

TEACHER PERSPECTIVES ON TEACHING AND  
CURRICULUM CHANGE IN A 1:1 CLASSROOM  
ENVIRONMENT

By

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#### Abstract

The purpose of this study was to understand teacher perspectives in a 1:1 classroom environment, particularly regarding how teachers' pedagogy and curriculum design may be transformed by using computer technology. By using a hermeneutical lens, driven by a case study approach, this study's aim was to investigate how teachers perceived and interpreted their own pedagogy and curriculum change in a 1:1 classroom environment. This study was conducted in two different school districts and the participants were secondary teachers. The data sources for this study included two classroom observations, two interviews, a focus group discussion, and classroom documents. Individual case and cross-case analysis were completed in this study. All participants believed that the 1:1 program had strengthened their teaching strategies, curriculum design and student engagement. The participants demonstrated these perspectives with a mixture of teaching styles and curriculum choices. It seemed that their previous teaching experiences and use of technology influenced their approaches to the role of technology. This cross-case analysis found the participants had pedagogical transformations, enhanced and layered curriculum design, increased student successes, and the need for teacher support and buy-in in their 1:1 programs.

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## CHAPTER I

### Introduction

In 2010, our school district received a grant to give each student a personal laptop to use as a tool for learning; this is often referred to as a 1:1 initiative<sup>1</sup>. A 1:1 program means that individual students are given a laptop or iPad to use everyday for their educational endeavors while at school and home. Such an environment, however, does not necessarily mean that teaching and learning are conducted merely through laptops because face-to-face teaching and students' collaboration happen simultaneously while using computers. In our district, as with most 1:1 initiatives, teachers were also given a personal MacBook, so we could start learning how to use the software and research Internet resources. Some teachers decided to retire and others faced the change with an open mindset, even though a majority of the faculty was intimidated by the technology. Many of the veteran teachers had limited experience with technology. It was April and we were implementing the 1:1 program the next academic year.

At that point in my career, I had been teaching for 17 years and my use of technology in

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<sup>1</sup> A "1:1 initiative/environment" is used interchangeably with "1:1 school", "1:1 computing", and a "1:1 program" in this dissertation. This term also refers to any digital device given to teachers and individual students to use as an educational tool in the classroom. These devices could consist of laptops, iPads, Chrome Books, or other digital tools used by teachers and students. A 1:1 classroom environment does not mean fully online learning but is a combination of face-to-face teaching and online activities.

the classroom was limited to holding a class in a computer lab, usually monitored by a computer teacher. I was eager to learn how to use the technology since I had minimal knowledge in using a laptop and none with using one as an educational tool. Shortly thereafter, my principal asked me to be the 1:1 Integration Specialist for the school. I was shocked because I was not an expert in using technology and knew there were many teachers who were younger and used technology for personal purposes. She told me it wasn't about the technology but about the teaching practices, and she had witnessed my teaching and knew that I would be a perfect mentor to the staff. After thinking about it for a few days, I decided to accept her offer. The journey has been challenging and rewarding.

Since that pivotal moment in my educational career, I have focused all my energy on researching 1:1 classroom environments, as well as participating in numerous professional development meetings and conferences to gain the foresight and knowledge to help my peers effectively integrate technology in their classrooms. My involvement with our 1:1 program also happened as I was beginning my doctoral studies. My experiences in a 1:1 classroom environment have motivated me to research teacher perspectives in 1:1 programs.

From what I have learned and witnessed over the last several years, I realize that teachers are instrumental to the successes of 1:1 initiatives. Teaching with laptops is a different phenomenon than the traditional form of teaching and curriculum design, and therefore asks for new understandings. Many teachers were just like me in 2010 as school districts from all over the country continued to embrace the 1:1 initiative. To what degree are teachers comfortable with using technology in the classroom? To what degree are teachers willing to change pedagogy and curriculum in order to take advantage of 1:1 programs? Teachers' own perspectives are important, but as my literature review shows, there are not enough studies on what it means to make changes in teaching and curriculum design in a 1:1 initiative. This lack of information inspired my quest for this research project. Previously, I have conducted and published research within my own school district to grasp an understanding of teacher perspectives in a 1:1 classroom environment (Williams & Wang, 2013).



This dissertation investigated teacher perspectives outside my school district in order to keep a personal distance between the participants and myself. I believe that this enabled authentic and unbiased discussions and findings about teacher perspectives in a 1:1 classroom environment.

### **Problem Statement**

According to The National Center for Education Statistics (2017), there is limited data that discloses the number of schools that have implemented a 1:1 initiative, but in 2002 Maine was the first state to implement 1:1 programs in most middle schools. By 2007, every middle school throughout Maine had a 1:1 program (Meyer, 2007). Furthermore, in 2007 1:1 initiatives had expanded to 9,600 students in 41 districts across the United States (Lei & Zhao, 2008). Some studies show that when 1:1 initiatives were implemented, student achievement, motivation, authenticity, and digital literacy increased in most classrooms (Holcomb, 2009). These increases were shown through observations, teacher perspectives, student grades, student technology abilities, and readiness for college and/or the work force. However, the effectiveness of 1:1 programs is not without controversy as other studies show that 1:1 classroom environments have not led to improvements in students' learning (Goodwin, 2011; Holcomb, 2008; Lei & Zhao, 2008). One possible reason is that curriculum and pedagogy had not been changed to successfully implement technology into the classroom.

When a 1:1 classroom environment is implemented properly in today's schools, it is easier for students to collaborate, create, investigate, and critically examine the content of the curriculum. Having access to a computer not only allows students to obtain global perspectives, but also puts the world of information at their fingertips. Such a program can develop student skills considered important in today's digital world (Shapely, Sheehan, & Caranikas-Walker, 2011). In 1:1 initiatives, teachers' own content knowledge can be expanded by a vast amount of software and online resources that give students educational opportunities to explore and learn (Shapely et al., 2011). Teachers not only teach students with face-to-face interaction, but also take advantage of the educational uses of

technology. However, in order to improve students' learning in a technology-enriched environment, teachers have to adjust their curriculum and pedagogy to match possibilities opened up by using new technology. If pedagogy and curriculum need to change to adapt to a 1:1 classroom environment, then the role of teachers and their perspectives becomes important.

Throughout history, educators have often expected new technologies (such as television, radio, motion picture, and video) to transform education and make it more exciting, and computers have been no exception to this assumption (Harvey, 2014). Since the beginning of the 21st century, school districts around the nation have been spending millions of dollars to furnish their schools with the latest technologies to improve teaching and learning in classrooms around the nation (Koehler & Mishar, 2009; Rosen & Beck-Hill, 2012). Furthermore, empirical studies have shown a peripheral use of technology by teachers and students but little paradigmatic changes in teaching and learning (Norris & Soloway, 2010; Rosen & Beck-Hill, 2012). In addition, in 2010 the U. S. Department of Education disclosed that technology adoption in American schools did not match their initial expectations and school districts were not efficiently teaching students with digital-age instruction (Rosen & Beck-Hill, 2012). Even though computer technology is present in today's school environment, some studies in many school districts around the country have shown that this technology has not helped students improve because of the methods through which the new technology was implemented (Norris & Soloway, 2010).

Donovan, Kendall, and Strudler (2007) argue that teachers' ideas, concerns, and perspectives should be included when adopting a 1:1 initiative. Teachers should also have a voice in the planning and be well-informed of the decisions pertaining to the adoption and implementation of computer technology and innovation (Donovan et al., 2007). Marsh and Willis (2007) point out that "Building support for a new curriculum is often a sensitive matter because it has been decided for them by others" (p. 164). Curriculum change is necessary for implementing a 1:1 initiative, and it should not be imposed by outside experts. Therefore, it is important to include teachers when developing ideas

and making decisions about the plan and educational vision for school districts that adopt the 1:1 initiative (Rosen & Beck-Hill, 2012). When school districts fail to include educators' voices many teachers face extraordinary challenges as they plan their curriculum and prepare to teach. Even though many school districts spend extremely large sums of money on computer integration, transforming curriculum and impacting student learning depends on many factors, most important being the teachers. However, in the literature there is not adequate attention given to teacher perspectives to reveal what it means to change teaching and curriculum design in a 1:1 initiative.

### **Purpose of the Study**

The purpose of this study was to understand secondary teacher perspectives in a 1:1 program, particularly regarding how teachers' pedagogy and curriculum design were transformed by using computer technology. Classroom pedagogy examined here consisted of classroom management, desk arrangement, classroom interactions, and teaching strategies. Curriculum design included how teachers develop the curriculum in a 1:1 classroom environment. It involved how teachers use textbooks, documents, films, Internet sites or online software, and other tangible or abstract devices used to teach the intended instructional agenda. This study investigated how teachers perceive and interpret their own pedagogy and curriculum change in a 1:1 classroom environment. I chose secondary teachers because the 1:1 program was implemented more at the secondary level in the state the study took place.

### **Research Questions**

1. What are secondary teachers' perspectives on how their pedagogy has been transformed while implementing computer technology into teaching in a 1:1 classroom environment?
2. What does it mean for secondary teachers to make modifications to curriculum design in a 1:1

classroom environment?

### **Conceptual Framework**

Bloomberg and Volpe (2012) state that “the conceptual framework of a study is influenced by, and at the same time, impacts the research processes at all levels and stages” (p. 89). This conceptual framework brings forth a notion of what is being investigated, what previous research has already established on the research topic, and the framework that informs the study (Miles & Huberman, 1994). The conceptual framework for this dissertation was driven by hermeneutics, as the study attempted to observe and interpret teachers’ experiences and meanings they make in a 1:1 classroom environment. Hermeneutics seeks to understand reality based on the interrelationship of language to consciousness, existence, understanding, and reality, and then tries to understand and make sense of events or phenomena (Gadamer, 1976). Through interviews and observations, this study aimed to uncover meanings that lead to richer understandings of the teachers’ experiences and perceptions of pedagogy and curriculum innovations in a 1:1 classroom environment.

In essence, hermeneutics is the interpretation of meaning. Heidegger (1976) argues that hermeneutics provides a lens for understanding and interpreting the fundamental ontological insights of human experiences and phenomena. Heidegger also suggests that human phenomena, whether social, physical, or metaphysical, embody a communal actors way of “being in the world” and are subject to interpretation because all are various forms of social interaction in an organization, and exist because people act a certain way based on their experiences and perceptions (Heidegger, 1976). This concept is derived from the German word *Dasein* which means “being in the world” or “presence.” *Dasein* is derived by the concept of “thrownness” where the participants are in situations where their knowledge is incomplete and they have difficulty thinking about their own actions and the outcome of these actions. This is due to the fact that humans are often thrown into a specific existence, circumstance, or knowledge because of their experiences, history, or tradition (Heidegger,

1976). Teachers who encounter technology due to school decisions are often thrown into such a situation and must make sense of it.

Furthermore, computer technology not only influences the results of teaching and learning, but also the classroom processes, such as classroom interaction, classroom practices, and the learning techniques (Kozma, 2014). Gadamer (1996) contends:

to discover what is common to all modes of understanding and to show that understanding is never a subjective relation to a given object but to the history of its effect; in other words, understanding belongs to the being of which is understood. (p. xxxi)

It is important to uncover the essence of the experience, search for deeper meanings, and investigate the complexity of the phenomena in order to have a consciousness or awareness of teachers' experiences and perceptions when they use computer technology in the classroom for teaching and learning (Cilesiz, 2011).

Therefore, hermeneutics is a suitable framework because in a 1:1 classroom environment teachers are often faced with unfamiliar phenomena, which can lead teachers to change the curriculum and/or pedagogy without knowing how their actions will affect teaching and student learning. This situation asks teachers to make sense of the strange and the unfamiliar, which is a hermeneutic act. As a researcher, I strived to understand how teachers experience their own engagement in the process of implementing computer technology in their pedagogy and curriculum in a 1:1 classroom environment. I approached this study using hermeneutic inquiry because it is a lens that goes deeper into the unfamiliar to reveal meaning.

### **Research Design**

This study used a qualitative approach, which was case study design, to investigate teachers' perspectives of curriculum design and pedagogy in a 1:1 classroom environment. According to Hays (2004), case study research pertains to the investigation of people, topics, programs, or issues. A case

study also seeks to answer questions about the phenomena that are intended to illuminate or understand meaning, and on some occasions case study provides the particulars or facts about a phenomena to help with decision making or bring light to complicated relationships that occur in school reform movements or other intricate topics, issues, or programs (Hays, 2004).

Merriam (1998) states that qualitative case study is a rigorous design for investigating educational occurrences and situations. A case study is a rigorous analysis and description of a social phenomenon of an institution or a process (Bloomberg & Volpe, 2012). Merriam (1998) defines a case as “a thing, a single entity, a unit around which there are boundaries” (p. 27). The cases in this study were teachers from two different school districts who teach in a 1:1 classroom environment; therefore, it was a multiple case study. As Creswell (2013) points out, “In a multiple case study the one issue or concern is selected, but the inquirer selects multiple case studies to illustrate the issue” (p. 99). According to Bloomberg and Volpe (2012), “Case study involves a detailed description of a particular setting and its participants, accompanied by an analysis of the data for themes, patterns, and issues” (p. 31). In addition, in a case study the researcher investigates a phenomenon bounded by time and activity, and gathers information by using different data collection procedures during a specified period of time (Creswell, 2014).

In this case study, I intended to understand teachers’ experiences and perspectives on integrating technology into curriculum and teaching in a 1:1 initiative. I chose two school sites, in two different school districts in a mid-west state, to recruit teachers to attend to possibly different perspectives with rich data. These school sites were chosen because of their location; they were within a drive day away from my residence. I chose two different districts because 1:1 initiatives are unique from district to district, which led me to assume the findings would create better understandings and deeper meanings. This study used purposeful sampling because the school sites must have implemented the 1:1 initiative. The data sources for this study included focus groups, interviews, observations, and classroom documents. This method provided a good data set for

understanding how teachers experience and understand the influence of technology on their pedagogy and curriculum design.

The case was the individual teacher in this study and I analyzed each teacher's perspective and then conducted a cross-case analysis to understand the shared meanings of all participants. As recommended by George and Bennett (2005), a cross-case analysis can provide a richer description of the phenomenon being investigated. Following Khan and VanWynsberghe (2008) suggestions, I compared and contrasted the themes, similarities, and differences across the cases to produce new knowledge that fostered greater insights into the phenomenon.

By using a hermeneutic framework with case study design, this dissertation aimed to gain an in-depth understanding of individual teacher's experiences in their nuances in a 1:1 program (Butler, 1998; Gadamer, 1976). A hermeneutic case study will provide explanations of the human experience and capture the intricacy of the teachers' experiences (Butler, 1998). Computer technology has evolved over the previous decades and teachers have different mindsets regarding its use in curriculum and pedagogy. This study attempted to discover deeper understandings of teachers' perspectives.

### **Setting and Participants**

The participants were secondary teachers who were currently teaching in 1:1 programs. I conducted research in two different school districts. The participants were veteran teachers, except one who had just started the profession. I contacted the schools to discuss my intentions of the study, and once my study was approved, I recruited teachers to participate. Therefore my sample was purposeful. I had four participants from two schools, each in a different school district. I will discuss demographics more in detail later.

### **Data Collection and Analysis**

For this study, I collected data over a five-month period. First, I completed a classroom observation of each participant in order to gain firsthand experiences of teaching practices and how the curriculum had changed to accommodate the use of computer technology in the classroom. Then I conducted individual interviews that lasted at least an hour (see Appendix I). After the individual interviews, I completed another classroom observation. This inspired additional questions for the focus group. Next, I conducted a focus group, which all participants attended (see Appendix II). The focus group lasted an hour. Finally, I scheduled a second interview with each participant that lasted approximately an hour. Every interview was audiotaped, and I took field notes of all observations and wrote down narratives of classroom practices after the observations.

I also collected classroom documents to gather data because these online resources provided insight to curriculum and teaching in a 1:1 classroom environment. With the exception of student assignments and textbooks, most classroom materials in 1:1 classroom environments were online. Teachers posted these materials to communicate with students, parents, and stakeholders. These documents consisted of syllabi, lesson plans, class website, online software, and Internet sites. Therefore, the data sources for my study included two classroom observations, two interviews, a focus group discussion, and classroom documents.

According to Erickson (1985), researchers need to spend as much time analyzing data as they do in fieldwork, and analyzing the data should not be done in isolation. Therefore, I spent ample time conducting this recursive process. Before I analyzed the data, I tried to be conscious of my own prejudices or pre-understandings so that I could interpret the data and investigate all components and their relationship to the whole. My pre-understandings stemmed from my personal experiences in working with teachers in a 1:1 program. Heidegger discusses this process as the hermeneutic “circle of understanding” (Heidegger, 1976). To understand the whole, one needs to start with understanding the parts, or components, of the experience, and in order to understand the part more in-depth, one needs to understand the whole. This means that existence and understanding always revolves or



relates to the components or details of something else. By using a hermeneutic lens to interpret the data, I examined each component as it related to the entire phenomenon. I also kept a researcher's journal to reflect on the process.

Many qualitative researchers also begin with open coding, which is coding the data for major categories or themes (Bloomberg & Volpe, 2012). Open coding was the method I used because it gave me insight into the phenomenon. When coding the transcripts I spent significant time reading and rereading the data to interpret the content for themes, seeking to identify key linkages and/or rare events. I did not use software to assist with my coding. Initially, I recorded any themes when I read the quotes or vignettes on notecards. Afterwards, I examined each notecard to analyze the themes that were prominent. Then I stepped away and paused for several days to ensure I effectively interpreted the messages before the final process of deciding which themes were prevalent. I followed this procedure after each interview and focus group because although the process was time-consuming, it was important. After the data was collected, I combined and weaved the data cards from each case to correlate and compare the text or discourse across the data sources in order to establish major themes prior to writing the commentaries. By using a hermeneutic lens, the interpretation of data enabled deeper meanings and understandings to emerge so that teachers' perspectives in 1:1 classroom environments were revealed.

### **Researcher Subjectivity**

As a technology integration specialist, I am in a position to assist fellow educators by giving them support and training that meets the needs of students in the 21st century. I have also attended multiple educational conferences and professional development meetings and researched the topic to familiarize myself with the identified best pedagogical practices in a 1:1 program. I also work at a site that has been regarded as successful in using technology in its curriculum and is deemed as an "Apple Distinguished School," which means that Apple Inc. has recognized the school as outstanding for

innovation, leadership, and educational excellence. Representatives from school districts throughout the state and nation visit the school each year when trying to implement technology into their curriculum. Teachers at my site have undergone numerous professional development meetings aimed at changing their pedagogy and curriculum so that technology is implemented as an effective educational tool.

