (2017) described one-to-one technology as an important pathway and the future for learning for any age. Hershkovitz and Arbelle (2020) also recognize that one-to-one technology within the classroom learning environment mostly enhances existing strategies and practices, and do not modify teaching dramatically. Teachers are given a responsibility to help a student learn and; therefore, have a responsibility to provide students with the opportunity to learn within their current culture. Learning is the goal in the classroom. To accomplish this, educators must be able to design, create, and act as architects within the classroom learning environment. For example, taking a systems approach to implementing technology into the 21st century classroom is important for a highly effective learning environment (Schrum, 2016).

The explosion of mobile technology in education has opened up new channels for teaching and learning, offering teachers new models and fresh approaches for delivery of instruction. This shift is also being propelled by a large number of teachers with new skill sets

that enable them to use these technologies to their advantage for highly effective classroom management and new instructional strategies. These strategies enhance the curriculum and work to deliver technology-mediated instruction (Galway et al., 2018). This implementation of one-to-one technology into the classroom learning environment has changed the scope of education for both students and teachers. For example, according to Hershkovitz and Arbelle (2020), a simple evaluation of one-to-one technology in the classroom since its rise in popularity in the 21st century has told us that the teacher's role is not limited to the space and boundaries of the classroom. With the addition of one-to-one technology into the classroom, the role of the teacher becomes increasingly complex. For example, it is now important to think about new 21st century teaching strategies, teacher-student interactions, and professional ethical standards within the one-to-one classroom (Hershkovitz & Arbelle, 2020). With the addition of one-to-one technology into the classroom, the role of the teacher as an educator has completely changed. This role has shifted from a focus on providing materials, tasks, guidance, classroom arrangement, and basic content knowledge to a much more worldwide expansive view of responsibility for learning.

It is the responsibility of educators to create systems within the 21st century classroom that enhance learning for the 21st century student. To enhance learning for students, educators must work to increase student engagement and create learning opportunities for students within the classroom. Jakobsen et al. (2021) discussed and argued that there must be more emphasis on digital tools within the classroom. Especially within the case of differentiated instruction, such as the augmented classroom, there is an extreme lack of widely adopted digital tools (Jakobsen et al., 2021). Once student engagement increases, educators can work to provide learning opportunities through innovative ideas such as one-to-one technology. Both Kim et al. (2019)

and Schrum (2016) discussed the advantages of one-to-one technology from a pedological perspective. However, Schrum (2016) provided specific emphasis on the idea that there must be a systems change from leadership for technology to create a highly effective learning environment for students.

A semi-structured interview was used in Kim et al.'s (2019) study. Many of the educator's interviewed expressed the idea that for implementation of technology to be successful, there must be teacher readiness for it. To accomplish this, there must be multiple training opportunities for teachers and opportunities to observe successful examples of one-to-one classrooms (Kim et al., 2019). This correlates with Schrum (2016) and his argument that it begins with school leadership. Educational leaders must also work to enhance their respective school district's technological infrastructure to ensure consistent and sustained access to technology (Seward et al., 2019). Implemented correctly for students and adults, technology can do great things outside the classroom as well. It can create massive channels for interaction and provide access to larger audiences, expand social networks, strengthen existing ties with peers, provide social support, and build community rapport (Ibarra et al., 2019). Although technology provides countless opportunities within the classroom, and instant access to a large social network outside the classroom, there is still a gap in the literature when questioning teacher-student relationships within the one-to-one classroom learning environment.

How One-to-One Technology is Used

New technologies, such as one-to-one technology, are being added to classrooms around the world at a rapid rate. In the last decade, schools in the United Kingdom experienced jumps of 56 percent of primary and secondary schools having one-to-one technology to upwards of 76 percent of primary and secondary classrooms. Globally, this trend continues as schools in South

Korea, India, Kazakhstan, and Turkey all shift towards one-to-one technology. According to a Tablets for Schools report, it is not a matter of if, but when, tablets are adopted and known as a learning device in schools (Blikstad-Balas & Davies, 2017). Despite the growth of such programs, there is little consensus about whether they contribute to improved educational outcomes (Zheng et al., 2016). It is important to understand the views and opinions of both students and teachers of one-to-one technology and its uses within the classroom learning environment. This includes application, implementation, and strategies which one-to-one technology offers (Ditzler et al., 2016). Additionally, it is important for the growth of students, both in and outside of the classroom, that educational leaders work to offer and utilize these digital resources within the classroom learning environment. With the use of one-to-one technology, students have a vast number of resources just a click away and teachers can easily teach 21st century digital literacy to their students. Begstrom (2019) found one-to-one computing allows the teacher to bring in content from outside the school and allows a greater role in decision-making for the students. Technology utilization, such as one-to-one technology, provides not only a unique model for the educator in the classroom, but an environment in which the student can take hold of their learning. When technology is utilized in the classroom, the classroom becomes a 21st century classroom.

With the use of 21st century skills, educators can provide students with new learning opportunities, create a student-centric environment, and increase student engagement. This creates a highly effective learning environment that promotes critical thinking for students of all levels. The three main dimensions that most often structure discussion of the benefits of one-to-one technology and how it is used in the classroom include pedagogical change, 21st century learning, and logistical and economic (Blikstad-Balas & Davies, 2017). One-to-one technology

within the educational learning environment creates a focus on skills for the future, such as collaboration and team-work, digital communication skills, and computer coding skills (Blikstad-Balas & Davies, 2017). The logistical and economic benefit for education includes efficiencies afforded by these technologies for teachers and students individually and when interacting with one another such as cost savings made in photocopying when using computer technology rather than textbooks.

As one-to-one technology in the classroom learning environment continues to become a primary tool, Blikstad-Balas and Davies (2017) found that the use of one-to-one technology is transforming learning routines, which includes accessing advanced learning resources and content, igniting cognitive processes that enhance learning, and changing teacher roles from delivery of content to facilitator or learning coach. This has been seen in both the secondary and primary school setting. Literacy skills are critically important, especially for students entering kindergarten and first grade. These skills are linked to later outcomes in reading, writing, and spelling. Within the primary classroom 21st century technology, such as computers, interactive whiteboards, and iPads or other tablet devices, have been used to support literacy instruction as a pedagogical tool to enhance student engagement and comprehension in literacy activities (Lu et al., 2017). Lu et al. also found that using iPads and other one-to-one technology devices within the learning environment has positive effects on student learning outcomes. The endless features of iPads and 21st century technology within the classroom provides teachers with a wide range of educational apps, tools, and strategies. These apps create and design more hands-on, child-centered, and collaborative activities for young students within the classroom (Lu et al., 2017).

In addition to teaching critical literacy skills needed throughout primary, secondary, and post-secondary schooling, the pedagogical changes that one-to-one technology brings to the

classroom have also brought the development of 21st century skills in the classroom that many feel will be vital to the future success of students beyond school (Blikstad-Balas & Davies, 2017). Studies by Ditzler (2016) and Bixler (2019) found that one-to-one technology was helpful in the classroom when implemented correctly. One commonality that the students shared in both studies were students found one-to-one particularly useful for research as it is quite literally at their fingertips. In addition, students found one-to-one technology useful for homework when they were trained properly on it. Within the middle school setting, Hilton and Canciello (2018) found teachers who use technology regularly can find unique opportunities to hold students' attention, increase participation, foster collaboration, and more closely mirror real-world situations.

Proper training and knowledge of 21st century technology, specifically one-to-one technology, was especially highlighted in March of 2020 when many school districts shifted to remote learning with their one-to-one technology due to the COVID-19 pandemic. Professional development should be sustained so teachers will be better prepared for teaching in virtual classrooms (Piedra & Yudintseva, 2020). To create highly effective classroom learning environments both at home and in school with one-to-one technology, teachers must learn strategies such as working to connect with learners virtually and using interactive online tools to create virtually engaging lessons (Piedra & Yudintseva, 2020). Bixler (2019) noted that one-to-one technology was particularly useful in math and science classes. Although one-to-one technology received overall positive feedback within both studies, educators within Bixler's study had differing opinions on one-to-one technology, as many of them stressed proper training for successfulness in the classroom learning environment. Hershkovitz (2019) also spoke about educators within the 2019 study. According to Hershkovitz, educators change their teaching

when one-to-one technology is implemented into the learning environment. However, he noted that all educators are different and conduct their teaching differently.

To differentiate from the use of mobile technologies, and other 21st century learning strategies, teachers within the secondary classroom are using 21st century technology to implement the flipped classroom learning model. The flipped classroom allows teachers to capture their lectures or lessons using recording tools. Students then view the lessons at home. Viewing the content at home allows educators to devote 100% of their day with students towards assisting students with content. This is especially impactful within the math class setting as students often have questions at home when doing homework. Using the flipped model, students are working with the educator in class on their practice to master the content. Üstünlüoglu and Dahlgren (2021) found in their study on college professors that most professors found the use of lecture capturing useful and impactful for students. Professors concerns for college students were about academic freedom and student participation. According to Tomte et al. (2020) the administrative and technical implementation of one-to-one technology has been successful, but there is still a way to go to transform pedagogical practices to enhance student-active learning supported by one-to-one technology. Within the one-to-one classroom, the strategies educators are able to implement within their learning environment are endless. However, effective implementation of one-to-one technology only occurs when professional development occurs and the teacher's voice is heard (Heath, 2017).

One-to-one technology within the learning environment provides both teachers and students new and advanced opportunities both in-person and through the remote learning setting. With the new applications, tools, and strategies that 21st century technology is constantly offering teachers and their classrooms, it is critical that they are provided with proper

professional development (Piedra & Yudintseva, 2020). Proper professional development will fully prepare them for the impact on the learning environment 21st century technology will have.

Impact on the Learning Environment

One-to-one technology has changed the dynamic of the traditional classroom learning environment. This change allowed a shift from a traditional teacher centric classroom to a new and innovative student centric classroom. For example, in the third year of Tay's (2016) study, the effects of one-to-one computing were reflected in significant reductions in teacher lecturing and an increase in student group discussions. This learning environment in classrooms today views the students as partners in their learning, engaged in the construction of knowledge together with other students in an environment that supports learner-centered practices (Asino & Pulay, 2018). Combined with the recent addition of digital technology, particularly mobile technologies, wireless and e-learning systems, these new learning environments provide the infrastructure to inspire teachers to reconceptualize and rethink the possibilities of both teaching and learning (Imms et al, 2017).

In various ways, 21st century technology has had a large impact on both the 21st century classroom learning environment and the 21st century student. Technology is so prevalent in the lives of students today that Reisdorf et al. (2020) found it is now affecting students following their secondary education. For example, laptop ownership may be crucially tied to academic performance both during high school and as students enter higher education. Based on a large data set of incoming freshmen at a large public university in the United States, not owning a laptop is negatively associated with overall college performance (Reisdorf et al., 2020). In addition, 21st century technology has affected both the pedagogy within the classroom and the systems implemented to effectively create a learning environment for the 21st century student.

New technology has also had an impact on the social aspects of the classroom. As the technology and culture of the 21st century changes, the students change as well. Research by Peled et al. (2022) claims that one-to-one technology has allowed teachers to improve their teaching and instructional practices. In addition, 21st century programs such as one-to-one technology have improved teacher proficiency in utilizing technology. When implementing one-to-one programs into the classroom learning environment, schools work to enable teachers and software to design, customize, and deliver more personalized content to learners. Schools look to advance learners' technology skills finally work to enable the students to do more complex and creative work through one-to-one technology (Peled et al., 2022). If schools are able to achieve these goals when implementing one-to-one technology, they may have had a deep, profound, and positive impact on the learning environment.

As students change and grow as digital natives, technology becomes the norm within the learning environment; therefore, with the ever-changing world of technology, classrooms are gaining more technology and having to incorporate it into student learning (Carstens et al., 2021). One-to-one technology has become prevalent in schools aiming to enhance active learning and assist students in developing twenty-first-century skills (Peland et al., 2022). One way classrooms are incorporating technology into the classroom through the use of one-to-one technology is with gamification. Gamification allows educators to use the one-to-one technology learning environment and provides students with a fun way to critically think, increase problem solving skills, and competence in the classroom (Cameron & Bizo, 2019). Cameron and Bizo (2019) found that gamification is a tool within the one-to-one learning environment that provides opportunities that students find to be positive social learning opportunities as they provide a fun, competitive, and immersive learning environment. It is

important to note that, according to Peled et al. (2022), for a one-to-one program to have a positive effect, it often takes an extended amount of time and involves profound fundamental changes in teaching practices, perceptions, beliefs, and attitudes. To work towards such a fundamental effect and drastic change within the learning environment, the school must do more than purchase mobile devices and provide students and teachers with access to them. Technology implementation is a complex process. It is a process that needs a comprehensive approach that transforms school culture, changes the very nature of teaching and learning, and expands the boundaries of the school and classroom (Peled et al., 2022).

Soriani (2019) found, in his study of technology within the classroom, that technology has an effect on the classroom's relationships and social climate. Educators view technology as a valuable tool for the classroom with a few concerns. For example, they question their students' maturity to use personal mobile devices (Soriani, 2020). Concerns expressed in Carstens et al.'s (2021) study included the use of technology and its possible effects on fine motor development and problem-solving skills. Additionally, Soriani (2019) found that educators recognized that technology has the potential to increase motivation and increase dialogue between students and teachers. Students can be motivated by the novelty of new technology, which in turn drives their desire to explore and understand the content area or lesson being taught. Digital tools can also be appealing and fun to use (Major et al., 2018). It is possible that this increase in dialogue within the classroom learning environment leads to a negative effect of 21st century technology. For example, the use of technology may become a source of distraction or frustration for students. Some may be distracted by the physical aspects of using technology. Also, technical issues have caused students to disengage with classroom assignments. Finally, students can be frustrated by

administrative activities such as the need to remember their usernames and passwords (Major et al., 2018).

Findings within the literature reveal many positive and negative aspects of technology use within the classroom learning environment. For example, when 21st century technology or a one-to-one program is added to a classroom learning environment, it creates certain challenges to continue to support teaching and learning. These challenges include learner inclusion and engagement, which are most often influenced by factors such as unequal access to technology and low participation rates (Major et al., 2018). Major et al. also found that within the one-to-one classroom, a sense of community can develop through shared online work. Also, dialogue between students, whether spontaneous or directed by a teacher, can create an atmosphere of solidarity and cooperation. Increased levels of interaction and greater open-ended questioning by teachers may also occur in the one-to-one learning environment (Major et al., 2018). Therefore, it is important to remember that although technology within the educational learning environment aims to improve the classroom educational and pedagogical practices, there is more to it than just implementation (Soriani, 2019). A consistent theme within the literature is both teachers and students need more training before implementation of technology for it to enhance the learning environment and improve mastery of content. Once proper training is done for both educators and students, effective learning strategies will be put into place that use technology to its full advantage, and students will use the technology in a responsible manner. The 21st century is increasingly creating a technology driven work environment. Due to this, it is important to look towards 21st century strategies for the classroom (Varier et al., 2017).