By means of a hermeneutic case study design and using descriptive and thematic analysis, I gained an understanding of the teachers' perspectives about pedagogy and curriculum in a 1:1 classroom environment. Reflecting on researcher subjectivity and its influence on my study, I considered one important factor. In qualitative research the overriding concern is the researcher's bias and assumptions (Bloomberg & Volpe, 2012). As an integration specialist my only concern was to improve teaching practices in a 1:1 classroom environment by listening to teachers who have been submersed in this educational environment. In the present study I attempted to understand how pedagogy and curriculum were transformed in a 1:1 classroom environment. I did my best to not let my existing assumptions about the role of technology influence this study. I have worked in two different sites that implemented a 1:1 classroom environment and have witnessed both the positives and the negatives of having student laptops in the classroom. I was in the classroom daily working with teachers and students while they used technology as an educational tool and was aware of my own biases that teaching and curriculum should be changed in a 1:1 program. When one of the participants asserted that the 1:1 program did not change his teaching, I respected his perspectives and listened to his positions without judgment because his opinion mattered and was just as significant as teachers who positively affirmed the transformative effect of using technology in the classroom. At the same time I also offered my interpretation about what this participant meant by "not changing." I also tried my best to establish an atmosphere of trust and mutual respect where the participants felt comfortable sharing their perspectives even when we did not agree with each other.

### **Significance of Study**

Many schools are aiming to implement a 1:1 initiative into their classroom environment, but initiatives at schools or school districts must have teachers' support to be effectively implemented. Currently, studies on teachers' perspectives in 1:1 programs are limited. This study can make a theoretical contribution by providing insight into what it means to teach and design curriculum in 1:1 programs, and teacher perspectives on the implementation of technology in their classroom environment.

This research study could impact school districts that are undertaking a 1:1 initiative. Knowing how to use technology does not mean the teacher knows how to teach with technology and can use it as an educational tool. Understanding teachers' experiences and perspectives has important implications for teacher professional development and training. This study's findings could provide guidance for schools that want to implement a 1:1 initiative regarding effective professional development. Teachers are the building blocks for effective classroom pedagogy and curriculum change. Burns, Dwyer, Koszalka, Roschelle, Pea, Hoadley, Gordan, and Mean have shown in previous studies that when teachers use technology with effective and appropriate methods, 1:1 classroom atmospheres have changed learning in a positive way (as discussed by Sprenger, 2010). Teachers' own perceptions and meaning-making processes in 1:1 initiatives will also provide insights into how to effectively implement such an initiative at a school.

### **Summary**

When a 1:1 program is implemented properly in today's schools, it is easier for students to collaborate, create, investigate, and critically examine the content of the curriculum. Some studies have shown that 1:1 programs have not led to improvements in students' learning because the decisions regarding the 1:1 initiative was executed by stakeholders. Studies show that teachers' perspectives are a vital component when implementing 1:1 programs because teaching with a technological device is a different phenomenon from the traditional use of laptops. Therefore, the

purpose of this case study was to understand teacher perspectives in a 1:1 program, particularly regarding how teachers' pedagogy and curriculum design were transformed by using computer technology. This study was conducted in two different school districts and the participants were secondary teachers. The data sources for my study included two classroom observations, two interviews, a focus group discussion, and classroom documents. Teachers' perspectives about pedagogical and curriculum changes in 1:1 programs could provide clarity on how to effectively implement such an initiative at a school.

## CHAPTER II

### Literature Review

In this literature review, I examine what existing literature shows as important in 1:1 classroom environments. These areas of importance consist of an educational vision for stakeholders, the pedagogical consideration, such as a student-driven classroom, and the revamping of curriculum design for students in today's technologically immersed world. I start with a brief overview and then move to teaching and curriculum components of 1:1 initiatives. Here I discuss pedagogy and curriculum with different foci: pedagogy relates to teaching practices and behaviors, while curriculum mainly involves planning, implementing, and assessing lessons and the content of information. I also discuss developing 21<sup>st</sup> century skills in students: collaboration, critical thinking and problem solving skills, research and information fluency, and digital literacy. Last, this literature review discusses the importance of teacher perceptions in a 1:1 classroom environment.

### **1:1 Initiatives**

#### **History of 1:1 Initiatives: A Brief Overview**

As Spector (2012) suggests, "Technology changes what people do and what they can do" (p. 5). Therefore, as new technologies become more prevalent in today's society, many school

districts are investing in these innovations and a large number of them are implementing 1:1 programs (Hobbs, 2011; Project Red, 2010). A 1:1 classroom environment means a laptop (or other mobile device) is made available by the school for each student, and students take their laptops home to do homework, surf the web, play online games, and engage in social networking sites. School systems are trying to combine students' interest in technology with the curriculum so that they meet the needs of students as well as the educational environment (Cavanaugh, 2007; Hobbs, 2011; Lei & Zhao, 2008). According to Richardson, McLoed, Flora, and Suaers (2013) laptop programs are "propelling educational change with the intent of providing benefits that include improving academic achievement, increasing equity of access of digital resources, preparing students for today's workplaces, and transforming the quality of instruction" (p. 4). When technology is used in education it can promote creativity, collaboration skills, critical thinking, and innovation among the students (Hobbs, 2011). In addition, 1:1 programs also provide a certain degree of equity for all students. When students have the same technological device it levels the playing field to a certain extent, and the problem of technology inequity that exists between rich and poor students can be reduced (Kontos, 2002).

The first school to embrace a 1:1 program was Australia's Methodist Ladies College, a private school, in 1990 (Richardson, et. al., (2013). Johnstone's (2003) book, *Never Mind the Laptops: Kids, Computers, and the Transformation of Learning*, tells the story of how laptop schools emerged in Australia and then were quickly adopted by American educators. The principal at Methodist Ladies College was visionary and felt that making computers available at school could empower students. The 1:1 initiative started with 10 years olds with their parents paying for the expense of the laptops (Today most school districts purchase the laptop, but students usually have to pay computer use fees for insurance and/or upkeep). The laptop program in Australia had a huge impact on pedagogy and curriculum. Teachers no longer had student desks in rows because students moved around as they needed to collaborate, and teachers did not

stand before the class lecturing but traveled between students facilitating them as needed.

As teachers worked together, the lessons became longer because teachers were having students create cross-disciplinary projects that integrated math with science or English with history. Teachers also found there was more time for individual tutoring. As Johnstone (2003) points out, “Technology frees teachers from the need to lecture, allowing them to do more individual guidance with their students” (p.1). The students now had some control over their learning, and they rose to the occasion and consequently improved their intellectual ability. Students started asking if they could stay in during recess to work on their projects because “the line between work-time and play-time became blurred” (Johnstone, 2003, p. 211). Students designed programs and games on their laptops, which generated self-esteem and motivation. At times the students taught the teachers. Their learning environment became relevant to their world. Soon tens of thousands of other students in surrounding schools had laptops. This sudden increase was because most schools were in the private sector, and they had to compete with other schools in the country (Johnstone, 2003).

Some teachers wrote a book about their experiences of working in a 1:1 classroom environment, which inspired more schools to use laptops. Thousands of students across Australia were given laptops and the successes in 1:1 classroom environments drew recognition across the globe. Johnstone (2003) narrates that after this change in Australia’s educational system “Microsoft flew ten US educators from Seattle to Australia for a fact-finding mission” (p. 4). American educators observed students who were thoroughly engaged in learning by creating digital projects and multimedia productions. American principals and teachers were amazed and exhilarated by what they witnessed and were determined to remodel American schools according to the Australian initiative. This led to the movement called Anytime Anywhere Learning. By 2002 hundreds of school districts across America had implemented 1:1 initiatives, and the laptop initiatives continued to spread across the globe (Johnstone, 2003). Even in their infancy, 1:1

initiatives showed a commonality to today's research of the components needed for effective implementation and integration into the curriculum (Johnstone, 2003; Langhman, 2014; Cox, 2014; Branch, 2014).

According to Lei and Zhao (2008) "One-to-one computing is one of the fastest growing yet most controversial phenomena in American classrooms" (p. 2). More states invested in technological devices that allowed students to have a laptop at their fingertips at all times in a 1:1 classroom environment. For example, in 2002 Maine signed an agreement with Apple Inc. that implemented 1:1 programs in all the public middle schools throughout the state. The Maine Learning Technology Initiative (MLTI) continues today and has grown to include many high schools around the state with personal technology devices (Walker, Johnson & Silvernail, 2013). In 2008, 33 states had schools experimenting with 1:1 initiatives, and Lei and Zhao (2008) predicted the trend was going to continue to grow throughout the nation. Hu (2007) claims that

Federal education officials do not keep track of how many schools have such programs, but two educational consultants, Hayes and Greaves Group, conducted a study of the nation's 2,500 largest school districts and found that a quarter of the 1,000 respondents already had one-to-one computing, and fully half expected to by 2011. (p. 1)

From my investigation of 1:1 initiatives, I have not found the exact number of schools around the nation that have 1:1 initiatives, but in the Midwest and many other states schools are seeking funding and support to implement a 1:1 program in their district (O. Aguilar of Apple Inc., personal communication, June 22, 2014; E. Hileman of Oklahoma State Department of Education, personal communication, July, 15, 2011).

### **Components of Effective 1:1 Initiatives**

Literature surrounding 1:1 initiatives indicate most students gain academically when technology is used as an educational tool, and teachers have transformed past teaching



methodologies to reach the students of today (Branch, 2014; Cox, 2014; Langham, 2014). As Rosen and Beck-Hill (2012) discuss:

A school system must go through major processes. It requires setting new educational objectives, preparing new curricula, developing digital instructional material aligned with learning standards, designing a new teaching and learning environment, training teachers, creating a school climate that is conducive to educational technology, and so on. (p. 226)

What is important is how technology is integrated within the curriculum and whether students are using computer technology to increase their comprehension of the academic standards as well as deepen their knowledge of the world around them.

It is important to be mindful that throughout history the purpose of education has been to prepare youths for adult life in work, family, leisure, and personal relationships. The function of educational institutions will probably be no different in the third millennium. However, the lives of students in schools today will be considerably different than the lives of their grandparents and parents. One important factor contributing to such differences is the rapid technological changes that have altered our society (Rosen & Beck-Hill, 2012). As Ertmer and Ottenbreit-Leftwich (2010) point out:

It is time to shift our mindsets away from the notion that technology provides a supplemental teaching tool and assume, as with other professions, that technology is essential to successful performance outcome (i. e., student learning). To put it simply, effective teaching requires effective technology. (p. 2)

To make 1:1 initiatives effective, teaching and curriculum need to change in order to prepare students for today's digital society. First, using a student-driven approach to teaching has shown to be most effective in technologically enriched classroom environments (Langham, 2014). This

approach creates an atmosphere where students construct their own learning and take ownership of their education (Rosen & Beck-Hill, 2012). Second, Langham (2014) claims “Combining technology with the curriculum often shifts the approach to increased student collaboration, learning, and developing more complex skills transferrable to other applications” (p. 31). Therefore, the curriculum needs to be revamped to fully engage students and support active learning by creating assignments that allow students to collaborate. Wagoner (2008) also discusses that in today’s workforce employees are required to work in teams with peers in their building or through the virtual world. Wagoner reports that schools are not preparing students for the collaboration skills they will need to succeed in today’s digital society. Third, the curriculum should not only promote critical thinking and problem solving skills but also teach students digital literacy and technology skills. Wagoner (2008) reiterates a quote of an executive from Dell, “Yesterday’s answers won’t solve today’s problems” (p. 1). This implies that schools need to teach students how to ask good questions and how to think on their own.

Foremost, school districts planning on implementing a 1:1 initiative need to develop a technology or curriculum plan aimed at transforming teacher pedagogy and classroom practices. Bennett (2003) states “To ensure that technology has an impact on students, staff and community, districts and schools must develop a thoughtful technology plan. Technology plans help districts and schools to use technology effectively” (p. 22). Furthermore Stanhope and Corn (2014) argue:

Stakeholders must believe in and commit to the initiative. This is done through planning and facilitating teaching and learning, planning and facilitating information access and delivery, and planning and facilitating program administration. Specific responsibilities include collaborating with teachers to develop curricula and lesson plans, modeling technology use and integration, providing access to technology resources and planning and designing the technology infrastructure. (p. 254-255)

Spector (2012) states that “a systemic representation of the role and use of new technology should

be developed prior to implementation” (p. 155). This creates a vision and mindset for all stakeholders involved with the implementation of technology.

### **Technology Plan of 1:1 Initiatives**

An essential stage that should start prior to the implementation of a 1:1 initiative is a technology plan, or an articulation of the school’s vision for the 21st century pedagogy and curriculum transformation. This includes what it is, what it looks like in action, how students and teachers experience it, and the expected outcomes of the program (Spector, 2012).

It is fundamental to include teachers and stakeholders when planning on adopting a 1:1 initiative or any form of technology integration that has the potential to change the way educators have previously taught (Stanhope & Corn, 2014). According to Spector (2012), “in a school or school district, the relevant stakeholder group includes teachers, students, parents, administrators, and support staff” (p. 112). All educators need to have clear expectations of how technology will impact the role of teachers and student learning. Teachers need to consider the structure of what the 1:1 classroom environment will look like in their school and classroom. This includes learning objectives, curricula, assessment strategies, new teaching and learning approaches, technology infrastructure, and district policies. Previous studies of schools with technology plans indicate that teachers who have a plan will have fewer concerns and a better understanding of how computer technology will meet the needs of students. Stanhope and Corn (2014) point out, “Effective adoption of change initiatives requires commitment to developing purpose and process of the initiative with stakeholders” (p. 271). This plan is based on teacher needs, professional development, and teachers’ vision of how the implementation of the technology will change pedagogy and curriculum (Maschmann, 2014; Stanhope & Corn, 2014). Without planning or having a vision, teachers are often faced with difficulties and challenges as they prepare for teaching in 1:1 classrooms and often the initiative will not be effective (Bebell & O’Dwyer, 2010;

Goodwin, 2011). Claro, Nussbaum, Lopez, and Diaz (2013) conducted a study in Chile that included 1,591 schools. These schools participated in the Mobile Computer Lab project and found what other studies have also found, which is “the importance of a shared vision of the innovation for a successful implementation” (p. 325).

According to a study conducted by Mouza (2008), teachers in 1:1 initiatives must undergo professional development that not only teaches them how to use technology, but also how to integrate technology into their curriculum. The study suggests that teachers be provided with ongoing support because learning how to use technology is not the same as knowing how to teach with it. This study was administered across all grade levels at 40 Teacher Center Partner Schools in New York City. Teachers reported that attending technology-focused professional development programming and having ongoing support from peers and administrators was key to increasing student learning. In addition, training should provide teachers with opportunities to observe, practice, and reflect. Training should continue over an extended period of time (Mouza, 2008).

In the context of 1:1 initiatives, a qualitative study conducted in Maine found that a teacher’s attitude was the most significant factor in 1:1 classrooms (Garthwait & Weller, 2005). This ethnographic study examined how 1:1 initiatives affected teaching styles and the barriers teachers had when integrating technology into teaching. Garthwait and Weller (2005) found that teacher perspectives and voices were an integral piece in transforming the educational process, and obstacles occurred because teachers did not have any input regarding the goals and purposes for adopting a 1:1 initiative. Furthermore, Stanhope and Corn (2014) argue that “Teachers are key stakeholders in school initiatives, and their commitment is an important determinant of 1:1 effectiveness” (p. 253).

### **Criticism of 1:1 Initiatives**

Even though school districts have been investing in technology during the past two decades, some schools are pulling away from 1:1 initiatives because student achievement has not been affected by the increase in technology and it is too costly to continue a program without successes or achievement gains (Goodwin, 2011; Lei & Zhao, 2008). At the start of the 21<sup>st</sup> century, Cuban, Kirkpatrick, and Peck (2001) conducted a study and found that even though schools were equipped with technology for teachers and students, teachers used the new technology with their existing teaching practices and noted no change in student performance. This might have been related to the lack of computer use for educational purposes brought about by teacher insecurities. Teacher insecurities are often caused by the absence of professional development, teacher buy-in, and a vision for transformation (Bebell & O'Dwyer, 2010; Goodwin, 2011).

In 2004 1:1 programs in Texas showed no significant gains on test scores than the schools without student computers. The next year, six of the non-laptop schools opted out when they had the choice to become a 1:1 school (Holcomb, 2009). Other studies done in 2003 and 2005 verified that student achievement was not affected in 1:1 initiatives from schools in California and Maine, especially in districts that have low socio-economic students (Warschauer, 2006). Goodwin (2011) also concurred that laptops had little effect on student achievement in Maine; Maine has the largest 1:1 initiative in the United States. The only high stakes test score that demonstrated an increase was students' writing scores. Michigan's 1:1 classroom environments showed mixed results when reporting their scores. Out of eight 1:1 programs, four schools showed academic improvement, three revealed a decrease in student achievement, and in one school there was no difference in student performance (Goodwin, 2011). This combined with the incident rate of student misuse of laptops and the cost of the program generated a lack of support for a 1:1 program.

Many Virginia schools eliminated the laptop program because it cost the districts an

additional \$1.5 billion and the program was not shown to contribute anything positive to the schools. Students were not showing academic gains and one-fifth of the students never used them for educational purposes (Holcomb, 2009). Bahrapour (2006) stated that many students from 1:1 programs around the nation reported that they hardly ever used their laptops for schoolwork, and critics called laptops “an expensive paperweight” (para. 4). It was also reported that students in a New York school district used their digital devices to download pornography, hack into businesses, and exchange test answers (Hu, 2007). In addition, many of the teachers claimed that the technology was a distraction and got in the way of the educational process. Hu (2007) quotes the school president in Liverpool, New York “The teachers were telling us when there’s a one-to-one relationship between the student and the laptop, the box gets in the way. It’s a distraction to the educational process” (p. 1). Claro et al. (2013) point out that “recent studies do not show clear evidence regarding the benefits of 1:1 models of computer use in schools, and the evidence indicates that the programs that overlook teacher training yield very low returns” (p. 316). These disappointments have occurred because there was a lack of planning, teacher training and preparation (Kim, Kim, Lee, Spector & DeMeester, 2013). Norris and Soloway (2010) stated that schools are failing when the laptop is not used appropriately in the classroom; therefore, redefining the curriculum and pedagogy is essential for student success. According to Stanhope and Corn (2014). “Teachers must assimilate the new technologies, adapt to systemic changes, and modify their teaching practices” (p. 254). Having technology in schools does not guarantee that children will be stronger students; only great teachers and smart curricula can transform the educational playing field.

### **Teacher Pedagogy in 1:1 Initiatives**

Technology integration in today’s schools is vital to prepare students to thrive in a progressive digital society. Research done on 1:1 initiatives shows teachers need a different pedagogical approach in this new learning environment, and studies show that effective teaching

and learning approaches are usually student-centered. (Beck & Eno, 2012; Saavedra & Opfer, 2012; Langham, 2014). As Estes (2004) points out, “Student-centered learning environments describe a learning process where much of the power during the experience resides with students. In some cases, students and teachers are collaborators, sharing equal power” (p. 144). Even though student-driven learning has been around for centuries, during the 20th century many educators taught using the “banking education model” (Freire, 2011) otherwise known as teacher-driven. The teacher stood before the class and had total control of the content while students were passive learners and regurgitated what the teacher told them to learn (Freire, 2011; Means, 2010). According to Means (2010) and Spector (2012), when computer technology is implemented into the classroom, teaching students using a student-driven approach is better than using the teacher-driven model.

Student-centered learning environments are those in which learners engage in activities that help them construct their own understanding of the objectives or concepts the teacher teaches (Branch, 2014). The teacher’s role is to design lessons that are relevant and interesting for students and to facilitate student learning. This is because the majority of 21st century students should be guided to become collaborators, lifelong learners, creative thinkers, innovative problem solvers, and have the ability to apply knowledge to new contexts with the aid of new technologies (Branch, 2014). These attributes cannot be reached through traditional learning and teaching means. Student-driven learning atmospheres are a requisite when using technology in the classroom (Gulek & Demitris, 2005). Therefore, pedagogical practices and curriculum focus should shift from teacher input to student engagement. The attention is on student production, knowledge, action, and the creation of learning provisions (Branch, 2014).

In most successful 1:1 classroom environments the teacher’s role is as a facilitator or coach (Cavanaugh, 2007). Martinez and McGrath (2014) define a facilitator as one who assists students in their learning, but is also actively engaged in learning about themselves and changes

within their professional field. Maschmann (2014) discuss that it is essential for teachers to engage in ongoing professional development so they use new technologies to empower not only themselves, but also all learners. Teacher must also collaborate with their peers to share best practices and digital resources that are effective in the classroom. In addition, facilitators assess students, plan the teaching, decide how to implement it, and evaluate how students are achieving through the processes. As a facilitator, the aim of the teacher is to create lessons that include real-world learning activities that consider multiple perspectives, in which students construct knowledge rather than repeating it and become problem solvers in the process (Pritchard, 2007). In addition, the teacher is the designer of quality work and a resource provider rather than a test-giver or lecturer. Wagoner (2008) discusses that 21st century students are growing up in a knowledge generation, and teachers cannot be just an information delivery system because students can find out anything they want to online. Therefore, schools need to create a culture of inquiry, which means teachers need to be orchestrators of teaching and assist students in turning concepts and ideas into knowledge, and then change knowledge into wisdom (Wagoner, 2008).

Other teaching methods that correlate with student-centered learning environments and are effective in 1:1 classrooms are active learning, cooperative learning, and inductive learning. Active learning is an environment in which students solve problems, formulate and answer questions, explain concepts, and debate during class. Fisher (2010) points out that in a technology-enriched classroom active learning combines lecture, simulations and laptop experiences to create a collaborative learning experience for the students. Cooperative learning consists of students working with their peers to solve problems and complete projects under the guidelines of positive interdependence and accountability. According to Johnson and Johnson (2014) technology can broaden and revolutionize the curriculum, which can in turn deepen student understandings and meaning-making because students can work with several mediums simultaneously. Inductive learning includes inquiry-based learning and project-based learning in



which students complete multidisciplinary assignments that are relevant to their world (Prince & Felder, 2006). Project-based lessons are ideal in a 1:1 initiative because teachers and students can share content and complete lessons on their laptops while at school or from another location (Richardson et al., 2013). All of these methods challenge students to solve real-world problems and gain conceptual understandings while they collaborate with their peers.

Another component of pedagogy in 1:1 initiatives is classroom design related to how teachers arrange the desks, monitor students, and construct a teaching atmosphere that is beneficial for student learning. Foucault's (1975) theory of enclosure and surveillance discusses institutions and how they often exercise their power by oppressing individuals, or students when it relates to education. The concept of enclosure pertains to the physical and structural boundaries places on students by teachers: "each individual has his own place; and each place is individual" (Foucault, 1975, p.143). This allows the teacher to have total control of the classroom. For example, in traditional or teacher-driven classrooms, students' desks are in rows and the teacher stands in the front lecturing to the students. In a 1:1 classroom environment there may not be desks but tables where students sit together; if tables are not available then the desks are arranged so they face one another (E. Hileman of the Oklahoma State Department of Education, personal communication, June 16, 2011; Nodolny, 2008; D. Troy of Apple Inc., personal communication, August 4, 2011). This gives students the freedom to collaborate and discuss the lesson at hand. In 1:1 initiatives classroom management changes due to the fact that every student will be working on a laptop and teachers no longer have to lecture and stand in the front of the classroom. Class interactions can consist of teachers working with students and students working with one another to complete assignments or share creations.

### **Curriculum Design**

Curriculum design refers to how teachers design the lessons using curriculum materials in

order to deliver the content and standards for any particular subject. Curriculum materials include: textbooks, online resources, documents, films, Internet sites or online software, or other tangible or abstract devices that are used to teach the intended instructional agenda. Teachers should start with assessing the standards for a particular subject in order to modify lessons to adapt to the new pedagogical practices used in a 1:1 classroom environment (Rosen & Beck-Hill, 2012).

The International Society for Technology in Education (ISTE) (2016) developed technology content standards for students, so that teachers and students have an understanding of the relationship between technology and other fields of study. These standards are in reference to the 21<sup>st</sup> century skills students will need to have in order to thrive in today's global world. Maschmann (2014) points out that "Students should develop an understanding of the relationships around technologies and the connections between technology and other fields of study" (p. 31). In 1:1 initiatives, teachers should collaborate to find online resources that develop the 21<sup>st</sup> century skills deemed important for students. These skills are: creativity and innovation, communication and collaboration, critical thinking and problem solving skills, research and information fluency, and digital literacy while including the concepts students must know for the state-mandated tests (ISTE, 2016). These aspects of 21<sup>st</sup> century skills are relevant because they bridge the gap between student experiences in and out of school by adding a dimension that is significant and relevant to their overall growth (Adams, 2015). Students are not only influenced by what they learn in school but also what they learn online and in digital societies. Teachers no longer have to teach students what the facts are because students can learn anything they seek to online. Therefore, teachers must furnish students with the skills needed to think critically not only in collaborative environments but also on their own accord.

### **Curriculum Skills Needed for 1:1 Initiatives**

## **Collaboration**

Many aspects of student-driven classrooms and 1:1 classroom environments create an atmosphere for learning through collaboration. When teachers in 1:1 initiatives work together on curriculum design student collaboration is an essential component in preparing students for college and our globalized workforce (Stevens, 2014). Student collaboration has the potential to grab students' interest because this strategy allows students to work with one another on an educational concept while preparing them for adulthood when many will have to work with others in a collaborative setting (Richardson et al., 2013). Within this framework, students are submerged in an environment in which they can band together, learn from their peers' unique experiences, and value one another's multiple intelligences (Saavedra & Opfer, 2012). What one student lacks another may have, leading to mutual enrichment. According to Joyce et al. (2009), the concept of cooperative learning environments has been around for centuries, but when technology is available to students, global connections expand such cooperation. One common critique of technology is that it reduces face-to-face interaction and collaboration, but many 1:1 classroom environments encourage students to complete assignments in groups in which they share the responsibilities of completing a project or class assignment (Branch, 2014).

Social networking is another collaborative avenue students have used in a 1:1 classroom environment. Students work together with someone from their classroom or the other side of the world to accomplish a particular task or project. Having diverse perspectives allows students to think outside of the box and to enhance their educational experience in a worldwide and authentic context (Nowell, 2012). In today's world, online engagement is not only important in business, but also in education and in the private sector. Curriculum design in technology-enhanced classrooms needs to promote collaboration among students because group work in and out of digital environments will give students the skills they need to be successful in today's globalized society and workforce.

## **Critical Thinking and Problem Solving Skills**

Teachers who work in 1:1 classroom environments have a responsibility to remodel the curriculum by designing lessons geared to stimulate critical thinking and problem-solving skills for students. Having access to technology enhances research projects for investigating problems, finding solutions, analyzing data, and using multiple processes and diverse perspectives to search alternative pathways. Teachers in 1:1 initiatives are encouraged to create lessons using student-driven authentic learning tasks in a collaborative educational environment to support reflective thinking, prompt inquiry, and encourage student curiosity (Rosen & Beck-Hill, 2012). Having applications on laptops provides students with different ways of completing tasks, and having the Internet at their disposal can add dimensions that are advantageous.

Another way to develop critical thinking and problem solving is by improving students' ability to determine if particular websites are credible by investigating the content and comparing it with textbooks or other available resources. Critical media inquiry gives students the educational experiences to make sound judgments about the information they acquire (Case, 2003). It also prepares them for college and adult life. In the media there are often accusations, false reporting, and other forms of propaganda that society has to determine to be credible or not. Providing students the opportunity to reflect and investigate the world around them will prepare them for real-life successes or failures.

## **Research and Information Fluency**

When students have access to computer technology in the classroom, the Internet not only allows them to investigate primary data sources, but also to gain insight on diverse perspectives about any given topic or issue. Having access to computer technology helps students construct their own knowledge because assignments can be completed not only with the software on the computer, but also with all the resources available through the Internet (Spector, Merrill,

Elen & Bishop, 2014).

Access to technology in a 1:1 classroom environment enables teachers to revolutionize the curriculum and gives students the freedom to show knowledge gained from multiple perspectives. For example, students can use technology to write research papers about a given topic, create a movie that pertains to real-life issues, produce a video to post on YouTube that explains a process, or write a blog that promotes critical thinking about something meaningful to them.

### **Digital Literacy**

Another important skill for students who have access to technology in schools is digital literacy. The definition of digital literacy is the ability to use technology in a competent, appropriate, and responsible manner. This includes using technology in a safe and legal way; showing positive behavior when using technology that encourages learning, productivity, and collaboration; exhibiting responsibility for lifelong learning; and having the ability to effectively communicate through various forms of media (ISTE, 2016; Digital Literacy and Citizenship Curriculum, 2016; Scheibe & Rogow, 2008).

Digital citizenship is a building block of digital literacy that refers to using technology responsibly. Hollandsworth, Dowdy, and Donovan (2011) state, “lack of digital citizenship awareness in education can, and has, led to problematic, even dangerous student conduct” (p. 37). For that reason, when school districts give students laptops or other digital devices to use each day, it is imperative to include digital literacy in the curriculum.

When students use online sites to interact with others they also experience the immediacy of communication and connection with society; therefore, it is important to teach students about being mindful of what they say and put onto the web. The consequences could be dire and could affect them in future endeavors. In 1:1 classrooms students have access to not only social

networking sites, but also other forms of online communication such as emails, wikis, nings, texts, Skype, and so forth, which are important in developing students' digital literacy. According to Hallondsworth et al. (2011),

digital can be compared to American citizenship in that all digital citizens have the same basic rights: to privacy, free speech, and creative work rights. Teaching students how to protect their privacy is critical. Everyone has the right to free speech but students need to be taught to think about what is said and posted online, which has far reaching effects.

(p. 41)

In 1:1 environments students have access to the Internet 24/7 so their having an awareness of digital citizenship will help them with not only their relationships, both in and out of the school environment, but also future educational or professional endeavors.

According to Hobbs (2011), the Federal Trade Commission reported in 2009 that 10 million United States citizens were victimized because they provided too much information about themselves online, and a large number of children were victims of sexting, cyberbullying, electronic aggression, and pornography. Teaching students how much personal information to disclose and how to be ethical toward others is an important component of digital literacy because social media is a part of 21st century culture and serves as an agent of socialization (Hollandsworth et al., 2011). Therefore, scholars suggest that teachers inform students about digital footprints when using technology because what they post or where they search online is tracked. Images and messages they post could haunt them in years to come because they never go away. These messages could impact their education, prospective jobs, families and personal life (Digital Literacy and Citizenship Curriculum, 2011). Reid and Boyer (2013) suggest Facebook could have a role as a pedagogical tool in the classroom, although many districts are reluctant to use it because of safety concerns. This is why many school districts choose to use an online platform like Edmodo, Google for Education, or other similar educational tools (D. Lopez of

ISTE, personal communication, July 2, 2015)

Another issue pertaining to digital literacy is teaching students to respect copyright laws and how to legally obtain information, movies, and songs. Many 1:1 programs have experienced major issues with plagiarism. Students need to understand that when someone creates something it belongs to the creator. Having access to technical devices makes it easy for students to copy and paste assignments. Therefore, many school districts use online resources, such as TurnItIn or PaperRater, which help students to avoid plagiarism. The curriculum in a 1:1 classroom environment needs to include teaching students how to paraphrase, use citations, and quote properly (Chao, Wilhelm & Neureuther, 2009). Digital literacy also provides students with the foundation they need in order to use the Internet wisely while in college or throughout their adult life.

### **Curriculum Materials, Implementation, and Assessment**

According to Maschmann (2014), when planning for a 1:1 program the focus should be on the curriculum and content of the laptop initiative. One of the advantages of a 1:1 program is that it gives teachers and students the opportunity to increase learning through online resources throughout the day, week, or year. It adds flexibility to curriculum design. Students can submit assignments or teachers can give students assignments when they are not in the classroom. Teachers and students can also give one another feedback while they are not on school grounds. If technology is used purposefully in a 1:1 classroom environment, students have the opportunity to learn based on their individual learning needs and thus increase differentiation (Maschmann, 2014). In today's digital world there are a vast array of online tools and resources that teachers can use in their classroom to inspire and engage students.

As Maschmann (2014) points out, "in 1:1 teaching environments the technology leverages and amplifies the teachers' efforts and voices in viral ways that move beyond what we

have done as individuals in the past” (p. 27). This statement means that learners always have access to the world around them and 1:1 programs “can help students and teachers create a learning environment that is truly transformative for all involved” (p. 29). In other words, computers give users quick and easy access to a plentitude of information on any topic; the information might include text, video, graphics, and audio from numerous sources that can engage all learners. Cox (2014) points out that when technology is available to students “The responsibility for learning is shifted from the teacher to the students as they participate with their classmates in the class experience” (p. 52). The curriculum can be transformed by going beyond online lectures because the curriculum materials consist of: educational and informational websites, interactive websites such as online games and virtual tours, or collaborative tools such as wikis, blogs, and other social networking websites to provide for maximum learning potential (Cox, 2014). Teachers can use these materials to support students so they learn and share content in creative and relevant ways. Teacher collaboration and teacher research are also ways for educators to learn how to incorporate these resources into their lesson plans in 1:1 classroom implementations.

While there are abundant resources available to teachers on the Internet to include in the curriculum for any subject at any grade level, teachers need to know how to design curriculum using these resources. Most lessons and assessments are available on the Internet if proper research is conducted but adapting the materials for curriculum planning requires collaboration and reflective thinking. As teachers build their curriculum or lessons they should think about the following questions: what do students need to know, how long will the lesson be, what is the sequence of the lesson, what teaching strategies will be implemented, and what technological tools will be used. In 1:1 initiatives, building the curriculum is not just a scale of technology integration, it is also about using innovative curriculum materials to enhance student learning (Puentedura, 2013).



Maschmann (2014) points out that teachers in 1:1 programs have the ability to oversee more student work because teachers have a “variety of indicators to measure the achievement of students” (p.30). For example, many schools take advantage of online benchmarking giving teachers and leaders another resource for evaluative data (Branch, 2014). These types of software or web-based educational sites give teachers and students immediate feedback on student progress. In addition, teachers can build their own assessments, use rubrics, or refer to websites that assess student knowledge for most subjects. Many 1:1 programs also evaluate student commitment and engagement in learning by behavior referrals and attendance as an indicator of the growth in student learning (Maschmann, 2014). In most 1:1 classrooms teachers evaluate student performance based on several measures, not just the high stakes test scores because most teachers and educational professionals believe this is not a true indicator of student performance or success (Maschmann, 2014).

### **Teachers’ Perspectives in 1:1 Classroom Environments**

Many professionals in today’s world think and act differently than those from previous decades due to the development of computer technology (Spector, 2012). Teachers are also affected by the changing technologies and are expected to use computers to increase their effectiveness in the classroom (Kim et al., 2012). Teacher perceptions are essential to the success or failure of 1:1 classroom environments because teachers’ pedagogy and curriculum will need to adapt to the changing dynamics that technology provides teachers and students (Rosen & Beck-Hill, 2012; Sprenger, 2010). Furthermore, teachers’ perceptions are more important than skills or knowledge when implementing computers into classrooms (Kim et al., 2012).

Teacher perceptions about the role of technology will differ depending on their experiences with technology, the educational environment where they teach, professional development, and teacher support. Studies reveal that teachers’ perceptions about the practical

uses of technology are influenced positively if teachers are submersed in an educational environment where they not only observe, have support, and learn from their peers, but also are provided constant professional development (Rosen & Beck-Hill, 2012; Sprenger, 2010; Maschmann, 2014). Claro et al. (2013) did a study in Chile and concluded that pedagogical support was the determining factor for successful 1:1 programs. Based on my experience, teachers who already know how to use technology and are receptive to implementing a 1:1 initiative will still need the proper guidance and support with their classroom practices and curriculum. According to Rosen and Beck-Hill (2012), “The factors affecting education technology integration include professional development, availability of resources and technical support, and teacher readiness to integrate technology” (p. 9). Teacher readiness and their perspectives impact teachers’ conceptions of what is appropriate and viable in their classrooms while using technology (Windschitl & Sahl, 2002). Teacher perceptions of how technology integration influences their teaching practices and/or curriculum, and how it impacts student learning, impact how they use technology in the classroom. Without teacher buy-in, implementing technology in a 1:1 classroom environment will fail to promote student learning (Windschitl & Sahl, 2002; Stanhope & Corn, 2014; Maschmann, 2014).