Teacher-Student Relationships

If one-to-one technology is an integral part of the lecture through student-response applications, then the device is an engagement tool rather than a distraction or barrier (Wyatt, 2017). For example, according to Higgins and BuShell (2017) one-to-one technology has the capability to change teacher-student relationships. When change occurred, there was change beyond the classroom and school. When positive relationships occur, educators had the ability to engage students using the one-to-one device (Higgins & BuShell, 2017). With the constant changes in the outlook of the 21st century learning environment, Owusu-Ansah and Kyei-Blankson (2016) argue that educators must continue to care, show concern, and interact with students. If this continues, student motivation is likely to increase.

According to Duong et al. (2019) teacher-student relationships are especially important throughout and after the middle school transition. This stage of schooling for adolescents is typically marked by a normative decline in relationship quality. Also at this stage, there is a decline in student engagement and achievement for many adolescents. This decline is not surprising given the multitude of challenges facing students entering middle school, including increased social comparison, competition, and heightened demands for academic success. Therefore, the positive teacher-student relationship can be critical throughout this time period (Duong et al., 2019). In a study conducted by Chang and Hall (2022) teachers who reported a greater focus on improving their abilities to develop caring relationships with students were more likely to perceive themselves as more capable teachers than those who were concerned about failing to connect with every student or how their social competencies were viewed by students.

Since the beginning of the COVID-19 pandemic in March of 2020, there has been a shift to remote learning with one-to-one technology in school districts throughout the country. This

move to virtual, or online learning, has revealed the importance of 21st century technology on the classroom learning environment. As school districts move back to in-person learning, teachers of the 21st century must begin to understand the role 21st century technology plays on their learning environment as they re-design lesson plans and classroom settings to ensure successful teaching and learning for the 21st century student (Scherzinger & Wettstein, 2019). According to a study conducted by Scherzinger and Wettstein (2019), to create better classroom learning environments for both students and teachers, it is crucial to have a better understanding of both the teacher and student perspectives. Further, in research conducted by Harper (2019) it was clear that technology has become a tool for communication and learning that is changing teacher–student interactions in face-to-face and online settings for all age groups and across all subject matters.

As a communication tool, technology within the classroom learning environment has created new avenues for dialogue. Even though students and teachers share the same classroom, they do not necessarily share perspectives on the teacher–student relationship, or classroom management procedures. Amir and Hershkovitz (2018) found the teacher-student relationship often extends beyond the classroom. This leads to communication extending beyond the classroom's time and space. Teacher-student communication beyond the classroom is often referred to as out-of-class communication (OCC). These types of teacher-student relationships may impact students' academic, social, and emotional development. Today, OCC is facilitated via social media and instant messaging services, which may affect its nature (Amir & Hershkovitz, 2018).

With the extension of relationships beyond the educational learning environment, having a deep understanding of the various factors that influence teacher-student interaction is

paramount. This is critical to determining the ways in which implementing technology in the classroom can most benefit students' educational experiences. Teacher–student interactions have been found to be critical to teacher efficacy and students' capacities to develop self-regulated learning skills (Harper, 2019). Especially during a time in which there is a shift towards one-to-one technology within the classroom learning environment, it is crucial to understand perspectives of both teachers and students to create better a learning environment. This may improve teacher-student relationships and work towards an environment where disruptions throughout the lesson are less likely, and positive relationships are created. (Scherzinger & Wettstein, 2019).

The aim of classroom management is to maintain order, engagement, and cooperation, as well as to develop self-discipline. When proper classroom management policies and strategies are put into place, the teacher–student relationship is built (Scherzinger & Wettstein, 2019). Adolescent and secondary-education teacher-student relationship closeness is important for supporting students' classroom engagement as well as their academic achievement (Prewett et al., 2018). Creating, fostering, and developing warm, close, and supportive relationships is instrumental to both maintaining order and developing self-discipline within the classroom learning environment (Scherzinger & Wettstein, 2019). Especially, with the addition of 21st century technology and one-to- devices, the question of how a teacher achieves an orderly learning environment is as important as whether a teacher achieves order. Effective teachers prevent misbehavior and promote self-discipline (Scherzinger & Wettstein, 2019).

According to Prewett et al. (2018) the middle school years are critical years for social emotional support within the classroom learning environment. This is an important component for student success both in the classroom and outside the classroom when creating relationships

with peers and teachers (Prewett et al., 2018). Social emotional support refers to teacher behaviors that lead to students feeling supported and cared about. Such behaviors include being available to assist with students' emotional and social needs, knowing students' families, and being available when students need extra help.

To create a safe and effective learning environment in the 21st century, which promotes critical thinking and provides students with a maximum amount of learning opportunities, teachers must begin to shift to a student-centric learning environment (Gurak-Ozdemir et al., 2019). It is important to remember that the role of the educator within the 21st century classroom continues to look much different than it did when public schooling was implemented in the United States, and even as it evolved throughout the 20th century. The student-centric learning environment that the 21st technology, such as the one-to-one learning environment, has created will enhance the teacher-student relationship as students take ownership over their learning (Gurak-Ozdemir et al., 2019). To be successful with these changes and growth towards positive 21st century relationships, teachers must make an honest evaluation of their instructional practices and properly revise their pedagogies to nurture and support their students' digital literacies (Seward et al., 2019). With the continuous evolution of technology, it is nearly impossible for teachers to keep up with constant innovations that occur in the classroom. However, the classroom should not exist in isolation from the world but should be a positive and safe extension of the world. Therefore, teachers must work to embrace a 21st century role reversal by acknowledging the learner's knowledge of technology (Seward et al., 2019).

The teaching profession is becoming increasingly reliant on technology and internet use to work with and interact with students. For example, teachers are becoming more reliant on using online platforms to post grades, take roll, and communicate to students, parents, and

faculty. According to national findings published in 2014 by Speak Up, 32% of high school students use mobile devices issued by their schools (iPads, Chromebooks), while 75% of students access class information and grades through online portals (Seward et al., 2019). New innovations and applications of technology have changed the teacher-student dynamic within the classroom learning environment (Seward et al., 2019).

Due to this change in dynamic within the classroom, all teachers must work to make an evaluation of their instructional practices and properly revise their pedagogies to create and support their students' digital literacies (Seward et al., 2019). With the additions of one-to-one technology to the classroom learning environment, researchers have also found that 21st century technology has been a useful tool for teachers' interactions with students (Harper, 2018). For example, as one-to-one technology in the classroom increases, teachers' interactions with students has changed substantially. Teacher-student relationships have had a large emphasis on collaboration with peers and student-centered learning. With an increase in digital literacy in the classroom teacher-student interactions have also changed in a way that has created a facilitating role for teachers within the classroom learning environment (Harper, 2018).

Gurak-Ozdemir et al. (2019) argue one factor that leads to teacher-student connection is a teacher's creative-thinking preference. Positive teacher-student relationships are a critical component to a safe learning environment within the classroom. To improve teacher-student relationships, educators and educational leaders must understand teachers' creativity styles and how these styles affect their teaching and perceptions of creative students (Gurak-Ozdemir et al., 2019). As teachers in the 21st century shift from a teacher-centric to a student-centric learning environment, the creativity styles of both teachers and students are important to keep in mind as they can affect both relationships with students and the learning environment itself.

The COVID-19 pandemic exposed the classroom learning environment as much more than just the four walls within the educational institution. Due to the digital era students are growing up in with one-to-one technology at school, personal devices at home, and social media sites at home; the idea of creating positive student-teacher relationships has extended farther beyond school hours. Unfortunately, literature is limited on the effects of student-teacher relationships on social media sites. Will it increase student engagement, motivation, or participation (Camas Garrido et al., 2021)? As educators continue to work with digital natives throughout the 21st century, it is important to understand the boundaries they create both in and outside the digital learning environment to ensure a positive and safe classroom for all students. To ensure this positive and safe learning environment, teachers and educational leaders must work to equip their students with digital literacy skills. Educational leaders must also work to enhance their respective school district's technological infrastructure to ensure consistent and sustained access to technology (Seward et al., 2019).

Effects of One-to-One Technology on Instruction

Educational leaders can make many varied, and often times compelling, arguments for every student to carry their own internet connected digital device. It could also be argued that attempts to place technology into the classroom learning environment is an attempt to exercise a degree of agency over the incoming tide that is 21st century technology (Davies, 2017). According to Davies, life for students in the developed world is already unimaginable without some form of networked communications and computing device within easy reach, and schools cannot consider themselves exempt from having to work out how to live with and deal intelligently with the implications of that fact. In cannot go overlooked, however, there is real opportunity and potential there, along with all the challenges technology poses. In schools,

digital technology has been imposed into unaltered traditional classroom spaces that often reflect a pre-information age way of thinking (Byers et al., 2018). Students in today's K-12 schools were born in, and have grown up in, the digital age. When new technology is released, it is often not new, nor is it a surprise to them. This makes them digital natives. Many of their teachers are digital immigrants. They did not grow up around technology. When there are updates to technology, they are more amazed by it than their students.

Elstad and Christophersen (2017) argue that the classroom layout and the arrangement of desks in the one-to-one computing classroom creates challenges to teacher practices based on the teachers' ability to see how the students use their devices. The key to using one-to-one technology to inform students for the future is using the technology intentionally. Intentionally using the tool and intentionally putting the tool away can provide opportunities to innovate, share ideas, build relationships, and have the conversations that may ultimately lead to lives of balance (Elstad & Christophersen, 2017). Davies (2017) found students in both the United Kingdom and Norway within the one-to-one learning environment developed a wide range of 21st century tools for in-school use that they would not now contemplate being without. For example, they benefited both from the opportunity to customize their uses of the devices to support their own learning and from extensive connection within school to online resource provision and teacher participation. Students, on occasion, seemed to become rather too adept at using the one-to-one technology in school for non-curricular purposes. Due to this issue, there was a feeling among students that teachers were purposefully not implementing technology into the classroom (Davies, 2017).

As the 21st century student becomes more knowledgeable about and fluent with one-to-one technology, teachers are looking for ways to increase student engagement through one-to-

one technology. One way this is done is through the use of the flipped classroom model. When the flipped classroom is implemented, technology is truly placed in the hands of the learners. When the flipped classroom is implemented properly, students prepare for the lesson through the use of supportive online video lectures. This requires high levels of problem-solving skills, critical thinking, and peer instruction.

The key feature that is involved within the flipped classroom model is the use of one-to-one technology before and during classroom activities (Boeve et al., 2016). According to Mayer (2020), mobile technology within the classroom learning environment and one-to-one technology has potential to improve academic learning. The key is to focus on learning outcomes. Zhai et al. (2016) found in the physics classroom, one-to-one technology enhanced the conventional physics instruction by improving learning in five critical ways. First, the 21st century technology saved time through the use of screen notes. Next, technology within the classroom provided extending perception through the use of screen display. Third, one-to-one devices for each student allowed for ease of accessing and managing of resources. Teachers within the classroom were also able to provide feedback through one-to-one technology. Finally, the 21st century technology allowed for remediating learning within the classroom learning environment (Zhai et al., 2016). Mobile devices offer a new horizon of learning opportunities for learners within the one-to-one learning environment. The constant changes and developments of mobile devices bring forth changes to the pedagogy within the classroom for educators. These changes include (a) the process and products of learning through interactions with psychological constructs, (b) new opportunities to directly influence learning process or outcomes, and (c) various opportunities to collect previously unobtainable data that improves the modeling and understanding of the learning process (Bernacki et al., 2020).

Making Connections with Students

To create a highly effective and safe learning environment, educators must make positive and appropriate connections with their students. Positive teacher-student relationships impact student engagement and behavior and predict both short-term and long-term academic success. Researchers have argued that student engagement is inherently a relational process between teachers and students (Duong et al., 2019).

One of the factors that most greatly promotes student learning within the classroom is the positive teacher-student relationship. The teacher-student relationship is the foundation for any productive classroom management plan. These positive relationships within the classroom learning environment are the building blocks for all class activities, and a teacher who does not actively work to establish these relationships will encounter negative situations that could have been avoided had the time been taken up front to establish these bonds with the students (Martin, 2019). This can be done through strategies such as teacher praise. Teacher praise increases appropriate prosocial behavior and decreases disruptive behavior within the elementary, middle, and high school level classrooms (Haydon et al., 2020).

Positive interactions between teachers and students create peaceful and effective learning environments. For example, positive and good relationships foster good learning environments. Essentially, according to Garcia (2019), it is a spiral that works together. With positive relationships and connections within the classroom learning environment, rapport with the students also improves, which leads to an increased level of engagement and learning. As learning continues within a positive environment with high levels of engagement, students learn to be better learners and critical thinkers. This leads to an increased level of confidence and trust in themselves and the teacher (Garcia, 2019).

Negative interactions produce an environment of instability (Agyekum, 2019). A positive relationship with a teacher leads to academic growth for a student. Teachers who emphasize positivity rather than negativity help students to be more forthcoming with positive behavior. Garcia-Moya (2019) found the quality of teacher-student relationships is a key mediating factor for the effects of students' disruptive behavior on teachers' occupational well-being. In addition, recent studies have also emphasized the importance of relationships with students as they can promote teachers' well-being. Therefore, relationships can be as important a source of well-being for teachers as they are for students, which past research has frequently neglected. Garcia-Moya et al. (2019) also found teachers have a wide variety of feelings regarding building relationships with students. According to Garcia-Moya et al. (2019), some teachers saw teaching and building relationships as being impossible to separate while others expressed the view that approaches that disregard relationships with students can be effective too. Throughout the study, investing in relationships with students was most often framed as a personal choice for the teacher.

Teachers' personal characteristics, such as emotions, are increasingly recognized as forming the basis of their attitudes toward students and of their ability to provide a psychologically secure classroom environment (Poulou, 2017). Many educators and students have mixed feelings about how the implementation of 21st century technology has affected the personal relationships between teachers and students. Jansen et al. (2019) found that instruction is stronger within the classroom when educators work to provide both academic and social support to students. Especially within the 21st century classroom, academic support can occur in a variety of ways through digital resources such as providing students with opportunities to meet learning objectives and tasks in context (Koedinger & Nathan, 2004). Social support within the

classroom can also occur in many different forms such as positive motivational discourse with a focus on learning and encouragement of collaboration with peers (Turner et al., 2002).

With the constant changes to the classroom that the 21st century has brought, students have experienced astronomical social changes outside of the classroom due to technology. Social media and technology are constantly around students. Nesit et al. (2018) noted that social media transforms adolescent peer relationships in five critical ways: (a) by changing the frequency or immediacy of experiences, (b) amplifying experiences and demands, (c) altering the qualitative nature of interactions, (d) facilitating new opportunities for compensatory behaviors, and (e) creating entirely new behaviors. To counter this, Rosenberg and Asterhan (2018) found that student-teacher communication and pedagogy within the classroom can be achieved using digital apps such as WhatsApp. Through the use of 21st century communication tools within the classroom learning environment educators can be highly available to student questions and requests and the ability for students to learn from each other through a social media messaging board (Rosenberg & Asterhan, 2018). This teacher-student availability within the classroom learning environment is critical to student success within the 21st century learning environment. It has been found that building positive teacher-student relationships increasingly outweighs negative teacher-student relationships (Martin & Collie, 2019). For some educators, there is a fear that as one-to-one technology is implemented into the classroom and there is a shift from teacher-centric learning to student-centric learning, personal relationships and connections between educators and students may become distant. It is important to remember the educators cannot be replaced. Martin (2019) argued without positive teacher-student relationships, engagement levels within the classroom learning environment, respect, and trust between teachers and students are much lower. Due to this, likelihood of success of students is diminished

(Martin, 2019). The educator pushes a student to meet the objectives and reach a mastery level of the content. With the constant changes to the outlook of the 21st century learning environment Owusu-Ansah and Kyei-Blankson (2016) argue that educators must continue to care, show concern, and interact with students. If this continues, student motivation will continue to increase.

Perceptions of Teachers

With the widespread use and implementation of technology into K-12 education, one-to-one laptop programs are becoming popular approaches (Jin & Schmidt-Crawford, 2017). The addition of technology in the classroom is seen as an important educational innovation to enhance teaching and learning processes in the 21st century. The use of technology within the educational learning environment by teachers seems to be influenced by various different factors. For example, beliefs about students' learning abilities and learning styles, concerns regarding meeting curriculum requirements, limited opportunities for professional development, as well as low levels of knowledge and skill for computer integration have all been found to impact frequency and content of classroom technology use (O'Neal et al., 2017). Challenges are increased for teachers in poor and urban school districts and these barriers can seem insurmountable and contribute to lower levels of technology integration. Due to this, classroom teachers, especially those in urban school districts, are playing catch up relative to creating more technology-enriched learning environments (O'Neal et al., 2017).

Teacher motivation has been seen as a critical prerequisite for successful technology integration in the classroom, particularly in early phases of educational innovation (Backfish, 2021). The ability of teachers to overcome what they perceive as barriers is critical for the success of one-to-one programs. However, this may also be dependent upon the value they place

on using technology to build necessary skills as well as how they are already using technology in the classroom (O'Neal et al., 2017). As 21st century educators, the perceptions that educators have of new systems within the classroom learning environment must be understood. The shift to the 21st century classroom with technological advancements such as one-to-one technology within the classroom learning environment has placed additional expectations on K-12 teachers. For example, teachers are now expected to better equip students with 21st-century skills. Therefore, this makes it critical to understand the teachers' beliefs about the role of technology in teaching and learning and the skills their students need to be successful (Oneal et al., 2017).

Although one-to-one laptop initiatives show great promise, research has indicated conflicting results regarding the impact of teacher pedagogy on student learning outcomes (Gonzales & Jackson, 2020). For many digital immigrants, 21st century technology in the classroom, such as one-to-one devices, is a daunting task. This is often due to the fear of the unknown. However, Khlaif (2018) found that there is a divide in attitudes towards one-to-one technology within the classroom. For example, Bergland Holen et al. (2017) indicate that increased student control due to instant access to the internet creates tension between teachers and students, where the access to one-to-one computing appears to sneak up and increase student control irrespective of how the teachers think and act. However, educators with positive outlooks on one-to-one technology noted that they are portable and accessible for students and educators and have various amounts of multimedia features (Khlaif, 2018). Nikolopoulo (2021) conducted a study on educator's readiness to implement mobile learning into the learning environment. Within the study, stronger perceptions on mobile learning benefits, preferences, and external influences were associated with an increased likelihood of using mobile devices in the classroom (Nikolopoulo, 2021). This closely aligns with Hershkovitz and Arbelle's (2020) study as they

found that when one-to-one programs are implemented within schools, positive outcomes occur. For example, within the one-to-one classroom, teachers enhance existing strategies and practices and do not modify teaching dramatically. When teaching in a one-to-one learning environment, teachers reflect upon the new learning setting and take part in professional communities more than while teaching in traditional settings (Hershkovitz & Arbelle, 2020).

Technology use is often impacted by teachers' beliefs and attitudes regarding the role of technology in teaching and learning (Oneal et al., 2017). Educators with negative attitudes towards one-to-one technology within the classroom reported that they confronted various challenges while using one-to-one technology during lesson plans. Additionally, a study by Nikolopoulo (2020) found mixed feelings from educators. According to Engeness (2020) the 21st century classroom provides valuable opportunities for learning; however, it creates new levels of demands and expectations for teachers that do not exist in the traditional classroom. For example, teachers are expected to not only have a deep understanding of 21st century technology but must also engage in the design of digital environments. Engeness (2020) also argued the design of these digital environments include online courses, learning management systems, and mobile applications. With the growing popularity of one-to-one technology in schools, there has been a rise in technologies that have been developed to facilitate collaborative learning in the classroom for teachers. One example of these is Computer-Supported Collaborative Learning (CSCL) technologies. CSCL provides teachers with scripting or scaffolding support that has been created to maximize students' opportunities for learning and developing effective collaboration strategies (Martinez-Maldanado, 2019). Unfortunately, the reality is that it may become increasingly challenging for teachers to implement these technologies on top of the social and pedagogical aspects of the classroom that they also need to manage Fortunately, in

recent years, more technology has emerged to help teachers manage the increasing uncertainty and complexity of CSCL classrooms (Martinez-Maldanado, 2019). Benefits of one-to-one technology that educators expressed are student involvement and active participation with the lesson, more enjoyable and interactive lessons, and easy to access information (Nikolopoulo, 2020).

To better understand the one-to-one learning environment and work to enhance the benefits of one-to-one technology, educators expressed the need for equipment and training. For one-to-one technology to be successful within the classroom learning environment, it is important to provide teachers with proper professional development opportunities. These professional development trainings must be in alignment with the personal and professional concerns of teachers. In addition to this, 21st century technology experts and content developers are needed to develop high-quality materials and assignments to use in the technology-rich classrooms. These instructional materials may enable the teachers to concentrate on pedagogy instead of investing efforts in developing instructional materials (Doron & Spektor-Levy, 2018). Studies have also found that educators' concerns include difficulty to control students and noise disruption during class when one-to-one technology is implemented into the classroom learning environment (Nikolopoulo, 2020).

To combat this idea and feeling of students losing control and not being ready to use technology within the classroom, proper teaching of digital citizenship within schools is key to create an environment of safe and effective use of 21st century technology in which educators feel comfortable implementing new interactive lessons. Digital citizenship, defined as exhibiting appropriate and responsible behavior with digital technology use, is an essential component of technology education (Martin et al., 2019). Another study conducted by Khlasisang (2021) found

that the educator's attitude towards using mobile technologies within the learning environment was significantly linked with perceived usefulness, perceived ease of use, perceived ubiquity value, and personal innovativeness. Usefulness of the technology was significantly influenced by perceived ease of use, peer influence, cognitive teaching belief, and cognitive feedback (Khlaisang et al., 2021). To effectively support learning in 21st century classrooms, we need to identify how data may interplay with 21st century pedagogy and theory. Understanding teachers' perspectives after they use learning new innovations during an extended period of time is critical to designing interfaces that can be orchestrated by the teacher and that can effectively support their teaching and monitoring needs (Martinez-Maldonado, 2019).

A consistent theme within the literature is both teachers and students need more training before implementation of technology for it to enhance the learning environment and improve mastery of content. Once proper training is provided for both educators and students, effective learning strategies can be put into place that use technology to its full advantage. The 21st century is increasingly creating a technology driven work environment. Due to this, it is important to look towards 221st century strategies for the classroom (Varier et al., 2017).

Summary

One-to-one technology has become commonplace within the 21st century educational learning environment. Technology within the classroom and endless amounts of resources that are just a click away for students comes with mixed reactions from educators. These resources, at the fingertips of students, create a learning environment which has shifted from a teacher-centric learning environment to a student-centric learning environment through the use of one-to-one technology (Kim et al., 2019). According to Lewis (2017), Vygotsky argues that most development occurs as both a part and result of social interactions. With a shift from a teacher-

centric to student-centric learning environment caused by one-to-one technology in the classroom, the question is posed: How do teachers describe relationships with students while using one-to-one technology to provide feedback? This study will be guided by Vygotsky's theory of learning.

Overall, there have been mixed reviews from teachers on both the effectiveness and the implementation of 221st century technology into the classroom learning environment. When implemented correctly, many teachers approve and enjoy the countless strategies and differentiation options that the one-to-one classroom offers. To be effective, educators find that there must be more professional development provided when technology is implemented into the classroom learning environment. However, districts have found that student achievement increases when one-to-one technology is properly implemented into the classroom setting. Additionally, once technology is implemented into the classroom, it can be used in a variety of ways to meet the needs of students across all learning levels.

Unfortunately, little is known about how one-to-one technology within the classroom affects teacher-student relationships and assessment within the classroom learning environment. A gap exists in the literature pertaining to how quality of grading is affected once one-to-one technology is implemented into the classroom learning environment. This study seeks to provide information regarding how students, teachers, and educational leaders approach the 21st century learning environment. With an understanding of how 21st century technology affects the quality of grading, teachers and educational leaders can work to create highly effective learning environment. By looking at the experiences of classroom teachers of students who have received one-to-one technology, there can be a better understanding of how one-to-one technology affects teacher-student relationships.

CHAPTER THREE: METHODS

Overview

The purpose of this transcendental phenomenological study was to describe teacher experiences of teacher-student relationships while using one-to-one technology to provide feedback at Sands Middle School and Heeler Middle School in Nebraska. One-to-one technology is generally defined as a learning environment that provides all students with their own laptop, netbook, tablet computer, or other mobile-computing device (Kim et al., 2019). The theory guiding this study was Vygotsky's theory of learning. Using the experiences of teachers within the one-to-one classroom, this transcendental phenomenological study examined the perceptions of teachers when grading and providing feedback using one-to-one technology. This chapter begins with a discussion of the study's design model and its relevance to the type of study under investigation. This is followed by the research questions for the study. The setting, participants, procedures, and data collection techniques are then described. In this study, all identifiable information associated with the setting, participants, and names of offices and participants' titles were changed to pseudonyms to protect the confidentiality of the setting and the participants. Additionally, included within this chapter are the data analysis process, trustworthiness, the ethical considerations, and a summary.

Research Design

According to Moustakas (1994) every method in human science research is open-ended. There are no required or exclusive guidelines. Additionally, each research project holds its own integrity and establishes its own methods and procedures to facilitate the flow of the investigation and collection of data (Moustakas, 1994). This transcendental phenomenological research design included participants who have experienced the phenomenon, in this case;

teaching in a one-to-one classroom learning environment. A phenomenological design was selected for this study with a social constructivist worldview because the study sought to understand the learning environment in which educators teach.

Phenomenological studies typically have strong philosophical underpinnings with interviews for data collection (Giorgi, 2009). The study, which sought to understand relationships between teachers and students within the one-to-one learning environment, has a strong social constructivist underpinning and worldview because multiple perspectives were sought through the interview process, rather than a narrow data collection process. It is important that through this process of studying one-to-one technology, multiple experiences and subjective meanings are collected through open-ended questioning (Giorgi, 2009). This can be achieved using the transcendental phenomenological design with a social constructivist worldview as the transcendental approach consists of identifying a phenomenon to study, bracketing out one's experiences, and collecting data from several persons who have experienced the phenomenon (Moustakas, 1994).

Specifically, within the transcendental phenomenological research design, the researcher's goal was to achieve transcendental subjectivity. This is a state in which the impact of the researcher on the inquiry is constantly assessed and biases and preconceptions no longer exist (Moustakas, 1994). The primary goal of this was so that the researcher did not influence the object of study. The researcher is to stand apart, and not allow his/her subjectivity to inform the descriptions offered by the participants (Neubauer et al., 2019).

Moustakas (1994) noted that the word phenomenon comes from the Greek *phaenesthai*, to flare up, to show itself, to appear. Constructed from *phaino,* phenomenon means to bring to light, to place in brightness, to show itself in itself, the totality of what lies before us in the light

of day. Creswell and Poth (2018) recognized that phenomenology is a design from philosophy and psychology in which the researcher describes the lived experiences of individuals about a specific phenomenon as described by participants. This description culminates in the essence of the experiences for several individuals who have experienced the phenomenon (Creswell & Poth, 2018). In the study on one-to-one technology in the classroom learning environment, the common phenomenon among the participants is one-to-one technology, and the common lived experience is relationships between teachers and students.

Within the social constructivist worldview, it is believed that individuals seek understanding of the world in which they live and work. Through this worldview, individuals develop subjective meanings of their experiences (Creswell & Poth, 2018). Using a qualitative approach and phenomenological design, social constructivist meanings are varied and multiple rather than narrow. The goal of researchers is to rely on participants interviews of the situation being studied (Moustakas, 1994). Factoring in all of these components of qualitative research, this three-part research study on one-to-one technology in the classroom learning environment was a qualitative approach, with a social constructivist worldview, and phenomenological design.

Specifically, the transcendental phenomenological design model discovers the nature and meaning of experience and develops methods and procedures for further investigation and analysis. Throughout the process, the researcher was present while increasing their understanding of the problem and phenomenon. The researcher also experienced growing self-awareness and self-knowledge (Moustakas, 1994). Moustakas (1994) points out that the transcendental process leads to new images and meaning regarding human phenomena, in addition to realizations to their own experiences. In this case, one-to-one technology in the

classroom learning environment. It is essential in transcendental phenomenology for the researcher to have an awareness of oneself, especially in relation to the essence being studied. While any experience is fitting for this type of study, looking at the experience separate from one's own values and beliefs is the challenge, according to Moustakas (1994).