Windschitl and Sahl (2002) conducted a two-year ethnographic study that investigated how teachers integrated technology in a 1:1 program. Their study found teacher perspectives about the role of technology in their classroom was the determining factor in how they incorporated the use of student laptops. Windschitl and Sahl (2002) explain

teachers’ interconnected belief systems about learners in that particular school, about what constituted good teaching within the context of the institutional culture, and the role of technology in the lives of students. Those belief systems influenced participants’ conceptions of what was proper and possible in their classroom. (p. 25)

Windschitl and Sahl (2002) also found two other themes that are important for implementing 1:1

initiatives in their study: a student-driven instructional approach and a school culture that expected and supported the use of technology in the classroom. However, the roles of these factors were impacted by teacher perceptions about how technology could benefit their teaching and student learning.

For instance, Carol, a participant in the study, felt that her administration had confidence in the teachers' teaching skills at the school site and gave them leeway to design their curriculum, but provided little support for laptop integration. When laptops were first introduced in the school site, Carol believed the laptops were beneficial to students and served as "a tool for knowledge construction and a gateway to the world of adult ideas" (p. 23). Carol viewed the laptops as a source of information for students and believed that it forced students to use higher-level thinking skills. Consequently, she changed her seating arrangement, had students work in groups, and altered the curriculum to contain project-based lessons. She transformed her pedagogy and curriculum to implement a student-driven education philosophy.

In juxtaposition, other participants did not perceive the laptops as making a difference in the educational environment. One participant believed that the 1:1 initiative made it more difficult to teach and the laptops just replaced a pen and paper. During the second year of laptop implementation, the school district provided teacher training, observation of other 1:1 programs, and support for technology integration but that participant's perspectives did not change. The teachers who did not value the laptops "maintained internally persuasive rationales for not using the technology that may have made them less receptive" (Windschitl & Sahl, 2002, p. 25). Findings from the study suggest that teacher perspectives are ultimately what matters to the success and failure of laptop programs.

Maschmann (2014) conducted a mixed methods study to examine teacher perceptions in Nebraska. He found that most teachers felt the 1:1 initiative was driven from the top down in the

beginning. After two years of researching other 1:1 programs and being involved with the planning teachers started to implement the initiative. His study consisted of 20 teachers across the state. Once teachers implemented student laptops in their classroom they had mixed responses about their effectiveness. Maschmann (2014) analyzes multiple aspects of teacher perceptions in his study: teacher perceptions about the 1:1 implementation process, perceptions on student engagement, perceptions on student grades, benefits of 1:1 technology, and the perceptions of continued success of 1:1 initiatives. All teachers felt after they took part in the planning phase and visited other 1:1 programs that they were comfortable with the implementation. In regard to student engagement and student grades teachers had mixed perceptions. Some teachers felt it gave them more time to monitor how much effort students were putting into their work and students became more accountable for their learning; others thought it decreased student engagement and had become a nuisance. Some teachers did not experience a rise in student grades and other teachers thought there was an increase because students collaborated and were better organized. The majority of teachers thought that the 1:1 program allowed students to think more critically. The vast majority of teachers also perceived that the continued success of 1:1 programs revolved around professional development and implementation because teachers felt “technology will never go away” (p. 80).

Kim et al., (2012) conducted a mixed methods exploratory study to examine how teacher perspectives influenced technology integration practices. Specifically the authors looked at how teachers’ perspectives of knowledge, learning and technology integration were related to each other. Their study consisted of 22 teachers who had undergone professional development geared to train them in integrating technology into their classroom. These participants used laptops, interactive whiteboards, digital cameras, and other selected technologies. Their findings showed teachers’ perspectives about knowledge, learning, ways of teaching, and teachers’ roles were related to their technology integration practices. Even though participants’ responses did not

disclose a specific opinion of how laptops impacted their classroom curriculum and pedagogy, both teachers felt that laptops impacted learning, so they were implemented into the curriculum. Teachers who feel that technology can make a difference in their teaching choose to implement it. Kim et al., (2012) state:

We found that teachers' beliefs about the nature of knowledge and learning and beliefs about effective ways of teaching were related to technology integration practices. This finding is consistent with prior research that has shown that teacher beliefs are strongly connected to teaching practices. (p. 82)

This study also argued that teacher perceptions should be taken into consideration before implementing technology integration because that is the starting point in overcoming teacher insecurities and barriers that many technologically-enriched school face. In addition, educational institutions need to design interventions for change, so teachers have positive perspectives in place that will promote effective technology integration.

Ertmer and Ottenbreit-Leftwich (2010) suggest a number of ways to facilitate teacher perceptions about technology use in teacher pedagogy and curriculum. They listed the following methods, for instance:

- Giving teachers time to play with technology
- Focusing on teachers' immediate needs
- Starting with small successful experiences
- Working with knowledgeable peers
- Providing access to suitable models
- Participating in professional learning communities
- Situating professional development programs within the context of teachers' ongoing work. (p. 5)

For many teachers, having appropriate knowledge, confidence, and a belief system in place about the usefulness of technology in the classroom will empower them to integrate it into their pedagogy and curriculum. Spector (2012) states, “Teachers have to be willing to try something new, and perhaps change themselves along the way” (p. 117). That is why many studies suggest continued professional development and support for teachers. As Spector (2012) suggests,

it is likely that there will be those that resist the introduction of new technologies; these persons should not be ignored or overlooked with regard to communication and training; teachers and trainers should be adequately trained before deploying new technology.  
(p. 155)

When implementing a 1:1 initiative, teachers need to have the opportunity to voice their concerns and opinions and have support, which includes the proper guidance of how pedagogy and curriculum need to be changed in their classroom, so that teachers have the competence and resoluteness to effectively integrate technology into their curriculum and pedagogy.

### **Summary**

Even in the grassroots phase of 1:1 initiatives, the literature shows the same building blocks hold true for today’s 1:1 programs. Schools districts that do not include these components in 1:1 technology integration often face criticism because the initiative is not effective. First, school districts must include the vision of all stakeholders for successful technology integration prior to implementing a technological device. This vision consists of the pedagogical procedures and curriculum transformations in the classroom, which directly relates to teacher perspectives. As described in the literature, the instructional strategies for 1:1 initiatives catalyzed a transformation from a teacher-driven to student-driven classroom where the teacher is a facilitator. According to Branch (2014) the curriculum for 1:1 initiatives has the “potential to grow beyond a textbook to include a wealth of information in cyberspace” (p. 162). These

curriculum materials could consist of videos, interactive quizzes, games, or websites, or online collaboration to construct their own learning that includes the mandated state curriculum plus ISTE's standards for 21<sup>st</sup> century learning.

The literature review shows that teachers' perceptions are important for the effectiveness of 1:1 initiatives. Most studies focus on teachers' positive or negative perceptions rather than going further into what it means for a teacher to be in a 1:1 classroom environment. This proposed dissertation study intends to provide insight and in-depth knowledge to teachers' perspectives, their specific issues, and what it means to teach in a 1:1 initiative, and to thus encourage teachers to take initiatives on creating the most productive 1:1 classroom environments.

## CHAPTER III

### Methodology

The purpose of this qualitative study was to understand teacher perspectives on pedagogy and curriculum design in a 1:1 classroom environment. The research questions were:

- What are secondary teachers' perspectives on how their pedagogy has been transformed while implementing computer technology into teaching in a 1:1 classroom environment?
- What does it mean for secondary teachers to make modifications to curriculum design in a 1:1 classroom environment?

This chapter will describe the theoretical perspective, research design, participants and sites, data collection and methods of analysis, and the trustworthiness of the study.

#### **Theoretical Perspective: Hermeneutics**

Teachers are continually redefining and interpreting the manner in which they are situated in their classroom and have to respond to the nuances that occur within their pedagogy and curriculum. According to Gadamer (1976), hermeneutic inquiry preserves the openness of discourse to the flow of life. Hermeneutics seeks to make meanings based on the interrelation of language and experience in understanding the events or phenomena (Gadamer, 1976). According



to Kinsella (2006) hermeneutic inquiry “can enrich, substantiate and make explicit assumptions about interpretation and understanding that are central to qualitative research” (para. 1). Through interviews and observations in which experience and language are interrelated, this study searched for meanings that led to rich understandings of the teachers’ experiences and perspectives of pedagogy and curriculum innovations in a 1:1 classroom environment. Heidegger (1976) points out that hermeneutic inquiry is a method for understanding and interpreting the ontological perceptions of human experiences. Heidegger (1976) explains that human phenomena represents a way of “being in the world” and are subjects of interpretation because all are various forms of social interaction in an organization and people act a certain way based on their experiences and perceptions (Heidegger, 1976). “Being in the world” is related to the concept of “thrownness” in which the participants are in situations where their knowledge is incomplete and they do not know how their reactions to the nuances will affect the outcomes of a given situation (Heidegger, 1976). Teachers who encounter technology due to school decisions are often thrown into such a situation and must make sense of it. Teachers often have to rely on their own intuition when making decisions in regards to their classroom teaching or curriculum when technology is implemented.

Kinsella (2006) points out that a hermeneutic approach seeks out understanding, and “acknowledges the situated location of interpretation; recognizes the role of language in interpretation; views inquiry as conversation; and is comfortable with ambiguity” (para. 6). This study was situated in a 1:1 classroom environment; I searched to understand teachers’ perspectives through the conversations I had with the participants. These characteristics served as a lens throughout this dissertation because the intention was to collect and interpret data (observations, interviews, focus groups, and document analysis) in order to understand teacher perspectives in a 1:1 classroom.

Kinsella (2006) argues that “a unique insight is not a liability but rather a way of

bringing individual insight into a situation” (para. 23). This study took into consideration that interpretation is unique to the researcher’s vantage point and my interpretation was situated by my experiences and perceptions. Even though “language is the universal medium in which understanding occurs” (Gadamer, 1996, p. 389), many hermeneutical thinkers also argue that language and conversation can be limitations in understanding (Kinsella, 2006). This study translated the discussions while recognizing the interpretation of the content is through my engagement of the language, and there is not a single interpretation that is exact. As Kinsella (2006) discusses Gadamer’s work she points out:

A hermeneutic approach is open to the ambitious nature of textual analysis, and resists the urge to offer authoritative readings and neat reconciliations. Rather, it recognizes the uniquely situated nature, historical and linguistically influenced, and the ambiguous nature of interpretation. (para. 34)

This study used a hermeneutic lens to better understand ‘the why’ behind human action and to gain an in-depth understanding of the unique and individual teacher perspectives of a 1:1 program. The goal was to illuminate the conditions in which understanding happens.

### **Qualitative Case Study Design**

When my professional status changed from a classroom teacher to an educational technology integration specialist, my main concern was teachers’ perspectives while they implemented laptops as an educational tool in the classroom. Merriam (1998) argues that a qualitative case study is a rigorous design for investigating educational occurrences and situations. I chose to use a qualitative case study design to analyze teachers’ perspectives of curriculum design and pedagogy in a 1:1 classroom environment because it enriched my understanding of teachers’ own approaches in a more in-depth way. Creswell (2013) explains,

Case study research is a qualitative approach in which the investigator explores real-life, contemporary bounded system (a case) or multiple bounded stems (cases) over time, through detailed, in-depth data collection involving multiple sources of information (e.g., observations, interviews, audiovisual material, and documents and reports), and reports a case description and case themes. (p. 97)

The teachers' perspectives I studied were bound by the 1:1 classroom environment that is a contemporary, ongoing effort in schools. I observed classroom experiences, as well as interview the participants to obtain a detailed description of teachers' perspectives who work in 1:1 classroom environment for a certain period of time. The case for this study was the individual teacher who participated in the initiative and since I wanted to understand multiple teachers' perspectives, this study used multiple cases. Lewis-Beck, Bryman, and Futing Liao, (2004) convey that multiple case study is an approach that involves two or more examinations of in event to reveal or confirm various conceptual elements of a phenomenon. I also chose teachers from two different school districts in order to increase diversity.

This dissertation explored teacher perspectives over a period of time, from different classrooms and school districts, while conveying a detailed description of the observations, interviews, focus group, and documents used in a technological enriched classroom. Creswell (2013) points out that "A good qualitative case study presents an in-depth understanding of the case" (p. 98). This study collected multiple forms of data to ensure the findings are adequate for case study research. Based on the criteria of scholarly definitions and explanations of case study methodology, this study was well-suited for case study design.

### **Participants and Site Selection**

The participants were secondary teachers who were currently teaching in a 1:1 classroom. Currently, many school districts are implementing 1:1 initiatives each year, so I conducted

research in two different school districts in a state in the U.S. Midwest. Most 1:1 programs vary from district to district because of the following characteristics: district size, the technology vision of stakeholders, individual teacher disposition, administration, technology infrastructure, type of digital tool teacher/students use, or any other attribute that may contribute to teacher perceptions.

My sample was purposeful because I searched to find teachers who taught in a 1:1 classroom environment. Yin (2011) defines the goal of a purposeful sampling as “The goal or purpose for selecting the specific study units is to have those that will yield the most relevant and plentiful data, given your topic of study” (p. 88). I was informed that I needed administrative approval prior to conducting research within a school district, so I called two different districts with 1:1 programs to get the contact information of the person who granted research approval. After I received confirmation from the Institutional Research Board (IRB) to conduct this study, I emailed both administrators to discuss my research intentions. They emailed me back with the ‘Request for Research’ application attached to the message. Next, I completed the paperwork and sent it back to them through email. After I was granted permission from the administrative office at the school districts to conduct the study, I was told to contact the principals at both sites. Next, I looked on both schools websites to obtain contact information for the principals. I then emailed both principals to explain my study and asked for permission to recruit participants from their schools. I also began researching information and demographics about both districts.

This research study was conducted in two suburban schools districts, at Eastland High School and Westward High School, with both 1:1 programs consisting of students using Google Chromebooks. Eastland High and Westward High are among the largest districts in the state and take pride in their abilities to educate all students. Both schools are located in a suburban area and perform above average on the state achievement tests. The school districts are similar in demographics, Eastland High’s free/reduced lunch rate for students is 25% while Westward

High's percentage is 26%, and minority enrollment for Eastland High is 31% compared to 38% at Westward High. Both school districts in this study also use Canvas to host their student management system. Teachers can post assignments, videos, links to websites, attendance, grades, and messages to students on Canvas. Even though these school districts have similar demographics, I discovered that there are differences in implementing the 1:1 programs,

The first school, Eastland High, has had the 1:1 program since the 2014/2015 academic year. In 2013, only the 9<sup>th</sup> grade was involved in the 1:1 program. I emailed the principal at Eastland High to explain my research interest and inform him that I had contact information for one of their teachers. I also wanted to know if I could get permission to ask her to assist me in recruiting teachers. I then explained that I knew this particular teacher from graduate school and we had taken some classes together. After I was granted permission, I emailed my classmate to explain my study and asked if she knew of any teachers who might be interested in participating. She forwarded me their emails and contact information. After corresponding with these teachers several times through email, I had two participants, Mark and Stacy. The other teachers chose to decline because of time constraints. I emailed Mark and Stacy to express my gratitude and asked them if they would complete a demographic information survey, so that I could gain some insights about their backgrounds, history and education, and scheduled the first observation. The link to this survey was on Survey Monkey (see Appendix IV). Bloomberg and Volpe (2012) point out when doing case study research relevant demographic information can be helpful because it explains "what may be underlying an individuals' perceptions, as well as the similarities and difference in perceptions among participants" (p. 105).

The first participant, Mark, is a veteran teacher, who has taught Math and coached soccer for more than 10 years. This was his first year at Eastland High, but he had previously taught and was an assistant principal at another school district with the 1:1 program. Mark had been immersed in a 1:1 program for a total of seven years. He taught for six of those years and during

one year he was an assistant principal. Currently, Mark teaches 10<sup>th</sup> grade algebra. The second participant, Stacy, had taught 10<sup>th</sup> grade English for three years. During her first year, Eastland High was not a 1:1 school. The district implemented the 1:1 program for 9<sup>th</sup> graders the first year and the program went school-wide the second year, so Stacy has taught in a 1:1 classroom environment for two years. When I arrived to collect data, I noticed that Eastland High had separate buildings to host different disciplines, so the campus resembles a college campus and students were often walking from building to building with their backpacks in tow. The sidewalks were covered and contained grassy areas, gardens, waterfalls, and picnic tables for students and teachers to lounge at during free time. Through our email conversations, we set up the dates and times to collect data.

The second school, Westward High, piloted the 1:1 program in Spring of 2015, and the 2015/2016 academic year was their first year to fully implement it school-wide. After I contacted the principal through email, we arranged a time for a face-to-face meeting. During that meeting, we discussed my research intentions and I told her a little about myself. She seemed interested in my study and was happy to help me recruit teachers. She told me that she would email her staff and contact me whenever she had some participants. The next week she contacted me through email and told me she had two teachers who were willing to participate. The principal asked me to meet with them prior to data collection. I then emailed both teachers and scheduled a time to meet with them to discuss the study. In that initial meeting, I thanked them for participating, explained my study, and asked them to fill out the demographic information on Survey Monkey. The first participant at this school, Jacob, had taught at Westward High for more than 10 years. He currently teaches 9<sup>th</sup> grade English. Jacob participated in the pilot program, so he had been in a 1:1 program for two years. The second participant, Ashley, had taught at Westward High for more than 10 years and teaches 9<sup>th</sup> grade Spanish. She also participated in the pilot program and had been teaching in a 1:1 program for two years. The school site was in a large two-story

building with the cafeteria situated in the center. Students had no lockers and students at this site also carried backpacks from class to class. Both schools also had a relaxed policy on cell phone use. Students could be seen with ear buds in their ears during passing time and in class. All participants participated in the specified procedures for collecting data: two observations, two interviews, and one focus group.

### **Data Collection**

This study collected multiple sources of data: observation, in-depth interviews, focus groups, and documents for analysis. I kept a research journal during the duration of the research process to help organize my thoughts and to write down any ideas or reflections as they arose. I also protected the participants and schools in this study by preserving their anonymity.