Research Questions

The questions formulated for this transcendental phenomenological study were derived from the theoretical framework guided by Vygotsky's theory of learning. The research questions begin with a central research question based on teacher experiences with the one-to-one learning environment. Sub-questions were derived from Vygotsky's theory of learning as they looked to understand the experiences of middle school teachers in the one-to-one learning environment, and how teacher-student relationships are affected through feedback and grading.

Central Research Question

How do teachers describe relationships with students while using one-to-one technology to provide feedback?

Sub-Question One

How do teachers describe the feedback process in the one-to-one classroom?

Sub-Question Two

How do teachers describe their interactions with students while using one-to-one technology to provide feedback?

Sub-Question Three

How do teachers describe ways to create relationships with students in the one-to-one classroom?

Setting and Participants

This section of the proposal discusses the site selected to execute the study and the

profile of the participants. A pseudonym is used to discuss the site. The size of the school and the organizational makeup, and the reasons it was chosen for the study are explained. In addition, participants' characteristics and the criteria for selection are explored.

Site

This study was conducted at Sands Middle School in Nebraska. The school is part of a district with thirty-five schools (six middle schools) and more than 24,000 students. At the time of this study, the U.S. Census Bureau (2020) reported over 75% of the population was White, 12% was Black or African American, and 14% Hispanic or Latino. The median household income was $62,213. For the purposes of this study, the schools and participants were represented using pseudonyms. This school was selected because within this Nebraskan school district, the strategic plan calls to "expand the use of and access to interactive tools and technology to support and improve PK-12 learning and innovation." To fulfill this portion of their strategic plan, the district partnered with local non-profit foundations to implement one-to-one technology within the classroom at both the elementary and secondary levels. Students within the elementary schools receive tablet devices, and students receive their first laptop device when entering the sixth-grade classroom.

Participants

This study examined the experiences of middle school teachers in the one-to-one learning environment and how teacher-student relationships are affected through feedback. Within the study, all participants met the criteria of being a middle school teacher. Creswell and Poth (2018) referred to this as purposeful, criterion sampling. Once a set of participants were identified; a participant group of ten interviewees were selected from a Nebraskan middle school staff. This sample size is fitting since a hallmark of a good qualitative phenomenological study includes an

emphasis on the phenomenon to be explored, with a group of individuals, typically 10 to 15, who have experienced the same phenomenon (Creswell & Poth, 2018).

Researcher Positionality

Phenomenology is a design from philosophy and psychology in which the researcher describes the lived experiences of individuals about a phenomenon as described by participants (Moustakas, 1994). This description culminates in the essence of the experiences for several individuals who have all experienced the phenomenon. The digital renaissance of the 21st century within the classroom learning environment has created a phenomenon of how technology affects the learning environment; specifically, how teacher-student relationships are affected through one-to-one feedback and grading. This phenomenon was studied using a social constructivist lens. This study is important to me because of my recent move to a one-to-one district and the reliance on one-to-one technology within my classroom learning environment. Due to the convenience of education platforms such as Google Classroom, feedback and grading is often provided through one-to-one technology in my classroom. Rather than hard copy, pen to paper comments, students receive feedback at a distance, often at a much faster rate prior to the to the one-to-one learning environment. With this distance in feedback and grading, the effects it has on teacher-student relationships becomes a question for me as I strive to create a learning environment for my students with positive teacher-student relationships.

Interpretive Framework

Using the social constructivist framework, I sought to understand the world in which I live and work. In social constructivism, researchers seek understanding of the world in which they live and work (Creswell & Poth, 2018). Through the social constructivist framework, I developed subjective meanings of experiences I have throughout my research. The social

constructivist framework allowed me to look for complexity of views rather than narrow meanings. The goal of my research through the social constructivist framework was to rely completely on the participants views of the situation being studied (Creswell & Poth, 2018). This was especially important when interviewing and capturing the experiences of teachers in the classroom learning environment.

Philosophical Assumptions

Philosophical assumptions are centered around the values and belief systems of the researcher. This transcendental phenomenological study included educators within the one-to-one classroom learning environment. Three philosophical assumptions addressed within this study are: ontological, epistemological, and axiological. These three assumptions articulate the beliefs of nature and reality, how knowledge is known, and the personal biases of myself: the researcher.

Ontological Assumption

The foundation of the ontological assumption is the belief that all human beings seek a subjectively meaningful orientation to the world. This includes both religion and science (Koch, 1994). Additionally, the mind confronts external reality, whether it be physical or social. The mind, with its limited capacities, must confront the social environment as an object in the process of seeking to make it intelligible (Koch, 1994). Therefore, the ontological assumption involves an individual's beliefs on reality. For example, are there multiple realities, or is there one universal reality? As a Christian educator, researcher, and scholar, I view the world through God's truth and His singular reality. When researching, and in the field working with participants through interviews, focus groups, and journal entries, it was important to accept and consider the viewpoints of diverse groups of people who may believe that multiple realities are the only

explanation of the world.

Epistemological Assumption

Qualitative research is subjective research. Within this phenomenological study, knowledge is derived from a wide range of people who are not necessarily experts in the field of one-to-one technology. The epistemological assumption addresses what counts as knowledge, how knowledge claims are justified, and, more specifically, what is the relationship between what is being researched and the researcher (Creswell & Poth, 2018). Epistemology is the study of the process of knowing or how we know what we know. It is concerned with how we gain knowledge of what exists and the relationship between the knower and the world. In this case, the knower is the researcher. The researcher and research participant may be considered independent of one another (Spencer et al., 2014). With epistemological assumption, subjective evidence is assembled based on individual views as the researcher aims to get as close as possible to the participants. This occurs through individual, open-ended interview questioning with participants in this transcendental phenomenological design. Following open-ended interview questions, focus group questioning, and journal entries with teachers in the one-to-one classroom learning environment, I formulated and collected subjective evidence.

Axiological Assumption

Axiology is concerned with how values and assumptions of the researcher, in this case me, influence the scientific process, as well as actions the researcher takes with the research produced. For example, what place do emotions, expectations, and values of the researcher have in the research process (Spencer et al., 2014). These assumptions and biases play an important role in this qualitative, transcendental phenomenological design. This is due to the nature of the research within the field of education as interviews were conducted with teachers who teach in

the one-to-one educational learning environment. This method of data collection could bring bias into the research as I also teach within an environment that provides one-to-one technology for students in the classroom. Moustakas (1994) focuses on epoche or bracketing to take a fresh perspective toward the phenomenon within the study. Bracketing is the process in which researchers work to set aside their personal experiences (Creswell & Poth, 2018).

Researcher's Role

I am currently a 7th grade teacher within the school district that the participants of the study currently teach. I however, have never taught any of the students that the participants of the study spoke about throughout the interview process. I had a professional relationship with the participants. For example, I did not report to any of the participants. Additionally, none of the participants reported to me. Throughout my years of teaching within the school, I have never taught with any of the participants in a classroom setting. These relationships did not affect the research study. As an educator, I recently moved to a district which utilizes one-to-one technology. This was a change for me, and I noticed a difference in my students. This noticeable shift within the classroom learning environment is a possible bias in my research. In phenomenological studies, the investigator abstains from taking suppositions, focuses on a specific topic freshly, creates a question to guide the study, and derives findings that will provide a basis for further research (Moustakas, 1994). To address my possible bias within the research, I utilized epoche, or bracketing, often focused on by Moustakas (1994).

Procedures

Within qualitative research, there are many steps that must be followed for a complete study. To conduct this study, I first identified what was needed to gain entry into the study. Three

types of data collection were within the study. These data collection methods included individual interviews, a focus group discussion, and collection of a journal prompt.

Prior to conducting research, I sent the individual research questions, focus group questions, and journal prompt to be reviewed by a panel of educators who have master's degrees and are both certified teachers in their state with one-to-one technology in their classroom (see Appendix A). These experts offered input and suggested potential changes to improve upon my research. I considered those suggestions and made changes as necessary.

Permissions

To conduct this study, approval was needed from the Institutional Review Board (IRB), Liberty University's IRB (see Appendix B), and the school district's research center. Approval for this study within the district was granted following approval of a Google Form submitted to the district research center. The approved Google Form (see Appendix C) includes the type of study, the purpose of the study, and who within the district is involved.

Recruitment Plan

One critical feature of a phenomenological study is the exploration of the phenomenon, or experiences, with a group of individuals who have experienced this phenomenon. This may vary in size from 10 to 15 participants (Creswell & Poth, 2018). For this transcendental phenomenological study, a range of between 10 and 15 participants were targeted as the sample size. The sample size was selected based on criterion sampling from a sample pool (Creswell & Poth, 2018). The sample pool was a middle school within a school district in Nebraska. Participants were recruited by first contacting the administration at the middle school who then recommended participants who meet the criteria for the study.

Data Collection Plan

To ensure triangulation of data, three different approaches to data collection were utilized in this study. Triangulation of data allowed myself, the researcher, to make use of multiple and different sources, methods, and theories (Creswell & Poth, 2018). This was important for validating the accuracy of the study. Each of the approaches within this study were carefully designed to gain insight and experience of the educator in the one-to-one educational learning environment. The data collection approaches included individual interviews, a focus group, and journal prompts. Data collection began with interviews and ended with journal prompts. This provided participants a timeframe to answer journal prompts carefully and thoroughly. Focus group participants consisted of participants from the individual interview collection procedure.

The first method of data collection were individual interviews. Consent was gained from participants digitally through DocuSign (see Appendix D). Once consent was gained, individual interviews were scheduled via email and took place using Zoom. I then printed the recorded Zoom transcription in addition to transcribing the interviews by hand. Following the interviews, I sent the notes to the participants for member checking. These recordings were password protected on my personal Google Drive.

Following the individual interviews, I scheduled the focus group. The focus group discussion will also be conducted via Zoom, recorded, and transcribed. All recordings, notes, and transcriptions will be password protected and maintained on my personal Google Drive for a period of seven years.

Once interviews and focus groups were completed, I asked participants to respond to two journal prompts. The journal prompts asked them to draw from personal experiences as they wrote their response. Journal entries were sent to me electronically via Google forms. If the

journal entries were not completed after a period of one week, I sent them a reminder email (see Appendix E). When interviews, the focus group, and all journal prompts were received, I began analyzing data.

Individual Interviews

The purpose of this transcendental phenomenological study was to gain insight into the experiences of teachers within the one-to-one educational learning environment and understand how teacher-student relationships are affected through feedback. Using Vygotsky's theory of learning as a framework, individual interview questions allowed for an open-ended discussion to help gather insight into the one-to-one classroom and how it effects the teacher-student relationship. Individual interviews were appropriate for this study since phenomenology is rooted in questions that provide focus and meaning (Moustakas, 1994). These interview questions provided a focus on teacher-student relationships within the one-to-one classroom. These interviews were semi-structured and were conducted as the first data collection approach.

Individual Interview Questions

1. Please introduce yourself to me, as if we just met one another.
2. Please share with me the number of years you have spent in the educational profession and the positions you have held.
3. How do you describe the teacher-student relationship when feedback is being provided through one-to-one technology? (CRQ)
4. What online educational platforms or strategies do you utilize in your classroom with one-to-one technology to provide feedback to your students? (CRQ)
5. Describe how one-to-one technology has impacted teacher-student relationships in your classroom learning environment. (CRQ)

6. Describe the experience of providing feedback in the one-to-one environment? (SQ1)

7. How you are most effective in providing feedback to your students using one-to-one technology? (SQ1)

8. How do you best describe the differences in providing feedback using one-to-one technology as opposed to pen-to-paper feedback? (SQ1)

9. How do you believe students interact with feedback given digitally as opposed to pen to paper? (SQ2)

10. How do you interact with students while providing feedback using one-to-one technology? (SQ2)

11. What are your experiences with the ways in which teachers use providing feedback to build relationships with students? (SQ3)

12. What are your experiences with one-to-one technology, grading digitally, and building relationships with students? (SQ3)

13. Describe strategies you utilize to create positive relationships and make connections with your students while providing feedback to students. (SQ3).

14. In what ways can digital grading platforms be utilized to build relationships with students? (SQ3)

15. We have covered a lot of ground in our conversation, and I appreciate your time. One final question: What else do you think would be important for me to know about using one-to-one technology to provide feedback to students and its effects on the teacher-student relationship? (CRQ)

Individual Interview Data Analysis Plan

According to Moustakas (1994), organization of data begins when the researcher studies

the interviews through the methods and procedures of phenomenal analysis. This includes horizonalizing the data and regarding every horizon or statement relevant to the topic as having equal value (Moustakas, 1994). Next, these are clustered into common themes, while removing overlapping statements. This allows the researcher to create structural descriptions and an integration of textures and structures into the meanings and essence of the phenomenon (Moustakas, 1994). For data collection and analysis in this study, interviews were conducted via Zoom and the transcripts were printed out following the meeting. Once the transcripts were printed out, data from the interviews were horizonalized and placed into categories. This is the process I used to go through the data and highlight significant statements or quotes that provided an understanding of how the participants experienced the phenomenon (Moustakas, 1994). These categories were color-coded and placed into a Google Sheet for development of textural descriptions of the phenomenon. These themes are known as clusters of meaning (Creswell & Poth, 2018).

Focus Group

To gain further insight into the experiences of teachers within the one-to-one educational learning environment and to further understand the effects of one-to-one technology on teacher-student relationships through providing feedback, the focus group provided the opportunity to interact with multiple participants at the same time, while encouraging dialogue amongst participants about the area being researched. Creswell and Poth (2018) described focus groups as interviews that take place in a group with four to six participants that share experiences. I scheduled two focus groups. Scheduling two focus groups provided two days and times for the focus groups to meet via Zoom. According to Moustakas (1994) this type of interview yields the best data when participants are similar and cooperative. Moustakas (1994) instructs that

beginning the interview with an ice breaker helps participants feel comfortable and respond more honestly.

Focus Group Questions

1. Describe your experiences building relationships while providing feedback through one-to-one technology? (CRQ)
2. What is the level of convenience as a teacher when providing feedback through one-to-one technology? (SQ1)
3. Describe the strategies or digital learning platforms you use to provide feedback to your students through one-to-one technology which also help interact with students? (SQ2)
4. Describe the interactions you have with your students through one-to-one technology as you provide feedback on their work. (SQ2)
5. Describe your students' response to feedback through one-to-one technology? (SQ2)
6. Describe the opportunities you create within your classroom to build relationships with your students, using one-to-one technology. (SQ3)
7. What form of grading and providing feedback do you believe builds the greatest teacher-student relationships? (SQ3)
8. We have covered a lot of ground in our conversation, and I appreciate the time you have given to this. One final question: What else do you think would be important for me to know about providing feedback using one-to-one technology learning its effects on the teacher-student relationship? (CRQ)

Focus Group Data Analysis Plan

Like the individual interview data analysis plan, the analysis process included

horizonalizing the data and regarding every horizon or statement relevant to the topic as having equal value (Moustakas, 1994). Next, these were clustered into common themes, while removing overlapping statements. This allowed myself, the researcher, to create structural descriptions and an integration of textures and structures into the meanings and essence of the phenomenon (Moustakas, 1994). Color coded common themes were placed into a Google Sheet for analysis.

Journal Prompts

Two journal prompts were submitted to participants through the use of Google Forms (Appendix E). Through the use of the journal prompts, participants were asked to share their experiences of providing feedback through the use of one-to-one technology in the classroom. Participants were provided with two weeks to complete the journal prompts. Once participants completed the Google Form, it was submitted for analysis in my Google Drive. Written journals are documents in which participants record feelings and experiences complete with examples relative to the topic of study (Creswell & Poth, 2018). While this type of data collection is more common with case studies and narrative research, it does provide a depth of understanding that may not be gleaned from interviews (Creswell & Poth, 2018). This data collection method is characteristic of social constructivism, which states participants construct meaning based on interactions with others (Creswell & Poth, 2018).

Journal Prompts

1. Describe your interactions with students during the feedback process using one-to-one technology and how these interactions affect the teacher-student relationship. (CRQ)
2. Describe your experiences with using one-to-one technology in the feedback process to build relationships with students. (SQ3)

Journal Prompts Data Analysis Plan

Organization of data began with horzonilization as data was placed into distinct categories (Moustakas, 1994). This allowed me, the researcher, to create structural descriptions and an integration of textures and structures into the meanings and essence of the phenomenon (Moustakas, 1994). To properly organize data into distinct categories, the journal prompts were answered in Google Forms and then submitted. Once in my Google Drive, the answers were horizonalized and placed into categories.

Data Synthesis

In transcendental phenomenological research, there are three considerations that are essential to analysis. These include epoché, transcendental-phenomenological reduction, and imaginative variation (Moustakas, 1994). In particularly characteristic of transcendental phenomenology, epoché is the process of taking what is understood to exist based on experience, judgement, and personal perception and setting it aside (Moustakas, 1994).

In addition to the process of epoché within this study and the complete removal of all my personal judgment from the study, the process of horizonalization was utilized prior to data analysis. Using transcriptions from the interviews, every expression relevant to the experience was categorized, color-coded, and listed within a Google Spreadsheet.

Moustakas's (1994) and Saldaña's (2016) coding methods were used to guide the interpretation and analysis of data. These methods included in vivo coding, and descriptive coding to both use actual participant language, and short phrases that represent the basic topic of passages in the participant data (Saldaña, 2016). Data was organized into clusters and themes as they related to my research questions. Descriptive coding is appropriate for qualitative research with multiple participants and sites while analyzing various sources of data, such as interview

transcripts, journals, letters, and artifacts (Saldaña, 2014). In descriptive coding, researchers analyze the data by categorizing it into topics to provide an inventory (Saldaña, 2014). Throughout this process, I was able to understand and identify ways that participants experienced the phenomenon (Moustakas, 1994). In my case, teacher student relationships in the one-to-one learning environment.

Trustworthiness

Trustworthiness was established in this study by addressing credibility, dependability, transferability, and confirmability. With validation comes trustworthiness. Validation is a distinct strength of qualitative research. Proper validation is based on the amount of time the researcher spends with participants and the detailed description that results (Creswell & Poth, 2018).

Credibility

Transcendental phenomenological research is based on the participants' perspective. Therefore, it was critical that I removed myself from the study and establish credibility. I ensured that my investigation into teacher's perspectives was done in alignment with the standards of qualitative research. Ensuring that these standards were followed will involve using all of the outlined stipulations presented in qualitative research and outlined by critical researchers such as Moustakas (1994) and Creswell and Poth (2018). Triangulation must be used to ensure the credibility of results, and a detailed accounts were given of the processes used by me to execute the research to facilitate replication. Additionally, credibility was also established within this study through the use of experts who examine my interview questions to ensure the questions collected the needed information to understand the study. Additionally, credibility was established through Liberty University and IRB approval.

Transferability

The external validity of the data is the transferability of the data within the study (Creswell & Poth, 2018). When transferability is properly achieved within a study, it acknowledges the particular uniqueness of the conditions within the qualitive study (Yin, 2015). Due to the nature of one geographic location, transferability may be a concern with this study. Thick descriptions and explicit connections were made throughout the research process that could facilitate the transferability process. Although these concerns were addressed, judgment of transferability can only be made by the reader of the research.

Dependability

Dependability determines how faithful and authentic the data within the study is and is often accomplished through auditing (Creswell & Poth, 2018). I ensured dependability of my study by executing several steps. In the case of this study, at Liberty University, this occurred with a thorough review of the process and the products of the research by the dissertation committee and the Qualitative Research Director.

Confirmability

Confirmability is the degree in which findings are shaped by the respondents, rather than the researcher, or bias. It is essential to gather data in a way that ensures a transparent representation of the data as opposed to choosing only data that fits the researcher's assumptions concerning the topic (Lambert, 2019). This was ensured throughout this study through the use of triangulation. Triangulation occurred with three types of data collection methods including individual interviews, a focus group, and journal prompts.

Ethical Considerations

Prior to the study, proper steps along with measures to protect participant confidentiality, were necessary for conducting an ethical phenomenological study (Creswell & Poth, 2018). Before the study was conducted, IRB approval needed to be gained. As the study was being conducted, several ethical considerations needed to be considered. Any ethical considerations or implications of the research needed to be discussed. For example, confidentiality were addressed by assigning pseudonyms to people, places, and any identifiers of the study. Next, participants were asked to provide a signed consent form (see Appendix F) with an understanding of the voluntary nature of the study. This voluntary nature of the study included the understanding that participants could decide to withdraw from the study at any point. If a participant decided to withdraw, their data would be destroyed immediately. Finally, electronic data would be guarded for a period of three years through the use of password protection known only by me.

Summary

This transcendental phenomenological research design sought to examine the experiences of teachers within the one-to-one classroom learning environment and the effects providing feedback through one-to-one technology has on teacher-student relationships. A transcendental phenomenological approach was fitting for this research design as it allowed me to gather data on the participants and seek meaning on the phenomenon from the views of the participants (Moustakas, 1994). This study sought out the experiences of teachers within the classroom learning environment. One-to-one technology within the classroom acted as the phenomenon within the study. Additionally, the study was conducted through a social constructivist worldview. This allowed myself as the researcher to seek understanding of the grading tool in the classroom. The social constructivist worldview allowed me to seek out complexity of views

while interviewing teachers, rather than just narrowing my view on one-to-one technology and its effect on relationships. The goal of this study through the social constructivist worldview was to rely on participants' views of the situation being studied. This study utilized individual interviews with participants, a focus group, and journal prompts to gather data about the phenomenon. The IRB approval and the issue of confidentiality address the ethical considerations of the study.

CHAPTER FOUR: FINDINGS

Overview

The purpose of this transcendental phenomenological study is to describe teacher experiences of teacher-student relationships while using one-to-one technology to provide feedback at Sands Middle School and Heeler Middle School in Nebraska. Utilizing this approach, I was able to understand the phenomenon and how it influenced the participants within the educational learning environment. This chapter presents the results of data analysis as findings in the form of keywords and phrases. In vivo coding refers to using a word or short phrase from actual participant language found in the qualitative data (Saldaña, 2016). Descriptive coding summarizes words or short phrases that represent the basic topic of passages in the participant data. Combining these two coding methods, captured from participants' actual language, establishes an authentic representation of the participant's experience of the phenomenon. (Saldaña, 2016). Additionally, this chapter also provides a description of participants in tabular and descriptive format. Outlier data is presented and explored.

Participants

The study included a sample of 10 middle school teachers from two different middle schools: Sands Middle School and Heeler Middle School. Both are public schools within the same district in Omaha, Nebraska. Initially, four participants from Sands Middle School responded to the research request and were willing to participate. Of the four original participants, two of them withdrew from the study prior to the first interview. Following additional IRB approval, the study was expanded to an additional site, Heeler Middle School, where eight more participants joined the study. The sampling criteria established for the selection of interview participants was that participants must have taught middle school for at least one

block of the day and have at least one year of teaching experience. This purposeful sampling led to receiving the most relevant content regarding the phenomenon under examination (Creswell & Poth, 2018). The baseline of teaching experience also provided background knowledge on teacher-student relationships and one-to-one technology prior to the interview. Participants' demographics can be seen below in Table 1.

Table 1

Teacher Participants

Teacher participant	Years taught	Highest degree earned	Content area	Grade level
Tiffany	3	Bachelors	English Language Arts	7th
Michelle	4	Masters	ELA	7th
Andy	20	Masters	Math	7th
Aubrey	4	Bachelors	Math	7th-8th
Alyssa	3	Masters	Math	7th-8th
Sean	10	Masters	Social Studies	7th
Cory	11	Masters	Social Studies	7th
Stephanie	3	Masters	Social Studies	6th
Jamie	5	Bachelors	Science	7th
Ellie	24	Bachelors	Science	7th

Tiffany

Tiffany is a third-year teacher at Sands Middle School. She teaches seventh-grade ELA. She holds a bachelor's degree and is also the assistant speech and debate coach. As a participant in this study, Tiffany stressed the engagement and teacher-student connection feedback with one-to-one technology provides. For example, she mentioned:

> I think with one-to-one they're more engaged with feedback because they are able to sit and review it digitally with me. Even the same kids that if I gave them something written, and I handed it to them, they would just throw it away immediately. They wouldn't take the time to look at it and there is no digital trail of it.

Michelle

Michelle has been in public education for four years and recently earned her master's degree. She currently teaches seventh grade ELA at Heeler Middle School. Throughout her participation in this study, Michelle provided positive insight about the "real-time feedback" she provides for her students. Michelle stated, "even as her students are working through modules to complete essays, she is able to build positive relationships with them through one-to-one digital feedback."

Andy

Andy is a seventh-grade math teacher at Sands Middle School with 20 years of teaching experience and a master's degree. He recognized during his interview that his experience provided a different perspective on one-to-one technology as he taught prior to any one-to-one technology in the classroom. Andy recognizes many positive features technology has on humanity as a whole. However, throughout his participation within this study he recognized there are occasions in his classroom in which he, "feels distant" from his students. Andy

recognized the convenience of providing feedback through one-to-one technology for both teachers and students.

Aubrey

Aubrey has been teaching for four years. She currently teaches multiple classes and levels of math at Heeler Middle School. She teaches seventh grade math as well as three different advanced classes for both sixth and seventh-grade students. Aubrey outlined both the convenience of grading with one-to-one technology, and also the challenges teachers and students face on a daily basis in the math classroom. For instance, according to her, "I like it that it is much more convenient, but I find when grading math digitally, it is much less detailed feedback." Additionally, Aubrey pointed out:

> Students can be more reluctant in math when working through problems digitally. They struggle with some of the stuff that they have to figure out how to type it in. Fractions are especially difficult, so they have to convert them to decimals.

Alyssa

Alyssa has three years of teaching experience and a master's degree. She is the math department Chair at Heeler Middle School. In the classroom, she teaches seventh and eighth grade algebra, eighth-grade integrated math, and eight grade honors geometry which includes students in seventh and eighth grade who are at a 10th grade level. Recently, while completing her master's thesis, Alyssa studied how one-to-one technology changes lesson plans. To do this, she taught entire units without one-to-one technology, and then units with one-to-one technology. This provided a unique perspective to this study. In regard to feedback and the teacher-student relationship, Alyssa feels, "The immediate feedback helps with the teacher-student connection and technology can make me more available to my students."

Sean

Sean is a 10-year teaching veteran. This is his sixth year at Heeler Middle School teaching world studies. He spent four years teaching at another public school in eastern Nebraska. His previous school did not have one-to-one technology in the classroom. Sean also holds a master's degree in the field of education. Like many of the other participants, Sean is a fan of the convenience of providing feedback through one-to-one technology and the ability to easily collect data about students. When speaking about relationships specifically, Sean stated:

> I believe the teacher to student relationship is the same either way (pen to paper or one-to-one technology). I don't think it's been made up more of a positive or more of a negative. I think the rapport that's built with students has nothing to do with feedback.

Cory

Cory teaches world studies at Heeler Middle School. He holds a master's degree in education, and this is his 11th year teaching. Cory is also a professional learning community leader at his school and team leader. This means he is the "team lead" for a social studies, science, math, and English teacher. When speaking about relationships and one-to-one technology, he also brought up classroom management issues in the one-to-one learning environment. Cory was very positive about the benefits such as convenient data collection, however he mentioned:

> I find that we are constantly going back and forth with our students. Providing them with this great tool and encouraging them to use it, yet it can also be a battle with the students because it is an easy avenue to many distractions in the room. These battles lead to disruptions in teacher-student relationships.

Stephanie

Stephanie recently earned her master's degree and is a three-year teaching veteran. She has spent her teaching career at Heeler Middle School. Her first-year teaching, she taught sixth grade ELA. She now teaches sixth-grade ancient civilizations, which is a social studies class. Stephanie sees the benefits of providing feedback and grading using one-to-one technology, however, for activities such as exit tickets, she prefers pencil to paper as this creates more of the teacher-student "relationship piece." She also mentioned, "I know the importance of sitting down and actually just discussing with kids and talking about things that they enjoy and having face to face conversations. That's also a skill that they should be building."

Jamie

Jamie is a seventh-grade science teacher at Heeler Middle School who previously taught at the elementary level. She is a five-year teaching veteran and holds a bachelor's degree in education. Throughout her interview, Jamie focused on the ability to create relationships with the use of one-to-one platforms such as Kahoot, GimKit, and Blooket. While participating in the focus group, Jamie encouraged her peers to take advantage of the convenient data collection that one-to-one technology provides. For example, she encouraged her peers to group students based on data and use one-to-one feedback to reteach the material.

Ellie

Ellie is a middle school teacher with 24 years of experience. Currently, she teaches seventh-grade science at Heeler Middle School. Previously in her career, she taught in Southern Texas in a Hispanic community with many English Language Learners (ELLs). While describing the benefits of one-to-one technology she emphasized the opportunities it provides her to get to know her ELL students. Ellie also pointed out:

I think science should be experiences, and so I really like the fact that we can have experiences and then work through them on the computer." In regard to relationships with students, "I am a great fan of technology in the classroom. I believe it brings me closer to my kids.