Data collection was carried out according to the following procedures. First, I observed teachers in the classroom (details discussed below). After the observations, I conducted the first interview with the participants. I asked participants non-judgmental and succinct questions that required teachers to reflect on how they think the 1:1 classroom environment is impacting their classroom. Third, I conducted a second observation and went through the same procedures that occurred during the first observation. Every observation and interview was conducted in the participant's classroom. Fourth, I invited all teachers from both district to participate in a focus group discussion. As with the interviews, guiding questions were used to keep the research focused. The purpose of this focus group was for teachers to discuss among themselves what it means to teach in a 1:1 classroom, and how the 1:1 initiative has affected classroom pedagogy and curriculum. Focus groups are beneficial for cross-case analyses and show the researcher how the participants interact between one another when discussing a designated topic. This type of social interaction often prompts candor within the discussion and gives the researcher multiple perspectives in a group context. The focus group was held at a local restaurant, and we ate

appetizers as we discussed their perspectives about the 1:1 program. After the focus group, I scheduled a second interview. During the second interview, I asked questions to clarify observations or conversations that I previously had with the participants.

The first method of data collection was teaching observations. According to Creswell (2013) “Observation is one of the key tools for collecting data in qualitative research” (p. 166). Observing teacher pedagogy and curriculum decisions in a 1:1 program provided useful information. My intention in doing observations was to see what was happening in the classroom and to obtain rich descriptions of the occurrences. I wanted to observe and listen to the teachers while understanding their perspectives. Creswell (2013) points out:

The observations are based on your research purposes and questions. You may watch physical setting, participants, activities, interactions, conversations, and your own behaviors during the observation. Use your senses, including sight, hearing, touch, smell, and taste. You should realize that writing everything down is impossible. Thus, you start the observation broadly and then concentrate on research questions. (p.166)

Even though I was totally immersed in the observations, I took field notes during and immediately after them for reflection and analysis. During the teacher observations, I concentrated on occurrences that were related to my research questions, particularly how teachers and students interacted with technology in teaching and implementing curriculum. According to Hamilton and Corbett-Whittier (2013) when conducting case study observations, the researcher “cannot observe all behaviors at the same time” (p. 100) so I focused on events related to pedagogy and curriculum. I also took field notes as soon as possible because it was extremely important to the observation process.

Observation also allows the researcher to attend to significant actions the participants may not be aware of or may ignore in the interviews and focus groups (Yin, 2011). It could also



be a means for developing interview or focus group questions for understanding teachers' perspectives in a 1:1 program. In my research design, interviews were scheduled after I made observations. I used the observations for generating interview questions. Each observation lasted one class period, and I completed two observations of each teacher.

In addition to the observations, I interviewed the participants twice for at least an hour each time. Interviewing the participants consisted of asking questions while listening and recording responses, and then soliciting additional questions to clarify or expand on issues that needed further understanding. Questions allowed the participants to freely make comments on events and issues, thus offering an adequate description of what it means and how it feels to teach and design curriculum in a 1:1 program. Flick (2006) points out that researchers should "create a good atmosphere in the interview and to give room to your interviewees to open up" (p. 169). I did my best to make the participants feel relaxed and make them aware that their perspectives and opinions were the most important aspect to my research. Yin (2011) states that "The qualitative researcher follows a conversational mode, and the interview itself will lead to a social relationship of sorts, with the quality of the relationship individualized to every participant" (p. 134). Hamilton and Corbett-Whittier (2013) point out "in interviews, a high level of trust must be established in order to get truthful answers to your questions" (p. 76). It is important to show respect, compassion, and genuineness when orchestrating interviews, so that participants feel that they are valued and appreciated.

Following the first interview, I conducted a focus group with the participants. As Thomas (2011) explains "The researcher's aim is to facilitate or moderate discussion between participants" (p. 164). I used guiding questions to keep the research focus intact, and the focus group lasted an hour and a half. I observed discrepancies between the language and behavior of the individual interactions with participants and the attitudes of participants in a group setting. I also paid close attention to dialogue and discourse as well as the body language. The focus group

allowed me to observe participants' interactions and identify themes in cross-case analysis. The second interview was scheduled after the focus group.

Teacher interviews and the focus group were audiotaped for transcription and reflection during the data analysis process. I asked permission for audiotaping the interviews before conducting them, and these interviews were held when it was convenient for teachers. After each interview, I emailed the participants a copy of each transcript for member check to ensure accuracy.

Document analysis supplemented the data and fieldwork from the observations, interviews and focus group. According to Creswell (2014), document analysis in case study research "represents data to which participants have given attention, as written evidence, it saves a researcher the time and expense of transcribing, and enables a researcher to obtain the language and words of the participants" (p. 192). The documents included classroom syllabi, lesson plans, class website, online software, and Internet sites. These documents were used as reference material to understand how pedagogy and curriculum are impacted in a 1:1 classroom environment.

These sources of data collection made it possible for me to triangulate the results to gain a fuller understanding of the phenomenon under study. Creswell (2014) explains that this means to "triangulate different sources of information by examining evidence from the sources and using it to build a coherent justification for themes" (p. 201). By means of triangulation, the results of one source will be investigated or checked against the other to gain more insights into the topic. Bloomberg and Volpe (2012) argue that in case study research "triangulation is important to obtain an in-depth understanding of the phenomenon under study" (p. 108). My study used multiple data sources for in-depth understanding of teachers' perspectives.

### **Data Analysis**

Patton (2002) mentions that data analysis consists of a structured and systematic examination to interpret all aspects of data, the relationship between the parts, and the relationship to the whole. Data analysis pertains to what the researcher saw, heard, read, and recorded, and is a systematic nonlinear process in which each phase leads researchers logically to the next phase. According to Creswell (2014), “Case study research involves a detailed description of the setting, following by analysis of the data for themes or issues” (p. 196), so not only did I interpret prevalent themes/meanings from the data, but I also gave a rich description of the setting. Creswell also describes six steps for data analysis in case study research:

- Organize and prepare the data for organization. This involves transcribing the interviews and typing up field notes.
- Read or look through the data. This first step provides a general sense of the information. What is the impression of the overall depth, credibility, and use of the information?
- Start coding the data. Coding is the process of organizing that data by bracketing chunks and writing a word or phrase representing a category in the margins.
- Use the coding process to generate a description of the setting or people as well as categories or themes for analysis. Use the coding for generating a small number of themes.
- Advance to how the description and themes will be represented in the qualitative narrative.
- A final step in analysis involves making an interpretation in qualitative research of the findings or results. These lessons could be the researcher’s interpretation, couched in the understanding that the inquirer brings to the study. (p. 197-200)

Therefore, before analyzing the data I transcribed the taped interviews and the focus group. After conducting each interview/focus group, I completed these transcriptions. Writing down all the components of the interview, the discourse, fillers and utterances, and body language took a

considerable amount of time. After I transcribed the first interview, I analyzed the transcription to understand teacher perspectives and possibly help me reshape questions for the next interview or focus group. I followed the same procedures with the each interview.

When coding the transcripts, I read and re-read the content line by line to interpret significant themes and/or categories that arose from the transcriptions. Many qualitative researchers label this method as open coding (Bloomberg & Volpe, 2012). As I read the transcripts I looked at all major and minor stories that related to my research questions to make sense of the meanings behind the participants' messages. I recorded the themes on notecards and then reexamined each notecard to search for additional patterns or categories that were prominent. I coded the data using as many categories as possible to identify patterns and themes from the participants' perspectives and language. As Creswell (2013) suggests, I used "categorical aggregation to establish themes or patterns" (p. 190). Then I took a break from the analysis process for a few days to organize my thoughts before starting the final process of deciding prevalent themes. This procedure occurred after each observation, interview and focus group. I also supplemented the data by analyzing classroom documents to search for additional themes. After all the data was collected, I merged the data cards for each case to compare the discourse across data sources to determine the significant themes for each case before writing commentaries.

After doing "within case analysis" for each participant, I also conducted a cross-case analysis. Cross-case analysis is when each individual case is compared with other cases in the study; the researcher analyzes the similarities, differences and themes across cases (Thomas, 2011). According to Khan and VanWynserghe (2008) "Cross-case analysis is a research method that facilitates the comparison of commonalities and differences in the event, activities, and processes that are the units of analysis in case studies" (para. 1). This study consisted of four cases and all of the cases were compared with one another to analyze the similar and diverse

themes that arose in the data. I compared and contrasted these stories to interpret and understand the cases both individually and wholly. Creswell (2013) points out, “often the inquirer purposefully selects multiple cases to show different perspectives in the issue” (p. 99). If there were different perspectives among teachers, then cross-case analysis will demonstrate it.

As I analyzed the data, I tried to be conscious of my own prejudices so that I interpreted and understood the data and how each component relates to the whole. My understandings stem from my personal experiences in working with teachers in a 1:1 classroom environment and I need to foreground participants’ experiences. Heidegger considers the interaction between the part and the whole to be the hermeneutic “circle of understanding” (Heidegger, 1976). To understand the whole, the researcher should start by interpreting the dialectic fragments of the experience, and to understand those pieces more in-depth, the researcher must understand the whole. This means that existence and understanding always revolves around or relates to the components or details of something else. By using a hermeneutic lens to interpret the data, I examined each component as it related to the whole and vice versa.

### **Ethical Considerations**

As a qualitative researcher, I constantly questioned my bias, methods, research question, and my research participants. As required by the IRB and the Responsible Conduct of Research recommendations, I was ethical, accurate, and honest when orchestrating and writing this research project. I received permission from the IRB to conduct my research study (see Appendix V), and obtained informed consent from both school districts and had each participant sign an individual consent form (see Appendix V). A participant information sheet was also given to each participant that contained information regarding the purpose of the study, what participants could expect, and their confidentiality rights (see Appendix VII).

Confidentiality is a concern when conducting qualitative research. To ensure confidentiality, I protected the participants' identities and school sites by using pseudonyms when conducting and reporting my study. I also had my participants' member check the data to ensure accuracy through the research process.

### **Trustworthiness of the Study**

In qualitative research, validity is a matter of trustworthiness. Zohrabi (2013) points out that "It is up to the researchers and research participants who attempt to build validity into different phases of the research from data collection through to data analysis and interpretation" (p. 258). Throughout the study, I used the following strategies to strengthen its trustworthiness: triangulation, member check, audit trail, and revealing the researcher's personal assumptions (Guba & Lincoln, 1989). As mentioned, this study collected data through observations, interviews, focus groups, and document analysis. Member checking is the process which participants check the transcripts for accuracy and plausibility. According to Creswell (2014) in case study research "Member checking is used to determine the accuracy of the qualitative findings through taking the final report or specific descriptions or themes back to participants to determine whether they feel that they are accurate" (p. 201). I asked participants to member check the interview transcriptions. An audit trail is a strategy that involves rich description of the data collection procedures and how decisions and categories were derived during data analysis. As Bloomberg and Volpe (2012) point out "describing decisions taken for arriving at certain judgments -that is, an audit trail- during data analysis enhance transparency, and is an indication of a good methodological practice" (p. 109). Finally, the researcher's experiences, biases, and assumptions need to be revealed from the outset of the study because this enables readers to understand how the data could have been interpreted (Merriam, 1995). I am aware of my biases and the lens through which I see the 1:1 program within my school district, but as a researcher my goal was to explore teachers' perspectives in other school districts to gain insight and awareness

of the events and elements that impact this phenomenon. The researcher should collect, analyze, and interpret data while being as neutral and open-minded as possible. I kept a researcher journal to describe and reflect my own assumptions throughout the research process.

### **Summary**

This chapter presented the methodology of my study. This study used a hermeneutic lens to better understand the unique and individual teacher's perspective in a 1:1 classroom environment. Ethical considerations were taken into consideration when selecting participants and collecting data for this case study. Data collection included observation, interviews, focus group discussion, and data analysis. A cross-case analysis was also brought into play to determine the similarities and differences between and across cases.

## CHAPTER IV

### Within Case Analysis

The intentions of this study were to investigate teacher perspectives in a 1:1 classroom environment, particularly regarding how teachers' pedagogy and curriculum design may have changed due to teachers and students having individual access to computer technology everyday while at school and home. In the next two chapters, the teacher perspectives are analyzed using qualitative case study design, with this chapter focusing on individual cases and the next chapter on cross-case analysis. This chapter begins with an overview of the data analysis process. I then describe my preliminary analysis of the participants in a holistic picture. Next, I introduce the interpretations of teacher perspectives that were derived from the observations, interviews, and documents. The analysis of the focus group is included in the next chapter.

### **Process/Procedure**

Once the data was collected, the task of categorizing data into smaller, more manageable sections for analyzing began. According to Creswell (2014), "Data analyzing involves segmenting and taking apart the data (like peeling back layers of an onion) as well as putting it back together" (p.195). The data was organized, sorted, and hand coded multiple times as the data analysis process started and intertwined with data collection. The first step involved transcribing the interviews and typing the field notes from the observations. Bloomberg and Volpe (2012)



explain that the researcher needs to “transcribe the interviews as soon as possible, and assign identification codes to each transcript” (p. 136). The interviews were transcribed verbatim. A copy of each transcription was given to each participant for review, and each participant was given the opportunity to make additional comments or ask questions. During this step, pseudonyms were assigned to each participant. Each transcription was thoroughly read and double-checked against the audio recording to ensure accuracy. The second step included reading through the data to obtain a general sense of the information while being mindful of the research question. Creswell (2014) explains the researcher needs to be mindful of “What general ideas are the participants saying? What is the tone of these ideas? What is the impression of the overall depth, credibility, and use of the information?” (p. 197). Throughout this procedure, these questions were used while reading the data.

The last step was the coding process. During this crucial course of action the data was organized by underlining the text and writing themes or categories in the margins. This involved highlighting pieces of the texts, underlining sections, and writing down thoughts or reflections in the margins. This process was done multiple times to reveal codes that were expected, or codes that were surprising or unanticipated, and to search for patterns among categories. Bloomberg and Volpe (2012) explain, “repetition is the most common theme recognition technique” (p.139). While coding the data, iteration of the text was used to identify profound themes within and across transcripts. Iteration of the text was used for uncovering individual themes and cross-case analysis. Once the themes were identified, they were categorized accordingly.

The theoretical perspective for this study was driven by hermeneutics. Therefore my participants’ experiences and language were interrelated representing the hermeneutics circle; conversations, observations, and document analysis led to the understanding and interpretation of teacher perspectives and their experiences teaching in a 1:1 classroom environment.

### **Mark: A Teacher of Interpretation**

Confident and secure, Mark had the composure of someone who felt he was going in the right direction with his curriculum and teaching. He was in his mid-forties and had taught long enough to know the content and how to manage the classroom. This was his first year at Eastland High; he had previously worked in another school with the 1:1 program. In his previous district he was a teacher in a 1:1 classroom for five years and then worked as an assistant principal. Mark had planned to go into administration for the rest of his educational career, but he missed the classroom and the connections he had with students, so he opted to go back into the classroom. When he went into administration he gave most of his teaching tools and resources to a fellow colleague; therefore, he was in the process of rebuilding his curriculum materials at Eastland High.

During my first observation, as I walked into the building where Mark's classroom was located, I noticed that the hallways were full of posters representing a positive school climate and pride. The atmosphere was uplifting and encouraging. Mark's classroom had brown walls and student desks were arranged in the traditional design, student desks were in rows and his desk was off to the side. He taught 10<sup>th</sup> grade algebra, so the majority of the students had previously taken the class and didn't pass. Algebra is typically taught to 8<sup>th</sup> or 9<sup>th</sup> graders, and students have to pass it in order to graduate high school. The class I observed contained thirteen male and five female students, of whom most were minorities, primarily Burmese or Hispanic, or were on an Individualized Education Program (IEP) due to learning disabilities. Mark considered his students to be "at-risk" and thought their confidence had been affected by previous educational experiences. According to Hermann (2009) all students experience some form of labeling and teachers normally label them according to their achievement or social level. Even though labeling is not recommended by many educational experts, many teachers like Mark informally categorize students based on their ability and ethnicity.

I am aware that many educators, doctors, and professionals in general label the disadvantaged as “at-risk,” but I would prefer to name them disadvantaged because of the negative overtone of “at-risk.” Since this particular class had students who spoke English as their second language or had learning disabilities Mark categorized them as “at-risk.” As Harris (2016) argued, “Students with any disability often face additional factors that impact the likelihood of completing school” (p. xiii). Mark later explained in an interview, “That is the struggle for me; not all of them are like that, but many have struggled for so long.” Some students do not care anymore. He felt that the population of kids in his class were hard to reach because most had fallen through the academic cracks. Mark wanted his students to graduate and be successful.

Mark was confident in his teaching abilities and was in the process of designing his curriculum for current groups of students so that next year he could teach students using multiple pedagogical approaches. He explained in our first interview that, “Being in a 1:1 has helped me recognize that the interpretation of teaching as opposed to practice is what I search for.” This means that Mark realizes unexpected and unplanned events will happen in his classroom every day, so he has to interpret those nuances to ensure he is doing his best to teach effectively. Mark searches for meanings behind his pedagogy and curriculum, so that his lessons can impact student learning. Stahnke, Schueler, and Roesken-Winter (2016) argue “Teachers’ knowledge and belief facets predict their situation which in turn correlate with aspects close to instructional practice” (p. 1). Mark used his previous teaching experiences to interpret the nuances in his classroom, and these interpretations possibly affected curriculum and pedagogy.

Merriam-Webster dictionary defines tact as “having a keen sense of what to do or say in order to maintain good relations.” van Manen (2008) describes a tactful teacher as one who can “interpret inner thoughts, understandings, feelings, and desires of children from indirect clues. Pedagogical tact is having the ability to interpret the psychological and social significances” (p. 16). As witnessed in the observations of Mark’s interactions with students and his responses and comments during our interviews, to a certain degree I think Mark was a tactful teacher. Mark

relied on students' facial expressions and their breathing to determine if they were frustrated or confused about a lesson. If a student sighed, that was always an indicator to Mark that he needed to slow down. Mark patted the student on the back, and gave them reassurance that they would get through the assignment together. Mark also relayed that the students who became disruptive in his class acted out because they were overwhelmed by the lesson or assignment. Mark always guided those students back to the lesson and helped them the best that he could. I also noticed Mark was always soft-spoken when dealing with individual students, and I thought his voice added to the calming effect of his demeanor. Mark always showed respect toward his students, tried his best to give them every opportunity to succeed, opened his classroom to students' families to establish trust and communication, and changed his plans accordingly if students were struggling with the concepts or task at hand. He also responded to students' frustration with compassion because he knew they were discouraged from past experiences. He assured them that they were capable, and that he would help them achieve success. Mark did not do this by dumbing down the curriculum, but by making it relevant to their experiences. Mark also praised his students when appropriate and responded to them with humor and light-heartedness. It was obvious that he truly cared for his students and wanted them to be successful.

Mark realized that the 1:1 program had the power to transform his classroom, and he continually interpreted the happenings in his classroom to meet the educational needs of his students. Next, I will discuss the three major themes that were portrayed in his perspectives on pedagogy, curriculum, and student learning in a 1:1 program.

### **Escaping the Sage on the Stage**

When watching Mark explain math concepts, I found that he definitely had a knack for delivering the content in a unique way. It seemed that Mark could take a complicated math problem and simplify it so that most students could comprehend the subject. He would also grab the students' attention by twisting math concepts with humor. I witnessed this during

observations and when viewing his website. It reminded me of a teacher I had in high school who changed my life because his lectures and the way he explained the concepts of math finally resonated with me, and I was able to excel.

### *Direct Instruction in Class and Online*

Mark used technology for his math curriculum with a direct instructional approach. Even though Mark planned to eventually change his pedagogy to include more student-centered teaching practices, currently he had to build his curriculum for the transformation to happen. In an interview he explained, “Once that [curriculum design] is taken care of, I can develop more hands-on learning types of activities, spend more individual time with students, and get involved with them in learning instead of lecturing because it is boring.” Mark also understood that change takes time and “that is the price of progress.”

Currently Mark was in the midst of fine-tuning his teaching world, which is algebra. After an observation, he remarked that “The challenge for me is communicating with them about math as visually as possible and also with the language, so for me it is more of a direct instruction avenue as opposed to the whole creative way.” Many of his students told him that the math concepts had never been explained to them the way he explained them, and no other teacher had ever taught them math the way he did. The feedback he received from students made him feel like he was making a difference. For example he often heard “Wow, that is easy! No other teacher has taught me this way!” Mark proclaimed that it made him feel good because sometimes he worried that he was not reaching them because math is a different language.

There are a lot of terms that students don’t use on a day-to-day basis, so he taught them with the most basic language. For instance, Mark used common language with students when describing math concepts and terms. He also showed them the mechanics of why a variable behaves a particular way when solving an equation. Mark explained these concepts several times

in each video he created for his website. When Mark explained the concepts in the classroom, he asked for any questions or clarifications before moving on to the next concept. He broke all the components of solving algebraic equations into steps for simplification. Mark labeled these videos as demonstrations. During both observations, I watched Mark teach students in this manner. Even though I have not had math classes for 35 years, after watching Mark's explanation I thought I could complete that particular day's lesson. After his instruction during the observations, the class worked out several problems together. During the assignment they were also allowed to help one another as needed. I saw some students referring back to the website that hosted his curriculum.

#### *Teaching With an Online Component*

Mark also believed that having technology in the classroom had been motivational and encouraged him to 'work smarter' to stay on top of things. Throughout the year, he video recorded his lessons each day and posted them on his website for students to view at a later time when doing assignments. The website that hosted his curriculum is [wiseracademy.com](http://wiseracademy.com). As I observed and analyzed Mark's lectures, in class and online, and the classroom resources, I realized that he provided a more personalized learning experience for his students than direct instruction usually allows. Because he had created an online teaching environment, students could watch Mark's videos while completing assignments, and he also listed several online games and/or resources to reinforce math concepts on Canvas. He also encouraged communication during times when students were not in school for additional support. He wanted them to have success in his classroom because that was essential to student buy-in.

Zhu, Wang, Cai, and Engels (2013) argue that many students feel frustrated in some classes and lose interest in the subject due to the lack of interaction between teachers and students. When homework and/or explanations are online it makes up for the lack of interaction,

which in turn promotes student success because more students complete assignments and are able participate in class. Young (2013) also points out that textbook companies no longer have control of the teaching process, and teachers are creating their own teaching environment. After my observations and interviews, I had come to an understanding that Mark performed an interpretive act by interacting with student questions, grades, and behaviors to teach his class accordingly. Such an interpretative act includes multiple modes of teaching both in class and online. I observed Mark answering students' questions based on the language barriers he had with his students. Mark also informed me that during evenings he often responded to online posts from students and parents. In addition, Mark had a couple of students in his class who were disruptive and his demeanor with those students was respectful but firm. During the first classroom observation, he informed me that it was a daily battle with one particular student, but thought he was making progress in getting him to behave and to pay attention.

Mark's goal was to get his entire curriculum on his website, so that the next year he could change his teaching style in class by having students collaborate more and work on creative projects. McKernan (2007) explains, "Good and wise decisions rest on the judgments of teachers and the situational understandings they exhibit" (p. 163). Mark was situated in the 1:1 program and used the websites effectively, but he also understood that providing curriculum on the Internet was not enough and that teaching in a 1:1 program should go beyond direct instruction. He made a conscious decision to focus on curriculum design the first year and then changing pedagogy after the course website was built.

As I dug deeper into analysis, I uncovered that Mark's desire was not only to teach students, but also to serve as a catalyst for change in the 1:1 program. Mark knew other veteran teachers were teaching the same way they had been for decades. Mark wanted to help fellow teachers move out of their comfort zone because the Internet offered many useful resources that

helped students. With the advances in technology, students are able to see and manipulate the concepts of math.

Mark was an interpretative teacher as well as a reflective educator. van Manen (2008) argues, “Reflective educators tend to be pedagogically sensitive to their students and to what and how they teach” (p. 6). This notion is not only a significant tool for pedagogy, but also as a goal for education. Mark was conscious that improvements to his teaching could be accomplished through the 1:1 program, and was making an effort to create an atmosphere conducive to student learning.

#### *Limitations of Not Having Same Device as Students*

Mark also struggled because he was unfamiliar with the students’ laptop, which was a Chromebook. He did not know what kind of applications were on their devices and what the laptop’s capabilities were. During our interview he pointed out, “I am not familiar with the actual technology, the Chromebook, the hardware. I don’t know what capabilities are on that device. I know they can watch the information that I present to them.” I was surprised that Eastland High did not invest in the same technology for their teachers as they do for their students. I assumed that was required for a 1:1 program because not having the same technology could present a challenge to teachers.

Mark’s past experience had shown him how teaching could be transformed by technology, although this year he has just lectured, and had students check the website, complete assignments, and participate in reinforcement activities. He relayed that at his previous school district students had ownership of their learning, and he would like to reach that point with his current students next year. At his previous school Mark had the same technological device as his students, so he was aware of that laptop’s software and capabilities. In an interview he explained, “I would see kids in the hallways filming videos of what they were doing, even hands-on stuff,



they were filming themselves.” Mark felt that this type of learning was beneficial for students and helped them prepare for the workforce or a college.

He was aware that this has been a challenge during the current school year because he was not on the same page as the students in terms of using the device. Working in his previous school district, he was more familiar with the device used by students. In an interview he explained,

Within the 1:1 [program] in particular when I felt like it was really clicking students were producing things of their own with their laptop, recording themselves teaching a lesson, something that takes them to the next level. Teaching a lesson at the highest level also documents the fact that you have done it.

Mark explained that in his previous experience of teaching in a 1:1 program, students often led the lectures with their own creations or demonstration of a math concept. Mark had not yet been able to use student-driven teaching at Eastland High but was in the process of getting to that point so that he could use a variety of teaching styles in his class.

From Mark’s experiences in a 1:1 classroom environment, we can see that he needed some time to establish his curriculum before he could fully transform his pedagogy. He also needed to familiarize himself with Google Chromebooks, so that he had an awareness of how students could demonstrate what they have learned. Mark was aware that his pedagogical approach needed to change in a 1:1 classroom environment to include student-centered teaching. As mentioned by Branch (2014) student-centered classroom environments enable 21<sup>st</sup> century students to become lifelong learners, creative thinkers, innovative problem solvers, and collaborators with the assistance of new technologies. When Mark taught at his previous district, he experienced the positive outcomes of having students work in groups to make presentations for a classroom assignment. Often those students would end up teaching the class a math lesson.

Mark was proud of his online videos and was optimistic that his online demonstrations could help students learn, but he also wanted students to take ownership of their learning in his classroom. He thought that when students created and presented different types of productions, they would retain the information. Mark was also aware that in many businesses and colleges students would be required to use technology to solve problems while working alone or in a team setting. He aspired to intertwine direct instruction with student-driven lessons in his classroom the next academic year.

### **Curriculum Design Beyond Textbooks**

#### *Making Math Concepts Understandable*

When discussing curriculum Mark explained that he was not a fan of textbooks because they always seemed to complicate the concepts and equations, and that was why he designed his curriculum without relying on textbooks. He used textbooks only for the problems that gave students practice but the explanations, videos, and demonstrations were all his own design. He explained,

I may show them examples of different types of problems but my whole goal is to make algebra easier as opposed to, as I feel most textbooks do, as challenging as possible almost as if it is a ‘gotcha’ situation to the student. I don’t think [using a textbook] is a very good way to teach, especially since I teach lower level students.

Mark felt like technology had transformed the way educators could teach math and thought it was going to be a challenge to get other teachers to change the traditional way they had always taught and the way textbook companies had designed curriculum. During one interview he said, “People who make math exams want to make it as tricky as possible and take pride in these types of things. I don’t see that as beneficial. We aren’t here to trick kids.” He thought those kinds of particulars were what turned students off. Mark tried to use games and fun strategies of

moving numbers and math signs in his curriculum. He also made use of websites where students not only played games, but also had access to virtual online math manipulatives that were tangible to reinforce the concepts. Mark felt that when students could actually see the movement of numbers when learning math it promotes student understanding. He explained in our interview, “The interactive things that are out there are a benefit because kids like to play games and stuff, and it makes it more enjoyable and with math it is a difference maker. In a 1:1, having access to a computer is very beneficial.” According to Maschman (2014), when designing curriculum in a 1:1 program, teachers should not only look at not only the textbook but also the capabilities of the laptop program. Mark understood that technology had enriched multiple layers of his curriculum, and he tried to incorporate these layers into his lessons and demonstrations. He did not try to lower the level of difficulty of his curriculum, but wanted to make the language more comprehensible for his students. Mark also strived to make math relevant to his students by explaining it so that it related to their experiences about real life. For example, when teaching a math concept he would associate it with a tangible object from the real world because people have to use math when designing a structure.

Mark believed that effective teachers needed to give students as many opportunities for success as possible, and the goal should be to get them hooked because when students realize they can do it and it isn't as hard as they thought, they will try. He did not want to stress out his students by making his math curriculum too lofty. Briggerman (2016) points out that “Algebra failure remains widespread among high school students and [they] report high anxiety with math more often than any other subject. Students often joke about their lack of math proficiency and appear unaware of its negative effects on their accomplishments” (p. 3). In an interview Mark explained, “I want them to understand the mechanics of the basics, how those mechanics are used, and in what circumstances they are used.” Mark designed his curriculum by demonstrating how essential algebraic concepts were used in the real world. He felt that teaching in a 1:1

program had enabled him to design his curriculum by working out of the box because he had an abundant amount of information at his fingertips. His experiences in a 1:1 program had helped him see that he had a bigger platform from which to pull information and use innovative solutions for problems. Cox (2014) explains that curriculum in a 1:1 program can go beyond online lectures and consists of web-based educational and informational websites, online games and virtual tours, or collaborative tools that the Internet provides for optimal learning. Through the use of materials that Cox describes, Mark demonstrated how to work problems in different ways for reaching most of the students he had with diverse learning styles. He tried to simplify the concepts to spread knowledge. After an observation, he explained “I think I really do it for the whole learning and that is why I got into public education to spread knowledge.”

#### *Demonstrating Movement*

Another important aspect to Mark’s curriculum in a 1:1 classroom environment was having the ability to show students the movement and mechanics in math. He used a Smartboard to show students how they can take a term and move it across the equal sign to the other side. Mark explained in an interview,

Traditionally kids learn to put two things up as an equal sign in order to cancel something on both sides. You’re putting more on to take things away. They get lost in all that.

Whereas with technology, I can take this term and move it across the equal sign to the other side, and show them it just changes signs when I move the variable. So I am not explaining what is there and putting more on, but taking something off and working it out so that it solves the problem.

Throughout Mark’s teaching career he had noticed that students were not interested in math verbiage but in how math worked, and that was why he used demonstrations to show evidence that math problems can solve world issues, and help with the design or the construction of objects

that people use in daily life. Students could revisit math demonstrations away from school on their laptop to reinforce the message of his lesson. They could also email him any questions they might have at night or on the weekends and he could respond to questions the student might have before coming to school. Mark's curriculum was hosted on a website called wiseracademy.com. On this website students could view podcasts, or videos, of each math lesson, so that when they were working on assignments they always had access to the video for additional explanation. On wiseracademy Mark stood in front of a Smartboard and explained how particular math problems were completed. He also worked out problems by showing the movement of numbers or variables. Each math objective was divided into individual chapters for organization and easy access.

Even though Mark felt like he has started all over again in designing his curriculum, he thought that doing it for a second time would cause it to be better and be more organized. His perception of the experiences he has had from working in two different 1:1 schools has impacted his curriculum and teaching. His experiences made him realize how the 1:1 program can positively affect student learning because students had a plethora of knowledge anytime they opened their laptop. After an observation, Mark pointed out,

Without the 1:1 [program] I know my experiences would not have happened because it made me hustle knowing that I was dealing with students that had technology at their fingertips. I wanted to give them something they could interact with so we could keep going.

Mark's perceptions of a 1:1 classroom environment had influenced his curriculum in a positive way. As Stanhope and Corn (2014) point out, a positive teacher perception is vital to the success of a 1:1 program.

Mark assessed his curriculum through his students' successes. If students could master a math objective, he felt that component of his curriculum was complete. When students had difficulties with an assignment, he would change the language or the mechanics of his demonstrations until students understood how to complete the problems. Mark believed that curriculum assessment was a continuous act because a dedicated teacher always has to revise and question the content of their curriculum design.

After examining Mark's perspectives on curriculum design, I believe that he was aware of the many possibilities and capacities that technology could provide to enhance his curriculum. Mark was in the process of adding layers to his curriculum because his main goal was to promote student learning.

### **Trust Builds Student Confidence**

#### *Building Relationships With Parents*

When Mark talked about his class, his students, and his students' families, his face lit up and he often leaned forward using gestures to demonstrate his responses. It was obvious that he truly cared for his students and that their learning was what motivated him to be the best teacher he could possibly be. He expressed the importance of having his students' parents involved in their learning and felt they could be impacted by his efforts to reach out to them. He encouraged parents to contact him anytime they had a question or concern. He was optimistic that parents would look at his website when they were helping their children. He told me that technology has reduced some of the pressure placed on him because it made it easier to communicate and collaborate with parents. Mark explained in an interview, "It is just all those ways of interacting and communicating with students and parents. It [the 1:1 program] has taken a lot of pressure off me as far as responsibility."

He further explained that technology allowed him to put all his lessons, videos, websites, and communication with students and parents on one platform. In an interview Mark said, “I think with a 1:1 situation, I am able to lay out my entire class, my entire curriculum, with videoing and things like that, and use the different programs that the district provides, like Canvas, to put everything out there.” Mark believed that parental contact helped build relationships with students and those relationships existed because of trust and respect. During an interview Mark informed me, “I think having the parental component is crucial to actually making a difference.” Stolzhus (2017) argues that parent-teacher relationships that are built on trust and support play a big role in the success of the student. Mark strived to have a trusting relationship with parents because he felt that it helped build trusting relationships with his students. Mark believed parental participation built the foundation for an effective classroom environment because it helped create an atmosphere that encouraged learning, and led to the communication between the classroom and home that could influence reasonable expectations for the child’s achievement. When parents are involved at school it generates a partnership between school and home.

Mark thought that the 1:1 program also helped students’ parents understand the concepts they were covering in class because they had access to his demonstrations and videos. Before Mark starting working in a 1:1 program, students and parents did not have access to his curriculum and teaching online. In an interview Mark explained his experiences,

[Without the 1:1 program] they couldn’t do it in the classroom or at home unless they had a computer. Now they have more access to help, and not only do they have access to help, but their parents have that access to help, too. My goal is to have the best educational atmosphere where not only the kids are engaged, but the parents are engaged with that success, particularly with math.

Mark believed the learning environment in a 1:1 program allowed him to show students and parents that math is not as difficult as they think because he has the ability to demonstrate concepts with different perspectives, learning styles, and ways of teaching. Parents having access to continuous communication, classroom curriculum, grades, and absences helped them to partner with Mark to help their child succeed.

### *Trusting Relationships With Students*

Mark encouraged his students to contact him when at home if they had any questions or concerns. He said that students could email him or send a video asking a question while working on a homework assignment. Students having access to laptops gave them more of an opportunity for success because it helped them at home when he was not available to interact with them. After an interview Mark explained,

I think it is always nice for students to have access to the laptop no matter where they are, and it helps those without a lot at home. It evens out the playing field because it gives them the opportunity to have access to information and to be part of the learning.

All Mark's curriculum, demonstrations, and math examples were online for students to refer back to when completing assignments. He also put links on the website that included interactive components such as games because he believed that this was an added benefit of having technology, and it made it more enjoyable for his students.

Mark measured his teaching success through the success of his students. He believed that when students had access to a 1:1 program it could be beneficial and was a game changer. Mark's confidence as a teacher and effective mentor were the building blocks that led to students' trust. Mark was aware that through technology he could impact and encourage student learning. His pedagogy and curriculum design was geared toward an encouraging learning environment where students trusted him, and demonstrated their learning. According to Romero (2015) students' trust



of their teacher is built through benevolence, competence, and integrity. Mark made sure that he demonstrated expertise in math, he taught them with the best of intentions, and students were aware that he had their best interests in mind.

Mark felt students' past deficiencies impacted them when they came into his classroom, and made efforts to break down those barriers so that all his students could take pride in learning and had the skills needed to be successful for future endeavors. He thought students needed to feel secure and confident when tackling different concepts, so he guided them throughout the entire process. This had empowered his students because they felt not only encouraged, but secure with the learning environment in Mark's class. According to Kumianingsih, Yuniarti, and Kim (2012), students trust their teachers when teachers have the ability to transfer knowledge and are able to guide students as they complete their work. Mark believed he was building relationships and trust in his classroom by doing what he could to ensure students understood the math concepts and were successful in his classroom. Through the 1:1 program, Mark felt he was able to provide students with the tools and resources they needed to be successful at algebra. He relayed that because students trusted him to do his best as a teacher, most of the time they did their best in his class. This also reinforces why I consider Mark to be a tactful teacher.