Results

The purpose of this transcendental phenomenological study was to describe teacher experiences of teacher-student relationships while using one-to-one technology to provide feedback. Information for this study was collected through a variety of collection tools as the experiences of 10 classroom teachers were highlighted. These included one-on-one interviews, a focus group, and journal entries. Ten participants participated in the one-on-one interviews and journal entries, while four participants participated in the focus group. Interviews ranged from 25 to 45 minutes. The focus group lasted approximately 50 minutes. Zoom recorded all interviews and provided a transcript for future data analysis. Both recordings and transcripts were placed in a password protected Google Drive. Throughout interviews and the focus group, I allowed participants to express themselves without interruption. Additionally, I only asked clarifying questions when necessary.

Once extensive amounts of information were gathered using the data collection tools, I utilized Moustakas's (1994) and Saldaña's (2016) coding methods to guide the interpretation and analysis of data. This was a combination of descriptive and in vivo coding. Descriptive coding summarizes words or short phrases that represent the basic topic of passages in the participant data (Saldaña, 2016).

The second step used to organize the data involved pattern coding to identify similarly coded data and generate themes. The use of axial coding and pattern coding is to group the initial

summaries into a smaller number of themes or categories (Moustakas, 1994; Saldaña, 2016). Evaluating the thematic codes allowed me to see patterns that represent the phenomenon. I utilized a spreadsheet to complete descriptive and pattern coding. The themes identified from the analytical process were (a) efficiency in teaching and learning, (b) positive relationships, and (c) interactive assessments. Finally, I identified individual responses which did not lend to generalization as outliers to the rest of the data set.

Table 2

Theme Development

Theme 1: Efficiency in Teaching and Learning	
Sub Themes	Keywords and Phrases
Convenient Data Collection	more immediate with less paperwork Google makes grading convenient with instant teacher/student interaction when providing feedback easy to “check in” on students
Instant Reception of Feedback	students can quickly see scores real-time feedback, immediately and easily see where students are assist students with ease both remotely and in person immediate feedback helps with the teacher-student connection
Theme 2: Positive Relationships	
Sub Themes	Keywords and Phrases

Empowerment of Students	allows teacher to build a back-and-forth relationship with the student while providing feedback more specific feedback because it is easier and faster which creates a closer relationship with the student comment sections bring me closer to my students able to provide more thoughtful feedback to my students creates positive teacher-student interaction private comments allow "quiet students" to get their thoughts out. It's a lower risk for the students if they get nervous

Theme 3: Interactive Assessments	
Sub Themes	Keywords and Phrases
Grading Platforms to Build Relationships	use interactive games to create relationships interactive programs create relationships in the one-to-one environment Blookets, Gimkits, Kahoot, QR Codes, Pear Deck, Paddock, Quizlet Live relationships built with the "fun stuff" such as Blooket and Kahoot
Online Platforms for Feedback	allows for full participation even from "quiet students" students more comfortable, brings me close with the students Google Forms, Google Slides, Google Classroom, Google Mail

Efficiency in Teaching and Learning

The ability for teachers to easily and quickly access and provide feedback was consistently a positive remark made about one-to-one technology and the teacher-student relationship. For example, seven out of ten participants mentioned the immediacy of providing feedback throughout one-to-one technology as a positive. This allows for teachers to gather and analyze student data quickly. In addition, teachers are able to provide grades and feedback to students quickly. This also allows for consistent teacher-student interactions and a teacher-

student relationship in the classroom. For example, Ellie stated, “More than ever before it is much easier to see their work.” In addition, Cory stated:

> We are able to collect feedback and data digitally, review it as a team, and have an understanding as a team where our students are academically with a digital footprint of it. This helps us as teachers create a back-and-forth relationship with students.

Tiffany, an English Language Arts teacher, agreed and even added, “students can see what they got wrong faster than ever before, and teachers can evaluate along with the students during the class period with the use of one-to-one technology.”

Convenient Data Collection

Nine out of ten participants noted a positive feature of using one-to-one technology to provide feedback was the ability to easily collect student data. Stephanie, a sixth-grade social studies teacher, highlighted the ability to both collect data and for students to see their scores quickly and easily. Using easy data collection, she can better get to know her students both academically and socially. Jamie, a science teacher, expressed her love for the easy and convenient data collection. She also added, “As teachers, we must use the easy data collection with the intention of providing feedback, not as a tool to be lazy.”

During the focus group discussion Jamie suggested that convenient data collection and easy grading with one-to-one technology be used to our advantage and benefit everyone. She encouraged her fellow teachers to use that data we receive from one-to-one grading platforms and reteach the students who do not do well on assessments. In the words of Jamie, “This easy data collection is useless if back and forth feedback and teacher-student interaction is not provided.” Michelle, an English Language Arts teacher remarked “Easy access to grades, feedback, and data collection provides the opportunity to easily check in and interact with

students." She continued, "With one-to-one feedback it is so much easier for me to actually see a student's thoughts as I work with them in real time writing their essays and providing feedback to them digitally in their online essay modules." Andy also stated, "It provides convenience for teachers and students to interact with each other on platforms such as Google Classroom." However, participants such as Stephanie, Aubrey, and Alyssa did have a sense of "distance" with students when utilizing one-to-one technology despite the convenience of it. For example, Alyssa stated:

> Especially as a math teacher, it is difficult to provide targeted feedback to students using one-to-one technology. Therefore, I cannot always catch the kids that are struggling in the math classroom, which makes it easier for kids to fly under the radar. This creates a sense of distance from my students.

Instant Reception of Scores and Feedback

Another common theme among participants was the positive outlook on providing instant feedback to students. When collecting data, 10 out of 10 participants remarked about the convenience of one-to-one technology when providing feedback to students. Alyssa, a third-year math teacher stated, "The more immediate feedback does help with the teacher-student connection." Cory, a social studies teacher remarked "It not only provides instant feedback, but it is easy for the students to view their feedback quickly. This is a positive in the fast, back-and-forth world we live in." With the idea of instant feedback, participants also remarked that once feedback was provided quickly, it created a quick opportunity to reteach the information. Sean, also a social studies teacher stated:

> I think, during both formative and summative assessments it's nice where they can see that grade instantly and see what they get. Seeing that feedback quickly and knowing,

> ‘Okay, here's what I finished, and this is how well I did’ right away, I think, is really positive and an opportunity to build relationships with them.

Andy, an English teacher, also expressed his one-to-one interaction with students and utilization of instant feedback to students through one-to-one feedback. He stated, “When giving a multiple-choice assessment to the students in my classroom, I utilize one-to-one platforms. Grades and feedback come back quickly and conveniently. This is great for both the teacher and student.”

Positive Relationships

Among participants, a common theme throughout the study was the experiences of positive teacher-student relationships within the one-to-one learning environment while grading and providing feedback. Throughout the study, seven out of ten participants mentioned providing instant feedback creates a closer relationship with the student. For example, Sean mentioned, that “Using one-to-one technology in the classroom students are able to actively participate in a back-and-forth dialogue with me about their feedback, even when they are absent. It is like we are building a digital back and forth relationship.”

Participants acknowledged throughout the study that the ability to provide quick or even immediate feedback to students paved the way for improved teacher-student connections. Alyssa stated, “Immediate feedback helps with the teacher-student connection and the one-to-one feedback allows me to be more available to my students which improves our relationship.” Ellie, a science teacher agreed:

> Providing feedback through one-to-one technology brings me closer to the kids. I am able to understand them better, especially my ELL students. Using technology, I have been able to both see their work and get to know them at a higher level.

In addition, she stated:

> I think science should be experiences, and so I really like the fact that we can have experiences and then relate them to me on the computer. To give feedback to them, I can click through their work, and search for specific understandings of the content area. I am a great fan of technology. I think it brings me closer to my kids and builds relationships with them. I think I am more able to see their work.

Tiffany notices in her 7th grade English classroom, "Students are much more engaged with teachers when working with feedback digitally." Tiffany went on in more detail and stated:

> I believe that students are more engaged when receiving feedback through one-to-one technology and one-to-one interaction, rather than a sheet of paper that they would just throw away. I actually have them sit there, go through their feedback on their computer, and often submit changes to me. The back and forth, one-to-one interaction creates an engaging learning environment and builds a relationship with the student.

Empowerment of Students

In addition to improved teacher-student connections and relationships, six out of ten participants expressed that feedback through one-to-one technology provided "quiet" students the opportunity to have their voice heard in the classroom. Tiffany, an English Language Arts teacher, pointed out, "One-to-one technology provides an avenue for students who may not have had the courage to speak to a teacher, but are willing to leave a comment on Google Classroom." Another English Language Arts teacher, Michelle, mentioned, "One-to-one feedback is more personal, and the private comments allow my nervous students to get their thoughts out, where they normally would not in front of the entire class." She continued:

> I really like the private comments, and I feel like I have so many students that are shy and nervous like, raise their hand and have me come over, and I always remind them that they

> can send me an email or leave a private comment, and usually when I remind them of that, I tend to get more questions than students just willingly raising their hands and having me come over.

Sean, a social studies teacher, agreed as he stated, "I find students more comfortable through one-to-one technology. I have more full participation and conversation with my 'quiet' kids. This builds trust in the classroom."

Interactive Assessments

When utilizing one-to-one technology in the classroom learning environment, teachers have the opportunity to use various types of digital grading platforms and interactive, one-to-one, learning tools. Both Sands Middle School and Heeler Middle School are known as "Google Schools." This means that teachers and administrators are trained on and utilize Google platforms to grade, interact with students, interact with each other, and complete daily tasks. Throughout this study, it was clear that teachers utilize Google Classroom, Google Forms, Google Documents, and Google Slides frequently to provide feedback to students. Ten out of ten teachers within the study mentioned using online platforms, and one-to-one technology for both formative and summative assessments. For example, Andy, who teaches seventh and eighth-grade math, "utilizes Google Classroom, Google Slides, and Google Documents to work with and interact with students."

Some interactive online education platforms consistently mentioned by participants were Pear Deck, Kahoot, Blooket, Gimkit, and Quizlet. Alyssa, a math teacher, would even utilize QR codes in her classroom. Students scan the code with their phone to find the math problems they are working on. Ellie, a science teacher, says it even goes beyond interactive platforms mentioned by other teachers. She stated, "Our textbook is extremely interactive and digital with

many activities I am able to both monitor and grade for both formative and summative assessments."

Online Grading Platforms for Feedback

Participants noted that they utilize online grading platforms to provide feedback for both summative and formative assessments. Nine out of ten participants expressed at least one form of a Google application to provide feedback to students. This is perhaps due to the convenience of it that 10 out of 10 participants mentioned. According to Stephanie, while providing feedback on assessments, "I am able to highlight mistakes for them, so it does provide them exactly where the issue is or what needs to be fixed." Additionally, Tiffany noted "I believe my students are much more engaged with it when I provide feedback to them digitally." When providing feedback digitally, Aubrey, a math teacher, enjoys the email feature that students have the ability to utilize. During the study, she stated:

> I am able to interact and work with more students through email than I am when there is a major line out my door during study hall. This allows for me to assist more students who need the feedback.

Online Grading Platforms to Build Relationships

Participants expressed their ability to use the comment section on grading platforms to interact and build relationships with students while providing feedback. Six out of ten students remarked about the interactions they have with students while providing feedback using online grading platforms. These grading platforms include Google Slides, Google Docs, and Google Classroom. This digital interaction created real-time feedback between teacher and student and a grading system that builds relationships within the classroom. For example, Michelle, an ELA teacher, expressed throughout her interview, "The real-time feedback in the comment section is

extremely valuable for students. It allows me to see their thoughts and them to see mine. This creates a connection between the teacher and student that is more personal when used correctly." Cory pointed out the "digital back and forth relationship" that is built due to the comment sections on grading platforms. Tiffany was also very positive when discussing the comment section. She not only posts her own personal comments, but utilizes comments that Google provides for her. According to her, as an ELA teacher, "It creates an instant teacher-student interaction when providing feedback." According to Jamie, "Positive interactions with students during digital assessment games are relationship builders." She also added, "The 'fun things' offered by digital platforms build relationships with students and allow teachers to gauge learning." Alyssa agreed as she stated, "interactive games foster teacher-student relationships."

Outlier Data

This section will include outlier data of my study. This outlier data was interesting and noteworthy as it brought additional dimensions to the study. The study displayed three distinct themes regarding teacher experiences providing feedback using one-to-one technology and teacher-student relationships. Among those themes, participants spoke about one-to-one interaction, teacher-student relationships, and interactive assessments. Outlier data included the power of face-to-face interaction with students while providing feedback and the difficulty of classroom management when one-to-one technology is added to the learning environment.

Outlier Findings

One-on-One Interaction. Stephanie, a sixth-grade social studies teacher, stated during her interview, "I honestly try not to use one-to-one technology. I would rather do activities in the class as a large group and even provide feedback to students that way." Stephanie continued, "I know the importance of actually sitting down with a student face-to-face and discussing and

talking with them about not only their assignment, but about things that they enjoy outside of school as well. That gets lost in one-to-one technology." Additionally, Stephanie noted, "I believe one-to-one technology makes the kids get off track too easily. It makes them want to do other things and gets to the point where they are almost not even there. The power of in-person teacher to student interaction goes beyond what one-to-one technology has to offer and cannot be replaced."

Classroom Management Difficulties. During research, despite the positive remarks about one-to-one technology in the classroom, participants did remark about the difficulty in classroom management one-to-one technology brings with it. Four out of ten participants remarked on the difficulties that one-to-one technology adds to classroom management. For example, Sean was adamant that "One-to-one technology brings many distractions into the classroom, including the opportunity for students to copy and paste information rather than using their own thoughts." Additionally, Andy expressed, "I often feel as if the student 'is not there' because of all the additional screens that are up on their screens. Too often this is almost impossible to manage in the classroom." According to Aubrey, "these classroom management issues can lead to strains on the teacher-student relationship."

Research Question Responses

The research findings for each of the research questions are articulated below. I begin with answering my central question and then proceed to respond to my sub-questions. All explanations are supported by empirical evidence on the experiences of teachers who provide feedback in the one-to-one learning environment.

Central Research Question

How do teachers describe relationships with students while using one-to-one technology to provide feedback? Participants throughout the study described positive teacher-student interaction, growth in relationships between teachers and students, a level of trust in the classroom when utilizing online platforms. These descriptions were brought out by keywords and phrases such as, “the comment sections bring me closer to my students” and “it creates a lower risk environment for the students if they get nervous.” Participants also acknowledged the teacher-student relationship changes when providing feedback with one-to-one technology. It is how the teacher utilizes the feedback and technology that often determines the change in relationship. For example, Jamie stated “You must be intentional about why you're using one-to-one technology. You must use it with the intention of providing feedback, not as a tool to be lazy.” If it is used with intention the teacher-student relationship improves due to “real-time feedback and easy check-ins with students” according to Michelle, an ELA teacher. Sean, agrees as he noted, “using one-to-one technology students who typically are not able to speak up are able to have conversations with me directly about their work.”