A trusting relationship was built between Mark and his students because he encouraged parent involvement, modified his teaching and curriculum as needed, and advocated for communication. Mark built relationships with his students and their parents through his attentive classroom atmosphere, both online and face-to-face, and his open line of communication, which fostered trust and student confidence.

### **Stacy: An Integrative Teacher**

Stacy, who is in her mid-twenties, had only taught for three years, but she had the determination and mindset of a master teacher. She was confident in her ability to educate

students in a 1:1 program because technology had played a role in her life since she was a child.

Stacy explained,

I am pretty literate with technology and I just have always been. When I got to college you pretty much had to submit things on Blackboard [online course platform] and I worked in the writing

center, so that exposure taught me a lot with technology and personal interest.

Stacy was outgoing and had a relaxed disposition. She taught 10<sup>th</sup> grade English at Eastland High to on-level students and pre-AP (advanced placement) classes. During her first year of teaching at Eastland High, the 1:1 program was confined to only the freshman class, and then the next year it was implemented throughout the school. She had taught in a 1:1 program for two years. However, she had always attempted to use as much technology as she could in her student teaching and prior to her second year in a 1:1 program. She said it was very difficult, and she offered many of the assignments done through technology as extra credit because not every student had access to a computer.

The English department was housed in a building in the back of the school campus, next to the fine arts department. As I approached the school for one of the observations, I noticed park benches and waterfalls in a garden area. I noticed several of these small parks while walking on the sidewalk to the building. As I entered, there was chatter of students who were walking in the halls transitioning from class. Students carried backpacks and most had their phones in their hands. I wondered about the policies regarding backpacks and cellphones. In one of our later discussions I asked Stacy about Eastland High's policy on student cell phones, and she informed me that there was not one. The district lets teachers enforced cell phone use because they got tired of fighting that battle with students.

Stacy's class had tables instead of desks and there were about four to six students facing one another at each table. Nodolny (2008) points out that in 1:1 programs students have the ability to work facing one another to collaborate and discuss the lesson at hand because the teacher no longer had to stand in front of the classroom lecturing. Stacy's classroom design demonstrated such a collaborative setting. In traditional classrooms teachers often had total control of students because students sat in rows with the teacher situated at the front of the classroom. This particular class, which I observed twice, had approximately twenty females and six males from different ethnicities, but the majority of the students appeared to be white. Neither Stacy nor her students acknowledged my presence during either observation. I thought that was interesting because my presence didn't interfere with the classroom procedures. I wondered if her classes had had a lot of visitors during the year. I noticed that she had posters around the class that reviewed English concepts as well as posters that displayed motivational quotes.

My first positive impressions were reinforced by the interview transcriptions, observation notes, and classroom documents. Three prominent themes emerged which I will discuss next.

### **Technology and Teaching Organically Connected**

#### *Giving Students More Choice*

I perceived Stacy as a young teacher who not only wanted to have a good rapport with her students, but also one who strived to provide the best learning environment as possible for students. When I asked Stacy how the 1:1 program had influenced her pedagogy, she replied that technology has molded her pedagogy because she was new to teaching. Unlike the other participants who were digital immigrants, Stacy was a digital native. Digital immigrants were born before the widespread of technology, and digital natives are people who have grown up with the Internet, technology advancements, and are usually digitally literate (Prensky, 2001). In an interview she explained, "I didn't have a previous teaching style to really be in conflict with, so

technology has shaped it from the beginning. I guess another fact that I like it is that they do better because they have more choice.” She felt that without the 1:1 program she would not be able to offer students more choices in the classroom. As discussed in the literature, using a student-driven approach to teaching is fundamental in a 1:1 program so that students have the opportunity to own their learning (Branch, 2014; Langham, 2014; Saavedra & Opfer, 2012; Spector, 2012). Stacy saw this as a huge benefit to student engagement and was confident that her students were doing better because they had more choices on curriculum content and the production of classroom assignments.

There was a shared power relationship in Stacy’s classroom because her students had a voice in how they learned the objectives. In one conversation, Stacy explained,

I think the Chromebooks have helped student learning because it gives them the freedom for choice, which is more engaging, and also it provides differentiation and scaffolding. I can offer these specific students this video and this specific video to others if they are not ready for the more advanced, the same choice with texts. I can assign this PDF or articles that are more at their speed.

Therefore, Stacy did not have complete control but offered different choices to students. She and her students made decisions about what the assignment was, and how they were going to demonstrate what they learned, and as a result classroom choice was a mutual decision. Stacy mentioned that during class she would briefly explain a topic or objective they would be covering, and then she expected students to find a video that related to that topic. For example, instead of telling her class they were going to watch a TedTalk video, she had them go and find one that they liked or wanted to watch. She thought this enabled them to be more interested or engaged in the class assignment. Stacy also believed that her teaching approach helped students think with higher-level thinking skills because students had to think about how the title or

description of the video fit the topic. TedTalks is an online educational resource devoted to spreading ideas that could alter society's views on important topics in every discipline and culture. As I looked at the content of what TedTalks offers, I thought this was an excellent educational material. The speakers were dynamic and had passion about the subjects they were presenting on.

Stacy also gave students a choice when completing assignments. They could make slideshows, videos, movies, images, or use an application, or other type of media using technology to complete assignments. She explained that students were not afraid of new technologies because they have been immersed in a technological environment since they were born. During one of my classroom observations, students presented videos they had created. Students were in groups and they used various multi-media digital programs to create their slideshows and videos. These effects included slow motion, stop motion, cartoon characters, doodling effects, and app smashing, to name a few. All groups also introduced a humorous aspect for entertainment. The students who presented and the students who watched were very enthusiastic and supportive of one another. When the presentations were over, the entire class applauded and Stacy praised their efforts and work. It was obvious that these students supported one another and the atmosphere was dynamic. I was amazed at their creativity. After class was over, Stacy relayed that I saw

a good spectrum of kids and their technology abilities, some were just sitting in a closet videoing themselves singing. It [the student creations] was using technology, was it using it as well as the girl that created the drawing and turned that [video] into a motion, stop motion video with lyrics? it is not the same level of technology, but those students grew and they still did it.

Students also shared how they created their videos with other students, and then those students went to their Chromebooks or phones to interact with the app or website. It was a very enriching and enlightening experience for me because Stacy's students found different ways to work with technology in order to create their projects, and they were proud of their presentations. I sensed Stacy also provided a flexible framework that let students experiment and learn from each other to create their own blend in their group.

Stacy also shared an experience she had with a student who had a tendency not to turn in writing assignments. In an interview she explained,

One student wanted to create a comic strip and I asked him how he was going to do that. He told me that in Google Doc or Slide there was a free drawing app. This was from a student who, if it were a writing assignment, might not turn it in, but because I told him he could use the comic strip app, he turned in the most beautiful, hilarious, funny presentation.

Stacy said she believed students would turn in a presentation more consistently if the assignment were not completed using paper/pen. I believe many students are bored and unmotivated because of the way they are being taught. Some students who are told to read textbooks, memorize facts, and listen to lectures do not pay attention, but today's students are often motivated by technology or certain types of media. That is because many students are born into a digital environment, which means they are digital natives, and technology relates to their world and experiences. I believe teachers who use technology and connect it to learning can increase student engagement by allowing them to choose digital forms of their own preference in their learning. This was the case in Stacy's class.

*Establishing Student Trust for Free Exploration in the Classroom*

Stacy also relayed that students were willing to venture out to try new and innovative ways to present what they had learned. She said students were willing to take a chance with her, too. For instance, students had seen occasions when she didn't share a setting correctly or some other technical situations arose. They knew if something did not work exactly as planned it was okay because her relationship with her students was flexible, and they have all learned to go with the flow because technology sometimes contains glitches or unplanned consequences. There we can see the transformation of pedagogical relationships because Stacy and her students felt comfortable enough to point out one another's errors and mishaps. Stacy also trusted her students to make wise and sensible decisions when completing their assignments, so her students tried to meet Stacy's expectations.

This demonstrates that trust in a classroom works both ways, both from the teacher and the students. Developing students' trust is key to learning because if students do not trust their teacher they will not be fully engaged in class. Too much risk is involved when students feel vulnerable, and teachers often generate an atmosphere in which students have to either adapt to the teacher's way of teaching or fail. Stacy did not teach her students to obey, but taught them to explore. When teachers build pedagogical relationships with their students and earn their trust by showing them respect in the form of challenging, rewarding, and meaningful learning activities that are worth students' time and effort they become engaged and develop into independent learners.

### *Student-Driven Pedagogy*

Stacy also explained to me she does very little lecturing because all her assignments are on Canvas and students can obtain that information on their own. After an observation, Stacy explained that when I observed her going through the slideshow and showcasing the components of MLA writing, it was probably the most lecturing she would do on any given day. She only did

this to make sure students did not skim the content. She often explained to her students that she created a slideshow of important concepts and directions on completing the assignment, but students had to decide how they were going to complete it. At that point she expected students to work on their own or in groups while she walked around to facilitate discussions and questions about certain concepts they are covering in class. Cavanaugh (2007) discussed that in most successful 1:1 programs the role of the teacher shifts from the authority to the role of a facilitator where students construct their own knowledge rather than repeating what the teacher tells them. Stacy believed that less lecturing or direct instruction had given her the ability to work with students on an individual level and had built relationships within her class. During an interview Stacy pointed out,

I feel like I can know more students better because the 1:1 environment has allowed me to spend more time with them. I can tell what this person's weaknesses and strengths are. Now I can give more feedback in the creation process as they go and [make it] more individualized, too.

She further explained that she could only give general feedback in a traditional classroom but when she taught in a 1:1 classroom it gave her the opportunity to give more individualized instruction. Mitsis and Foley (2009) point out that

A student-driven learning environment is a less structured classroom where students take control of their learning. The role of the teacher is seen to be a channel to help students establish and enforce rules, respond to work in an encouraging manner, and to encourage students to summarize, review, and conclude on lesson objectives. (p. 243)

Stacy's student-driven pedagogical approach situated students at the center of their own learning. Students had a voice in why, what, and how their learning experiences would take shape:



- “Why” involved the relevance of the assignments and that students understood the value of the lesson.
- “What” encompassed the students’ interest, which drove the content including concepts or skills.
- “How” surrounded the manner in which the students would demonstrate what task they learned.

#### *Encouraging Peer Collaboration Among Students*

Another aspect to Stacy’s pedagogy that depicted the power shift in her classroom was through students’ collaboration. She often encouraged students to give feedback to one another and to get in groups and teach the class a particular topic. Stacy felt that collaboration prepared them to work in teams and having these skills would benefit them in a work environment. Stevens (2014) argued that collaboration is necessary in a 1:1 program to prepare students for not only college but also the workforce and our globalized economy. Stacy strived for this type of communication between and among her students because she thought the classroom climate was very important to their success. When analyzing the relationships in her class, I often found myself comparing these elements to a family unit, one that shares mutual responsibilities. Her classroom was a family in which members leaned on one another for support and reassurance. Stacy’s teaching strategies enabled a shift in relationships because students had some control on how they were going to complete assignments and often collaborated with their peers.

Stacy was very comfortable with the 1:1 program because she had been exposed to technology from an early age. I felt Stacy relied on student-driven pedagogies because technology had molded her teaching strategies. Szeto, Cheng and Hong (2016) explain that young teachers use emergent technologies because they grew up using them in their own lives during school and for personal use. Technology and teaching become organically connected because digital natives often form their pedagogies through technology. Stacy’s use of technology demonstrated that she

was comfortable teaching in a 1:1 program. Technology was interconnected to her daily life, both professionally and personally. In Stacy's case, pedagogy was less about changing traditional teaching and more about intertwining her teaching style in a 1:1 program with her digital way of life.

## **Enriched Curriculum With Multiple Layers**

### *Increasing Curriculum Depth*

Stacy constantly researched curriculum materials that would hold students' interest and keep them engaged. She added layers to her content by combining ideas and concepts with students' prior knowledge and skills so they could produce new knowledge. Stacy was pleased with the accomplishments she has made in designing her curriculum, and when I asked her about her curriculum she responded by saying,

I think there is no question to me whether the 1:1 has been successful in my class. It was like 'boom'; it has definitely improved my curriculum, it has improved how effective I am as teacher, and it has improved the student learning in my class.

Stacy felt this way because of the additional resources that were available through technology. She also realized that students could Google anything online, so she had developed her content to include higher-level questions and learning. Students were required to make reasoned judgments when providing answers. Stacy's curriculum also encouraged students to think deeply about a concept, problem-solve a new task they were learning, and engage in discussions. She encouraged students to seek information on their own. Wagoner (2008) thinks that students in today's world can find anything online, so teachers need to transform their curriculum to create a culture of inquiry and to help students gain ideas of knowledge. Stacy informed me that during her first year of curriculum design most of the questions she was asking students could be answered by clicking the definition button or by going to Google. Then the next year, when Stacy designed her

curriculum she tried to change it. As Stacy explained in an interview, “I think just being able to fill in the gaps and learning processes helps because they will always have access to those resources. I want them to think critically.” Therefore, she tried to design more layers of assessment into her curriculum. For example in an interview she explained,

Some of my quizzes will have videos, images or something else because I can do that multi media type stuff now. Part of their final was a TedTalk where I had questions about the organization, the purpose, or the effect of using this or stuff like that, but I couldn’t have done it on the traditional paper/paper.

Thus in assessment, she adopted the multi-media elements that students were familiar with, and she did not give a question that had only one answer. The 1:1 program has enabled her to work with a nonconventional framework when designing her assessment.

Stacy also commented that the 1:1 program has helped her with the organization of her curriculum, both in the classroom and online. She explained,

They can do their assignments from home. I have made this policy and it is very rare to have a student who was absent and then asked what we did while he or she was gone. I won’t even answer if asked because my curriculum is online.

She said students may have specific questions about the assignment and then she will have a discussion with them, but that doesn’t happen very often. Stacy included not only the content of her curriculum online, but also examples and videos. Students would often contact her at all hours during the night and they submitted assignments whenever it was convenient for them, sometimes a minute before they were due. However, Stacy did inform the students that she would only respond at particular times during the weekends and at night. She believed that this type of curriculum is very similar to what they will use in college. In a study about 1:1 programs Maschmann (2014) points out, “If teachers use their resources wisely, they can develop an

enriched curriculum through the use of the Internet” (p. 24). Stacy made an effort to develop an enriched curriculum through the resources available in the 1:1 program, so that her students learn in a way that prepares them for their future while offering multiple avenues for getting the assignment done and turned in. Stacy added layers into her curriculum by framing it around her students’ learning styles. Instead of giving every student the same activity to complete, Stacy matched her students with the activities that best fit their needs. Her students had the freedom to choose which activities they would engage in, and they critically analyzed the content through a current issue from the real world. This helped students demonstrate the knowledge or skill learned as it relates to their world. In addition, Stacy’s curriculum assessment was often accomplished through individual oral defense or small group discussions.

#### *Integrating a Flipped Classroom Into Curriculum Design*

Another aspect to Stacy’s curriculum design included the integration of a flipped classroom. A flipped classroom is a type of curriculum design that transposes the traditional learning environment by delivering the curriculum content online. Students watch online lectures and videos, have online discussions with one another, or research topics at home and come to class with an understanding of the concepts. In her class, the teacher served as a mentor to facilitate students. McDonald (2015) finds that “The efficiency of flipped classrooms has been beneficial and having access to distant learning opportunities across Nebraska with other districts has become more of the norm” (p. 78). He explained that by flipping the classroom this type of curriculum design has students learn the concepts at home and class time is used as reinforcement. Stacy felt that having students review the lesson at home and come to class ready helped her give proper feedback on the lessons because she had the entire class period to discuss concepts with her students. In an interview Stacy explained,

I put together a video, with the lecture I would have in class, and their homework is to

watch that video and then take a comprehension as many times as needed to get a 100% on things I want them to know. I also post another example and have them answer questions over that example. They would watch the example, take a quiz that walked them through, and then they could get feedback. When students come to class I would have them get into groups and talk about it while I walked around giving feedback.

Stacy further explained that this kind of lesson is one that she has realized needs to be introduced at the beginning of the year, so that the expectations will be established for all her students, including her pre-AP and on-level students. During an interview with Ashley, another participant, a flipped classroom was brought up in our discussion. Ashley thought it was an interesting concept, but had experienced a lack of commitment from students when assigning homework. Actually, Ashley gave students more time to work on assignments in class and less homework, and felt this was working better for her and her students. Ashley also assumed this type of curriculum would not be effective in her class because some students have limited family support, limited resources, time constraints, or no motivation. Even though Eastland High and Westward High had similar demographics, Ashley's district, Westward High, had a large percent of its students from rural areas where there were limited Internet services. Also, Eastland High had more students from privileged families who were from higher socio-economic status and this may have contributed to a higher success rate in Stacy's flipped classroom environment.

According to Jensen, Kummer, and Godoy (2015) a difference in socioeconomic statuses largely affects student success in a flipped classroom environment because in homes where parents make less than \$15,000, only 17 percent have Internet access. In addition, Blair, Maharaj and Primus (2016) point out that student perceptions about flipped classrooms are just as important as student performance. If students are not motivated to do the assignment at home it will negatively affect their achievement. A teacher has to take into consideration what the child thinks they are capable of doing at home because many won't have the time or resources available.

Stacy mentioned that next year she will start flipping her classroom content at the beginning of the academic year, so student know their expectations, and will add units of her curriculum over the course of the year. Gorres-Marten, Segovia, and Pfefer (2016) recommend implementing a semi-flipped classroom in small steps throughout the year. I assume Stacy was referring to a semi-flipped classroom where just components of the curriculum materials were expected to be completed outside the classroom. Flipping the classroom sounds good in theory, but in the reality of our world some students have too many issues at home or a lack of resources to support this type of learning environment, and I concur that student perceptions need to be considered before using this curriculum model.

Stacy confided that she has witnessed her students flourishing academically because her curriculum is built by using multi-media technologies, providing a transparent curriculum that students can utilize 24/7, and assigning the lesson prior to class which gives students more time to process the content. Stacy had incorporated these fundamental concepts into her curriculum in order for students to have choices and enriching experiences they will need in their academic journey.

### **Lack of School Support in a 1:1 Program**

#### *Lack of Support and Commitment*

Stacy was very confident that the 1:1 program had positively impacted her pedagogy and curriculum design, but there was an underlying tension in a broader context that Stacy kept referring to during our conversations. Stacy repeatedly voiced her frustrations about other teachers and the administrators who were not concerned whether the 1:1 program was being implemented appropriately, or even at all. Stanhope and Corn (2014), Kim, Kim, Lee, et al. (2012), Norris and Soloway (2010) and Mouza (2008) point out that teachers and administrators are essential stakeholders and their commitment is imperative to the successes of 1:1 programs.