Sub-Question One

Participants expressed that they utilize multiple different types of online platforms to provide feedback. These include Google Classroom, Google Forms, and Google Slides. The most common type of feedback throughout the study was the use of the comment section that Google provides. “The comment section provides instant teacher-student interaction when providing feedback” according to Tiffany. Participants noted the ability to build and create relationships with students through the use of the comment sections while providing feedback to students.

Sub-Question Two

How do teachers describe their interactions with students while using one-to-one technology to provide feedback? Participants described the interaction process while utilizing one-to-one technology to provide feedback in two distinct ways. First, participants described how they utilize the comment sections on grading platforms such as Google Slides. Most participants enjoy this out of convenience and teacher-student interaction. For example, Michelle described utilizing the comment section for student feedback as:

> A way of providing real-time feedback with them on their work. This is especially useful in my English class as students work through modules to write essays. I am able to provide feedback for them, digitally, that they are able to see and use.

Cory noted, "With the comment section, I am able to build a digital back and forth relationship with my students." Participants also mentioned providing feedback through online digital platforms. These included Blookets, Quizlet, Pear Deck, and Kahoot. Using these platforms, teachers and students are able to interact with each other digitally, while teachers gauge student learning and knowledge.

Sub-Question Three

How do teachers describe ways to create relationships with students in the one-to-one classroom? Participants described the importance of finding ways to interact with students even in the one-to-one environment. Michelle said, "One-to-one technology provides an avenue for students who may not have had the courage to speak to a teacher but are willing to leave a comment on Google Classroom." Participants also spoke consistently about online educational platforms that offer digital assessments and games for the classroom. According to Jamie,

"These 'fun things' such as Blooket build relationships with students." Ellie agreed stating, "Interactive technology in the one-to-one classroom increases teambuilding in my classroom and builds the teacher-student relationship." Additionally, participants mentioned the ability to build trust and create relationships with students while also providing feedback to students. This was found in key words and phrases such as, "allows teacher to build a back-and-forth relationship with the student while providing feedback" and "it is a lower risk for quiet students if they get nervous; therefore, I am able to build a relationship with them I may not have been able to."

Summary

When asking teachers to describe the teacher-student relationship when providing feedback using one-to-one technology, it became clear that when providing feedback with one-to-one technology, teachers are constantly interacting with their students through immediate feedback and comment sections on digital platforms. The convenience of these platforms and comment sections on online platforms creates tools for convenient data collection and the ability for teachers to build relationships with students in a way that builds trust in the classroom. Trust in the classroom creates a safe and effective learning environment for students while utilizing up-to-date, one-to-one technology. The themes that emerged from this study were (a) efficiency in teaching and learning, (b) positive relationships, and (c) interactive assessments. Participants consistently said they are able to both interact and build relationships with students using one-to-technology.

CHAPTER FIVE: CONCLUSION

Overview

The purpose of this transcendental phenomenological study was to describe teacher perceptions of teacher-student relationships while using one-to-one technology to provide feedback. Chapter five begins with a discussion of the study's key findings. After that, an interpretation of findings takes place, implications for policy and practice, theoretical implications, limitations, and delimitations follow. The chapter concludes with recommendations for future research and a summary.

Discussion

This section focuses on discussing the central findings of the study. It starts with interpreting the thematic findings, including convenience, online grading platforms, and relationships with students. After that, implications for practice that entails purposeful grading is discussed. Next, themes and sub-themes gathered are addressed in alignment with the study's theoretical overview. Factors that impeded the study are explored, and recommendations for future research are explained.

Interpretation of Findings

The question guiding this transcendental phenomenological study was: How do teachers describe relationships with students while using one-to-one technology to provide feedback? As a phenomenological study, this question was key to gathering the essence of the participants' experiences providing feedback within the one-to-one learning environment. Three sub-questions followed this central question. These questions were as follows:

SQ1: How do teachers describe the feedback process in the one-to-one classroom?

SQ2: How do teachers describe their interactions with students while using one-to-one technology to provide feedback?

SQ3: How do teachers describe ways to create relationships with students in the one-to-one classroom?

Summary of Thematic Findings

I discovered three themes and five sub-themes from the data analysis process. These three themes included (a) efficiency in teaching, (b) positive relationships, and (c) interactive assessments. These three themes were followed by five sub-themes that expanded on the overarching themes. The five sub-themes included, (a) convenient data collection, (b) instant reception of feedback, (c) empowerment of students, (d) grading platforms to build relationships, and (e) online platforms for feedback. Throughout data analysis, these themes were seen as critical to participants' experiences. For example, a high number of participants were extremely positive about the immediate feedback they are able to provide students and the ability to create relationships with students through their one-to-one grading platforms. However, there were participants who felt while using technology to provide feedback, they do feel a sense of distance from the students. Interpretations of themes and sub-themes are provided below.

Benefits of One-to-One Technology. It is important for educational leaders and classroom teachers to remember that as education consistently changes, it is not only about the pedagogy, but about the systems implemented into the classroom that will help the student learn. Researchers such as Fantozzi (2017), have shown that young students can use technology for multiple active means. Elementary aged children have used technology to interact with others and extend play. In addition, the tablet design affords a medium that is simpler for young students. The touch screen proves to be easy for students to navigate, and the portability allows

for flexibility in use; it can be taken into a play space or used in circle time (Fantozzi, 2017). This can create a learning environment not offered before as technology is provided to students directly at their fingertips. Bixler (2019) described one-one-to-one technology as a convenience and valuable digital platform for sharing resources. Additionally, Kim, et al. (2019) described one-to-one technology as a classroom tool that offers convenience and a tool that makes group activities easier using apps and web services.

When describing the phenomenon of providing feedback through one-to-one technology, teachers consistently spoke about the convenience of it and the benefits that it provides for both teachers and students. It was clear throughout the data collection process that participants agreed on the convenience of providing feedback through one-to-one technology.

For example, Tiffany stated, "Providing feedback through one-to-one technology highlights the students who would have gone out of their way to read the feedback that I would have handwritten on something. Students simply receive notifications when I provide feedback and a handful of students will immediately respond with a 'thank you so much.' This is convenient and builds relationships with students." Andy, a math teacher, seemed to agree as he stated, "It is convenient that the comments from my feedback go immediately to them." The convenience one-to-one grading provides is not only an advantage for teachers, but also creates an easy pathway towards building positive relationships with students. With quick and easy grading, teachers are able to respond to students quickly, interact with students about their work, and easily check in with students. Additionally, the convenient data collection that one-to-one grading provides allows for easy data collection of assessments. Teachers are then able to easily work with students to reteach the material they may have missed. All of these quick interactions through one-to-one technology can increase the teacher-student relationship.

Trust in the Classroom. In their 2019 study, Amemiya, et al. found that students with low trust in their teachers were very rarely affected by teacher discipline in the classroom. However, Bond & Bedenlier (2019) found students can act without anxiety while using educational technology, and it can increase engagement if students find it meaningful and related to real life. It was apparent throughout this study that using one-to-one technology to provide feedback creates new opportunities to interact with students and create relationships with students. Additionally, the use of one-to-one technology provides an avenue for students who normally would not speak up in the classroom to let their voice be heard to the teacher about their classwork. When positive relationships occur, educators are able to engage students using the one-to-one device (Higgins & BuShell, 2017).

These interactions between the teacher and student create a level of trust. They also allow for a back-and-forth relationship between teacher and student while feedback is provided. Throughout this feedback and teacher-student interaction, teachers are able to provide thoughtful and detailed feedback while creating a relationship with the student.

Student Engagement and Participation. The digitalization of K–12 education has developed rapidly worldwide through one-to-one computing initiatives based on one laptop or tablet for each student (Islam & Grönlund, 2016). Liu & Pu (2020) Determined learners are able to direct their attention to the learning process when interaction and feedback increases. Also, learning outcomes increase due to this improved interaction (Liu & Pu, 2020). Within the primary classroom 21st century technology, such as computers, interactive whiteboards, and iPads or other tablet devices, have been used to support literacy instruction as a pedagogical tool to enhance student engagement and comprehension in literacy activities (Lu et al., 2017).

These authors also found that using iPads and other one-to-one technology devices within the learning environment has positive effects on student learning outcomes. The endless features of iPads and 21st century technology within the classroom provides teachers with a wide range of educational apps, tools, and strategies. These apps create and design more hands-on, child-centered, and collaborative activities for young students within the classroom (Lu et al., 2017).

The use of interactive, online learning for formative assessments in the classroom also allows for full participation from the quiet students who would not typically participate in a classroom without one-to-one technology. According to Kim et al. (2019), instruction using one-to-one technology and interactive programs can enhance student achievement. Throughout interviews, participants in this study described the increase in the teacher-student relationship when one-to-one technology and online platforms are used to assess student learnings. For example, Jamie remarked, "I seem to become their favorite teacher when we play a Blooket, Kahoot, or Quizlet to review the content." Teachers throughout the study used online platforms such as Blooket, Gimkit, Kahoot, Pear Deck, and Quizlet Live. Ellie, a seventh grade science teacher remarked, "On days in which interactive learning is done through one-to-one technology, I feel closer to my students and relationships are built while assessing student growth."

Implications for Practice

Positive feedback was received from participants about providing feedback through one-to-one technology. Many participants remarked on the feeling of feedback through one-to-one technology bringing them closer to the student. Still others remarked on the level of distractions one-to-one technology brings into the class and the difficulty of classroom management. In addition, the idea of students being "a world away" when they are right in front of them was brought up. Thus, it is important to think about improvements in practice within the classroom

learning environment when one-to-one technology is utilized. This section will focus on articulating the study's implications for practice.

Implications for Practice

With technology at the core of education, the foundation of education can be building digital skills for promoting digital citizenship (Milenkova & Lendzhova, 2021). According to Gleason and Von Gillern (2018) students increasingly spend an average of six hours of screen time per day, excluding school and homework. Increased amounts of screen time lead to increased amounts of time spent on social media which can lead to mental health issues, lack of real emotional connection, cyberbullying, diminishing of thoughts and understanding, and laziness facilitation (Al-Ansi, et al. 2023). If students develop skills that allow them to find, evaluate, and share information responsibly it could lead to a learning environment with more positive relationships for teachers and students. Digital citizenship is important throughout school, and beyond. It is also important for members of the workforce and policymakers. The youth must learn to navigate and participate in the digital world (Cortesi, et al. 2020).

Digital citizens need thorough and complete knowledge, as well as technological access to the internet within this 21st century world; therefore, teachers have a responsibility to lead students to become digital citizens (Kim & Choi, 2018). Participants in this study emphasized the positive effects the convenience of one-to-one technology has on the teacher-student relationship. It is possible for this to create positive relationships between teachers and students. Teachers can then create digital citizens in the positive one-to-one learning environment. Based on information collected from participants in this study, one-to-one platforms can build relationships and empower students in the learning environment.

One-to-one technology and internet use creates a place of expanding horizons for students in the classroom. This ranges from fast access to information, to learning that occurs in the one-to-one learning environment (Szymkowiak, et al., 2021). With the mass amounts of one-to-one and personal access to technology students have; educators, administrators, and district leaders must implement school-wide plans that work to create positive and responsible digital citizens both in and outside of the one-to-one learning environment. Kozyreva, et al. (2022) argued part of successful digital citizenship must include the ability to choose what to ignore and where to invest one's limited attentional capacities. Stephanie, a social studies teacher, stated, "I know the importance of sitting down and actually just discussing with kids and talking about things that they enjoy, and having face to face conversations. That's also a skill that they should be building." To build this skill in the one-to-one environment, schools can implement digital citizenship plans that teach students how to interact online with their peers and teachers, responsibly. Additionally, schools can implement policies that restrict students from websites that are not school related.

Theoretical and Empirical Implications

The study has both theoretical and empirical implications, which will be discussed in this section. Subheadings are provided to deliver more clarity to subtopics gathered from implication. The theoretical implications related to teacher-student relationships in the learning environment will be explored.

Theoretical Implications

This study was guided by Vygotsky's theory of learning. Vygotsky believed that children developed as a result of social interactions. According to Vygotsky, this was the "Zone of Proximal Development" which represents what we can do with the help of an adult, teacher, or

technology (Bodrova, 1997). Vygotsky's theory of learning argues that those learning from a high-quality mentor or teacher can reach their full potential or ability. Results from this study display the importance of social interactions and mentor relationships within the one-to-one learning environment and implies the ability for teachers in the one-to-one classroom to individualize student learning. Through individualized student learning, students are empowered, trust their teacher, and create positive teacher-student relationships. This can allow for teachers in the one-to-one classroom to help students reach their full potential through one-to-one feedback. For example, Tiffany stated, "I am able to help them with developing and establishing growth mindset through positive and constructive feedback directly to them." Alyssa agreed as she stated, "Immediate, one-to-one feedback helps with the teacher-student connection, the relationship with the student, and the growth of the student."

Part of Vygotsky's learning theory is his Zone of Proximal Development. In this stage of development, learners need someone to hold onto and lead them to the next stage of life. With the trust and relationships built through one-to-one technology, students may be able to grow both academically and socially within the classroom learning environment.

Empirical Implications

My findings throughout the study covered many of the topics brought forth in my literature review. These topics included teacher-student relationships, making connections with students, and how one-to-one technology is used. Therefore, the study is consistent with previous research findings on 21st century technology and one-to-one technology in the classroom learning environment. For example, according to Higgins and BuShell (2017) one-to-one technology has the capability to change teacher-student relationships. When change occurred, there was change beyond the classroom and school. When positive relationships occur, educators

had the ability to engage students using the one-to-one device (Higgins & BuShell, 2017). According to Tiffany, a middle school English teacher she, “is able to help them with developing and establishing growth mindset through positive and constructive feedback with one-to-one technology.” These relationships in the classroom can create trust between the teacher and student, which allows for opportunities to provide effective feedback to students through one-to-one technology.

Ellie, a seventh-grade science teacher, stated, “The positive teacher-student relationship creates an environment for student growth.” According to Martin (2019) the teacher-student relationship is the foundation for any productive classroom management plan. These positive relationships within the classroom learning environment are the building blocks for all class activities, and a teacher who does not actively work to establish these relationships will encounter negative situations that could have been avoided had the time been taken up front to establish these bonds with the students. While using one-to-one technology to provide feedback, teachers can utilize one-to-one technology to make connections with students in a number of ways. For example, they can utilize the comment section on many grading platforms to provide real-time feedback to students or allow students to reach out to them digitally which is helpful to students who are less confident in front of the whole group. “I am able to provide real-time feedback with my students. The private comments allow nervous students to get their thoughts out” stated Michelle, a middle school English teacher. Additionally, teachers can also build great teacher-student relationships through the use of one-to-one interactive platforms such as Kahoot, Blooket, Gimkit, or Quizlet.

As one-to-one technology in the classroom learning environment continues to become a primary tool, Blikstad-Balas and Davies (2017) found that the use of one-to-one technology is

transforming learning routines, which includes accessing advanced learning resources and content, igniting cognitive processes that enhance learning, and changing teacher roles from delivery of content to facilitator or learning coach. As this study continued, more and more participants remarked on the importance of using the convenience of one-to-one feedback to their advantage. For example, during the focus group discussion, Jamie stated:

> We can't just stick something in front of a kid and say, 'Oh, this is the greatest tool in America.' You have to be intentional about why you're using it. We also have to be intentional about the data we collect. Use it to our advantage and find ways to reteach our students the material they missed.

Limitations

Limitations in phenomenological research examine characteristics of the methodology or design that influence or impact the interpretation of the results (Patton, 2015). When first seeking participants, two of my initial participants dropped out of the study. Various subject matter throughout the study also led to certain limitations. For example, participants within the study taught math, social studies, English, and science in grades six through eight. Educators within the subject areas of the math, social studies, and English provide feedback and grade in a variety of different ways. For instance, interviews throughout the study made it clear that English and social studies teachers were more likely to utilize comment sections on Google Slides and Google Classroom. Math teachers made more remarks about pen to paper grading rather than one-to-one feedback as a primary tool. These differences across participants were both a potential weakness of the study and a finding for future research. Additionally, these differences displayed that future research is needed on relationships with students while providing feedback in specific content areas rather than a diverse amount of content areas.

Delimitations

Delimitations in qualitative study are deliberate decisions made by researchers to limit or define boundaries of a study (Patton, 2015). Transcendental phenomenology is not a narrow collection process. Rather, it dives deep into the research through multiple collection methods (Moustakas, 1994) According to this author, these collection methods especially include open ended questioning including multiple people with the defined experience. Transcendental phenomenology was specifically selected for this study to gather broad, in-depth data, from participants through open-ended questioning. In contrast, qualitative hermeneutic phenomenology inherently embeds the researcher's own experience into data collection and analysis (Moustakas, 1994). The deliberate decision to apply transcendental phenomenology rather than hermeneutic phenomenology limited my own experiences with one-to-one technology from the study as I was able to view the phenomenon "freshly" for the first time, and open to its totality (Moustakas, 1994).

Additionally, the specific decision was made to include only teachers from the middle school classroom learning environment. This took away the perceptions of teachers based on experiences in both the high school and elementary learning environment. This study defines one-to-one technology as a learning environment that provides all students with their own laptop, digital notebook, tablet computer, or other mobile-computing device (Kim et al., 2019). The participants in this study were describing their perceptions and experiences with tablet computers in the learning environment. This deliberate decision to use only one type of one-to-one learning device, created a delimitation within the study as it provided a limited view of perceptions and experiences. It was also specifically decided to only include teachers as participants within the study. This excluded the experiences and perceptions of students in regard to their relationships

with teachers. This specific decision was made to gain data on the perceptions of providing feedback rather than receiving feedback.

Recommendations for Future Research

Based on the limitations, delimitations, and findings of my study, I would suggest that studies focus on researching a more diverse sample. For example, this study focused on the one-to-one learning environment in grades six through eight. Opening the study to teachers and students in the high school and elementary levels would provide an in-depth analysis of teacher-student relationships in the one-to-one learning environment. Additionally, considering the study's delimitations, future research should be conducted to create an understanding of the teacher-student relationship when the student receives feedback. A qualitative study in which the perceptions of students are the focus could provide an even deeper understanding of the teacher-student relationship while providing feedback using one-to-one technology.

Employing a quantitative study, rather than qualitative study that investigated the use of various types of one-to-one grading tools on a broad level, could provide an interesting perspective into how grading and providing feedback using one-to-one technology plays a role in the teacher-student relationship. Questioning participants on the role the COVID-19 pandemic has played in their use of technology and how they believe it will change education in the future is also a valuable recommendation. One-to-one technology plays a key role in the 21st century classroom; therefore, the effects of it within the classroom should be investigated further using both quantitative and qualitative methods.

Conclusion

The purpose of this transcendental phenomenological study was to describe teacher perceptions of teacher-student relationships while using one-to-one technology to provide

feedback at Sands Middle School and Heeler Middle School in Nebraska. Vygotsky's theory of learning argues that most development occurs as a part and as a result of social interactions (Lewis, 2017). Vygotsky's theory of learning was used as a framework to guide this study. Research was also guided by the following question: How do teachers describe relationships with students while using one-to-one technology to provide feedback? Data were collected from 10 middle school classroom teachers in four content areas. Once data was collected through interview, journal prompts, and a focus group, data was coded and generated into three distinct themes.

Findings within the study suggested providing feedback through one-to-one technology increased efficiency in teaching and learning. Additionally, the study found that feedback through one-to-one technology allows teachers to create positive relationships with students and create relationships through easy real-time feedback dialogue. Teacher-student relationships also increase within the classroom learning environment through the use of interactive one-to-one learning platforms. This study suggests future research on the perceptions of teachers and students using one-to-one technology at the elementary and high school levels, or in specific content areas.

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Appendix A

Interview and Focus Group Review Request

Dear Faculty Member,

As a graduate student in the School of Education at Liberty University, I am conducting research as part of the requirements for a doctoral degree in educational leadership. This research will help better understand teacher-student relationships in the one-to-one classroom.

Participants must be 18 years of age or older, teach in the middle school classroom, and use one-to-one technology to grade or provide feedback in the classroom. Participants, if willing, will be asked to participate in a 30-40 minute interview, answer a journal prompt through a Google Form, and participate in an optional focus group. Participation will be completely anonymous, and no personal, identifying information will be collected.

I am writing you seeking your assistance in the review process of my methods of research. This will include a review of my interview, focus group, and journal prompt questions for the study.

If you are interested in being a part of this process, please contact me at [redacted] or [redacted] for more information.

Sincerely,

Robert C. Magee
Graduate Student, Liberty University
7th Grade Teacher
[redacted]
[redacted]

Appendix B
IRB Approval Letter

LIBERTY UNIVERSITY.
INSTITUTIONAL REVIEW BOARD

September 15, 2022

Robert Magee

[redacted]

Re: IRB Exemption - IRB-FY22-23-48 THE EXPERIENCES OF TEACHERS PROVIDING FEEDBACK USING ONE-TO-ONE TECHNOLOGY ON TEACHER-STUDENT RELATIONSHIPS: A PHENOMENOLOGICAL STUDY

Dear Robert Magee, [redacted],

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 to be exempt from further IRB review. This means you may begin your research with the data safeguarding methods mentioned in your approved application, and no further IRB oversight is required.

Your study falls under the following exemption category, which identifies specific situations in which human participants research is exempt from the policy set forth in 45 CFR 46:104(d): Category 2.(iii). Research that only includes interactions involving educational tests (cognitive, diagnostic, aptitude, achievement), survey procedures, interview procedures, or observation of public behavior (including visual or auditory recording) if at least one of the following criteria is met:

The information obtained is recorded by the investigator in such a manner that the identity of the human subjects can readily be ascertained, directly or through identifiers linked to the subjects,

and an IRB conducts a limited IRBreview to make the determination required by §46.111(a)(7).

Your stamped consent form(s) and final versions of your study documents can be found under the Attachments tab within the Submission Details section of your study on Cayuse IRB. Your stamped consent form(s) should be copied and used to gain the consent of your research participants. If you plan to provide your consent information electronically, the contents of the attached consent document(s) should be made available without alteration.

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

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

Sincerely,

[redacted], **MA, CIP**

Administrative Chair of Institutional Research

Research Ethics Office

Appendix C

Google Forms

[redacted] Research Application - Internal

If you have questions, please contact [redacted] at [redacted].org
Your email ([redacted]) was recorded when you submitted this form.

Last Name *
Magee
First Name *
Robert
Job Title *
Teacher
Please select your building: *
[redacted]
Building Administrator Who is Aware of Research Plan *
[redacted]
Research Type *
Graduate
College or University *
Liberty University
Program *
Doctoral Degree
Instructor or Research Sponsor *
[redacted]
Audience of this Research *
published dissertation
Research Report
Submitted files

Magee_Robert_Approved_Proposal__8_20_22 - Robert Magee.docx

Project Title *
The Experiences of Teachers Providing Feedback Using One-to-one Technology on Teacher-Student Relationships: A Phenomenological Study

Purpose of the Project *
What is your research investigating?
The purpose of this phenomenological study is to describe teacher perceptions of teacher-student relationships while using one-to-one technology to provide feedback.

Justification for this Project *
Include why this research project is one of importance as well as its potential benefits to students, staff, or parents of [redacted]
This research project investigates the experiences of teachers in the one-to-one learning environment with providing feedback and grading using one-to-one technology. [redacted]

[redacted]

Brief Description of Methods/Procedures *

This transcendental phenomenological research includes 10-15 participants who have experienced the phenomenon; in this case, one-to-one technology in the classroom. Participants will first be asked to participate in an individual interview, which will take approximately 30 minutes. Half of the participants will be asked to be part of a focus group interview, which will take approximately 30-45 minutes. Each participant will be asked to answer a journal prompt through a Google Form.

Copies of Surveys, Assessments, Interview Questions, Data Collection Instruments

If the research involves materials that are not part of [redacted] approved curriculum materials, these materials must be described and available for review. Please provide a document or PDF with survey questions rather than a link to a survey.

Submitted files

Journal Prompts - Robert Magee.docx

Interview Questions - Robert Magee.docx

Focus Group Questions - Robert Magee.docx

Describe the potential negative effects, including interference of instructional time and/or teacher planning time. *

Participants who agree to be part of the study will meet after school hours via Zoom.

Detailed Participant Information - building(s), grade level(s), number of participants, and/or specific identifiers *

If this study is limited to a particular subgroup of students, e.g., SpEd, EL, accommodations-based, etc., those specific identifiers must be included here in detail.

This research study will include 10-15 participants who teach in one-to-one middle school classroom.

Describe methods by which confidentiality of students, teachers, schools, and district will be ensured throughout this research.

Pseudonyms will be used throughout the study. Any identifying information within data collection that is used in the published dissertation will be taken out of the documents. Following publication of the dissertation, transcripts of Zoom interviews will be destroyed.

Timeline *

Please detail deadlines you are required to meet for this research project and that are impacted by this approval. The approval process usually takes a minimum of two weeks.

10/01/2022-11/01/2022

Informed Consent

Type of Informed Consent *

***Note: If informed consent is not required, please select None Required and provide an explanation based on [redacted] Consent Guidelines provided on the [redacted] Research Site.

Positive (Active) Consent

Informed Consent Letters

Link all applicable consent forms (parent/guardian, student, teacher, principal, etc.)
Submitted files

Consent Form - Robert Magee.docx

Appendix D
Consent Form

Title of the Project: The Experiences of Teachers Providing Feedback Using One-to-One Technology on Teacher-Student Relationships: A Phenomenological Study

Principal Investigator: Robert C. Magee, School of Education, Liberty University

Invitation to be Part of a Research Study

You are invited to participate in a research study. To participate, you must be at least 18 years of age, teach in the grades 6-8 one-to-one learning environment, and use one-to-one technology to grade or provide feedback to students. 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.

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

The purpose of the study is to describe teacher perceptions of teacher-student relationships while using one-to-one technology to provide feedback.

What will happen if you take part in this study?

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

1. 30-40 minute interview
2. Journal prompt submitted through a Google Form
3. 30-40 minute focus group (optional)

How could you or others benefit from this study?

Participants should not expect to receive a direct benefit from taking part in this study.

Benefits to society include a better understanding of the impact one-to-one technology has on the teacher-student relationship.

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.

How will personal information be protected?

The records of this study will be kept private. Research records will be stored securely, and only the researcher will have access to the records. Data collected from you may be shared for use in future research studies or with other researchers. If data collected from you is shared, any information that could identify you, if applicable, will be removed before the data is shared.

- All recordings, notes, and transcriptions will be password protected and maintained on a password protected Google Drive for a period of seven years.
- Participant responses will be kept confidential through the use of pseudonyms. Interviews will be conducted in a location where others will not easily overhear the conversation.
- 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.

Is study participation voluntary?

Participation in this study is voluntary. Your decision whether or not to participate will not affect your current or future relations with Liberty University or Millard Public Schools. 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. Should you choose to withdraw, data collected from you apart from focus group data, will be destroyed immediately and will not be included in this study. Focus group data will not be destroyed, but your contributions to the focus group will not be included in the study if you choose to withdraw.

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

The researcher conducting this study is Robert Magee. 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, [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, [redacted] or email at [redacted]

Disclaimer: The Institutional Review Board (IRB) is tasked with ensuring that human subjects research will be conducted in an ethical manner as defined and required by federal regulations. The topics covered and viewpoints expressed or alluded to by student and faculty researchers are those of the researchers and do not necessarily reflect the official policies or positions of Liberty University.

Your Consent

Before agreeing to be part of the research, please be sure that you understand what the study is about. You will be given a copy of this document for your records/you can print a copy of the document for your records. If you have any questions about the study later, you can contact the researcher 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.

☐ The researcher has my permission to audio-record/video-record the person named below as part of their participation in this study.

Appendix E
Recruitment Reminder Email

Dear Faculty Member,

As a graduate student in the School of Education at Liberty University, I am conducting research as part of the requirements for a doctoral degree in educational leadership. This research will help better understand teacher-student relationships in the one-to-one classroom. I am writing you seeking eligible participants to join my study.

Participants must be 18 years of age or older, teach in the middle school classroom, and use one-to-one technology to grade or provide feedback in the classroom. Participants, if willing, will be asked to participate in a 30-40 minute interview, answer a journal prompt through a Google Form, and participate in an optional focus group. Participation will be completely anonymous, and no personal, identifying information will be collected.

To participate, please contact me at [redacted] or [redacted] for more information to schedule an interview.

A consent document will be emailed to you prior to the interview. If you choose to participate, you will need to sign the consent document and return it to me at the time of the interview.

Sincerely,

Robert C. Magee
Graduate Student, Liberty University
7th Grade Teacher
[redacted]
[redacted]