But Stacy did not have that support from other stakeholders. Her dissatisfaction with the lack of support, lack of building communication, and administrators' lack of commitment was mentioned multiple times. When I asked Stacy in our first interview to describe her experiences with the 1:1 program, she replied, "I think as far as the implementation of it there are a lot of issues that I wish could have been addressed before and [that includes] the absence of support for integrating technology into specific disciplines." However, she did commend Eastland High for the training teachers received on how to use Canvas, their learning management system, and applauded the district for the research done before purchasing Canvas. Stacy felt that Canvas was an excellent resource in a 1:1 program because it allowed teachers to put everything in one place for students and parents to use, and it kept her organized for the class as well. Eastland High does offer support in using Canvas; however, as far as someone coming in to help a teacher integrate technology into the curriculum, there was no one. Stacy was aware that disciplines would integrate technology differently. In an interview, she explained

A math teacher is going to be different than how an English teacher uses it, so that has kind of fallen on me to do that by myself and other teachers. When we get that frustration a lot of teachers just stop and they abandon it, so it doesn't help their curriculum.

Presently, teachers are only required to send messages to students through Canvas. As she points out, "Everybody is supposed to use the calendar to send messages and events to students, not like an assignment link or PowerPoint. That is the base they are making us do and I am far beyond that."

Stacy continued to discuss the lack of commitment in her department, and explained that out of the twelve teachers in the English department at Eastland High there were only three or four who had their curriculum online because there was no support. She did not have the time to give that support to her peers. These teachers had curriculum resource instructors, but they had

not done anything with technology and the 1:1 program requires a paradigm shift to implement. Stacy claimed, “It’s different having technology versus traditional learning.” She often developed her curriculum through trial and error and was mindful of what she needed to assess. I assume this referred to the lack of curriculum support in her 1:1 classroom environment. Stacy’s statement led me to believe that she found that parts of her curriculum design promoted student success while others lessons did not, so she had to continuously assess her curriculum design on her own without support from a technology curriculum specialist. Stacy was proud of the way her curriculum was transitioning and was eager for other teachers to transition with her, so teachers could have the support from one another. Stacy’s frustrations and advocacy led her to mention this issue to their IT director, with hopes the district will provide training in the future. She felt like this gap in their 1:1 program has jeopardized educating students for 21<sup>st</sup> century learning.

Stacy pointed out that students are affected by the lack of teacher commitment. At the beginning of the year, students would come to class with their laptops dead because they were not expected to use them in class. Students often told her that her class was the only in which they used their laptops. Throughout the course of the year, students started coming to class prepared because they knew they would use their device in her class. Stacy also said that she had heard some criticism from students and parents because teachers were not posting information on Canvas. Students and parents thought having the curriculum in one place enabled them to stay on top of lessons and assignments because they could work from home.

### *Lack of Communication*

Open communication was another aspect that the 1:1 program can provide to students and parents, but many teachers in Stacy’s district do not take advantage of it. McDonald’s (2015) study of teacher perceptions shows that in a 1:1 program, the participants felt that the barriers of communication between teachers, students, and parents were lifted because they had access to



open communication at all hours every day. If students or parents had questions about anything they knew they could contact the teachers online. Stacy mentioned in an interview that she often received a mass email, meaning sent to every teacher, from the principal about a parent who had contacted him wanting to know how their child was doing in class, what they would miss when absent, or if they had any zeroes that needed to be made up. Stacy said this had never been an issue with her, but she could see how not having a day-to-day outline or replying to parents on Canvas would be frustrating to parents and students. She believed if other teachers would just answer questions or post what they did in class that it would help students and parents.

Stacy felt that accountability, support, and involvement were needed for the transition to a 1:1 program. In an interview, Stacy mentioned that her principal never asked her about Canvas or offered support, and committed, “I don’t think our administration even logs in to Canvas and I am sure they have the capability to see our Canvas accounts, who is using and not using it, or even to offer support.” McDonald (2015) argued that “Administrators agreed the success of the one-to-one initiative relies on proper implementation process and continued support and training for teachers” (p. 107). Stacy hoped that in the future these inconsistencies would change, so that all teachers have the support and accountability for using technology in their 1:1 program.

### **Jacob: A Candid Teacher**

Straightforward and to the point, Jacob was quick to identify himself as an avid technology user. He was a veteran teacher who had taught 9<sup>th</sup> grade English at Westward High for more than 10 years. Jacob participated in the pilot program, so he had been in a 1:1 classroom for two years. Westward High piloted the program in 2015-2016 and only had a selected number of teachers who were in the 1:1 program. Those classrooms had student stations that enabled students to work on their laptops while in class. Students did not take laptops home during the

pilot. In our final interview, Jacob disclosed that he was going to be a technology integration specialist for the district and was thrilled at the new opportunity.

Jacob co-taught in his classroom with another teacher because he had many students that were on Individual Education Programs (IEPs). He informed me when I arrived for my second observation that he had taught with his co-teacher for ten years and it appeared that their relationship was balanced with mutual respect. When I observed the class they worked very well together and often fed off one another during lecture and when facilitating students. After the observation, Jacob explained that many students who were on IEPs required additional instruction that he did not have time to give. He was also not certified in special education and his co-teacher helped them with his curriculum and class management. Westward High did not have special classes for IEP students because they mainstreamed them with other students. Strogilos and Avramidis (2016) found that co-teaching had a strong effect on students with IEPs because student engagement and student interaction increased. They also found that special education teachers reported higher success rates in learning when special needs students were mainstreamed. Mark was aware that he needed the support of a teacher trained in special education.

When I arrived at Westward High for the first observation with Jacob, I noticed that the campus consisted of a large two-story building with each classroom on the second floor having windows. The first story had windows but not as many. There was a football field to the west and an activity center to the south of the main building. After I checked in through the front office and started down the hallway, there seemed to be hundreds of students in the hallways passing between classes. I noticed they had their backpacks and phones out like at Eastland High. I reminded myself to ask Jacob about the district's policies on backpacks and cell phones when I could. Later before an interview, when I asked him about Westward High's cell phone policy, he

informed me that students had no lockers and there was no rule against cell phone use because their phones sometimes replaced laptops for the purpose of learning.

No one knows what the long-term outcomes are in regard to the use of cell phones in school, but a study conducted by Pew Research Center found that many teachers allow students to use cell phones in class and the number continues to rise (Walker, 2016). Based on my experiences, I believe teachers can use cell phones as an educational tool, and for safety reasons it might be a good idea to allow students to keep their cell phones in their possession. As I continued to walk down the hallway, many students acknowledged my presence and smiled or waved as we passed. I thought this was a very friendly school because the students had manners and were welcoming. As I approached Jacob's class, I saw him outside the door waiting on me. We shook hands and he directed me to a desk sitting in the back of the classroom.

As I sat down, I noticed Jacob's classroom arrangement. He had three vertical rows and three horizontal rows of student desks, and his desk was in the back of the room. I assumed his desk was behind students so that he could monitor where they went on their Chromebooks. Neither Jacob nor his students acknowledged my presence, and his students did not look in my direction as I entered the classroom and sat down. As with Stacy's classroom visits I found this surprising. I had expected some kind of acknowledgement of my presence. Jacob's class had eighteen males and seven females from various ethnicities. During both observations, students had their Chromebooks open on their desks, and most had their phones out and were listening to what I believed to be music. Students each had one ear bud in their ear, so they could hear Jacob and other students when conversing. It appeared that students were multitasking between listening to music, browsing through their Chromebooks, and listening to Jacob as he spoke. There are mixed conclusions on the benefits or harmful effects of students who multi-task between different types of interactions (Moisala, Salmela, Hierajaervi, & Carlson, 2016). Personally, I have always thought when students listen to music during a lecture, especially music

from an ear bud, it would pose as a distractor. I believe students need to pay complete attention to the teacher when she/he is speaking, so that they can process the information. While students are working, I think listening to music would be a distractor, depending on the individual student.

As I observed Jacob's demeanor toward his students, I sensed that he was casual and had a good relationship with them. While students were working, he made a couple of jokes to the class causing his students to laugh. Jacob's class had a comfortable tone and atmosphere. During my observations and interviews, he was always very direct when interacting with his students and me. He was candid but also very sincere with the delivery of his curriculum and communication.

### **Enhancing Pedagogy not Changing It in a 1:1 Program**

#### *Using Multiple Teaching Strategies*

Through our conversations, I learned that Jacob was comfortable and confident in his classroom and felt the 1:1 program helped his students in some aspects, but did not really feel that it had had a significant impact on his pedagogy and student learning. However, he hoped that it would eventually impact both. Jacob also thought that the 1:1 program was moving in a positive direction but perceived it as too much engagement sometimes. In an interview he explained, "It is very positive. It helps student engagement to a certain level. Sometimes too much engagement; there is no way to block all games and sites that they shouldn't go to." Jacob pointed out that he realized this issue relates to class management, and if students respect the teacher this is not much of an issue. As we were talking, I asked Jacob if the 1:1 program had changed the way he was teaching. He replied, "No, not really. It has given me a lot more resources." Jacob was direct and forthcoming in our conversations and he did not seem to sugarcoat any aspect of the 1:1 program. He felt that the 1:1 program did not change his pedagogy because he had already combined teacher-driven with student-driven teaching strategies throughout most of his career. With the implementation of technology, he just used more online materials to teach his students. He had

always given students a choice when completing assignments and would often check out the mobile carts through the library before his district implemented the 1:1 program. The mobile carts contained a class set of student laptops. Jacob informed me that the librarian taught the research unit for his classes, and she also controlled the mobile carts. The carts were often available to his students when he needed to use them for research. He also pointed out that, “As far as when I wanted the carts for other projects, I had to see when they were available and work our lesson plans around them.” In a 1:1 program he had no use for the carts because every student had a laptop.

### *Encouraging Student Engagement*

With the 1:1 program Jacob often had students choose what type of presentation they wanted to do in order to complete the assignment because the 1:1 program provided more possibilities than a traditional classroom. In an interview he explained,

It (the 1:1 program) offers more venues to get information; it offers them more creative ways to produce end results. Like I might offer for a research project to give students a variety of ways to turn that in. It might be a written paper, a PowerPoint, any kind of presentation they want. So it gives them a little bit more creativity and ownership in what they are doing.

Jacob commented that he did have a written research project, but students had multiple mini-research projects throughout the academic year, and since the 1:1 program was implemented he could offer students a choice for completing those projects.

Jacob also informed me that student collaboration was easier when working in a 1:1 program. In previous teaching experiences he had always had an open, collaborative classroom, but with technology it is easier to work together because students can type on the same document and send it back to one another. In an interview Jacob pointed out, “Technology does not affect

academic learning but social learning.” This is because he felt that students learned from one another and could process the information because they were doing more than just typing a response; they were discussing and analyzing the content. Collaboration also builds relationships between students and develops students’ empathy (Greene, 2016). Both Jacob and Stacy believed that the 1:1 program had significantly impacted the way students collaborated in the classroom, which had built relationships and engaged more students.

During my second observation, Jacob’s class was reviewing vocabulary on a classroom resource he often used called Quizlet Live. Jacob’s students were very eager and excited to work in teams to win the class competition. Students worked in groups to answer as many questions as quickly as they could. Jacob and his co-teacher walked around the room while students played the game. Students were laughing, yelling at one another, and totally immersed in this lesson. They were definitely having fun. After the game, Jacob redirected his students to take the vocabulary quiz on Canvas. For both the test and quiz, students knew automatically where to find it on Canvas. Students had to retake the quiz if they didn’t receive a ‘C’ or better. These observations gave me a glimpse at how technology enhances the paradigm for student learning and classroom instruction. Students listened to the lecture or watched the slideshow and then received reinforcement through online games or quizzes, which engaged them through interaction or competition.

### *Open Dialogue*

Another element of Jacob’s classroom instruction is that he was not an information deliverer because open dialogue was a part of Jacob’s pedagogy. He often told his students to Google the questions they had and then they taught the class about what they learned. Before the implementation of the 1:1 program, Jacob often had to Google questions and now he instructs his students, “You have a computer right in front of you so Google it and tell us all.” Jacob believed

that his students did not rely on him when they had questions about something because they had the world of knowledge at their fingertips. He conveyed that Google and the Internet had promoted student learning and engagement for most of his students. Even though Jacob did not feel his teaching had changed, after analyzing the observations, interviews, and documents I think there had been a subtle change because Jacob did implement more student collaboration and student-driven teaching strategies. Student learning also changed because when students create digital projects and collaborate with one another it requires problem solving, critical thinking, and team skills. Jacob's previous teaching strategies were enhanced through technology. I believe Jacob was a good teacher before the 1:1 program, and the 1:1 classroom environment strengthened his teaching practices.

### **Emergent Curriculum**

When it comes to curriculum design Jacob also indicated that his curriculum had not changed too much. He posted his curriculum and assignments on Canvas. If the assignment was digital, students completed it by using Google Docs or Google Spreadsheets. Jacob said about half of his curriculum was completed on paper, and he often used the textbook resources for worksheets or tests. He supplemented his textbook curriculum with online texts because most of his literature was copyright-free. He also took advantage of online games and quizzes. He especially liked the website, Quizlet.com, because it would grade students' quizzes. If students did not score satisfactorily, the quiz would generate new questions so they could take it again. Quizlet.com would also improve students' graded through flashcards and educational games. Jacob believed that the 1:1 program made teaching easier because of the online resources that were available to him and his students.

Jacob said that next year his curriculum would transform because teachers in his district were going to write their own curriculum, and the district would not purchase textbooks anymore.

In an interview he commented, “Curriculum hasn’t changed yet, but next year is our textbook adoption year and we aren’t going to adopt textbooks. We are going to create our own OER, so it will affect curriculum.” OER refers to a website called Open Educational Resources that offers a digital library in any discipline or grade level that is dedicated to curriculum improvement. The resources are geared to meet the standards of each state and give educators the opportunity to network with other teachers around the globe. Teachers can collaborate through groups, microsites, and hubs to create, organize, and share their OER collections. Jacob explained that there would be disciplinary teams to develop the curriculum goals and procedures for each subject and grade level. According to Hilton (2016), the results of 16 studies showed that students achieve the same learning outcomes when OER are used in schools, while at the same time districts save a substantial amount of money because schools are spending thousands of dollars on textbooks.

Jacob also mentioned that his curriculum was already approximately half digital and half pen/paper. He felt his IEP students got too distracted working on laptops and that they needed more tactile work, but he believed that the 1:1 program could give students the means for using online assistance when completing work. In an interview he explained, “All essays are digital because they have certain websites that they can submit things that will help with grammar, composition, spelling, and handwriting.”

Even though Jacob did not feel his curriculum has changed much in a 1:1 classroom environment, he believed that in the upcoming year it would have to because teachers will be using materials and assessments that are mostly online. Without textbooks, teachers will rely on OER for curriculum design and assessments. Currently, he used websites for enrichment and help with writing assignments. Jacob told me that his vocabulary tests had improved because students always had an online resource right in front of them and the games on Quizlet kept the students engaged. Jacob also discussed that most of the literature he had taught online was from sources



with free copyright. This aspect to his curriculum will continue while curriculum design changes because of OER. Mark pointed out that curriculum transformation is a process that takes time, and Jacob also relayed the same message throughout our discussions.

Jacob assessed his curriculum by taking advantage of online materials that determine if students have mastered a specific objective. If a student does not attain a satisfactory score on a quiz they can retake it as many times as needed. He often used websites or software that generated an assessment of the student's grade. He also graded essays digitally by using Track Changes. Jacob felt student growth was a true indicator of student success when assessing his curriculum.

### **Effective Implementation of the 1:1 Program**

Jacob appeared to be very happy with the 1:1 program at Westward High and took pride in knowing that the program would only get better in time. He was confident and felt the 1:1 program was a positive thing, but that some students needed to be guided when using their Chromebooks because of the distractions the laptop provided to some students. As mentioned, he really did not feel that the 1:1 program substantially influenced his teaching and curriculum, but relayed that it would influence curriculum design in the future.

### *Implementing a "One to Stay" Program*

Jacob was satisfied with the way the district implemented the program and thought it was moving in the right direction. He felt that by conducting a pilot program the first year, the school gave teachers the resources and peer support they needed to be successful. During our interview Jacob confided,

They picked 9<sup>th</sup> grade as the pilot and five of us were chosen last year to participate in the pilot. So we were in the "One to Stay" group, and we all had Chromebooks in our rooms.

They were not checked out to students. There was a class set of Chromebooks, so five of us got to go strictly digital last year. Now we have been the ‘go to people’ for teachers who need it in their classrooms.

The “One to Stay” was what their district called the pilot program and all these teachers received support and training so that they could teach the other teachers the next year. He also told me they offered additional trainings throughout the summer months to prepare teachers for the upcoming school year. Teachers who attended were not paid for their time, but were offered incentives such as snacks or lunch.

Jacob was comfortable in a 1:1 program and felt his district had successfully implemented the program. In an interview Jacob mentioned,

I love the way we have integrated technology and things. We are about to have a whole teach of just digital learning specialists that are going to be going around helping teachers with technology we are giving in different classrooms. As far as support, Westward High has done a great job.

Westward High implemented the 1:1 program by taking small steps in order to obtain teacher buy-in from the entire high school. They started out with giving student laptops to five teachers, then the entire 9<sup>th</sup> grade implemented the 1:1 program, and the last step was to integrate the 1:1 program throughout the entire school. The district used the failures and successes of the “One to Stay” program to implement it throughout the high school. Jacob felt that teacher buy-in was a vital factor to the successes of the 1:1 program and thought the district was using procedures to implement the program to promote teacher buy-in. In an interview he explained, “If the teacher has a good attitude about it, and knows how to work it well, and actually makes good use of it, and there is actual learning going on through the computers, then that makes it successful.” Jacob believed Westward High was encouraging and advocating the 1:1 program in a positive way and

felt many teachers looked forward to teaching in a 1:1 program. Islam and Gronlund (2016) found that 1:1 programs must address the following elements to successfully be enacted:

effective management by a strong leadership, have adequate contextual knowledge or understanding about local environment for effective implementation, shift educational paradigm, teachers' support, stakeholder commitment and uninterrupted support, monitoring and evaluation, and adaptive technology. (p. 213)

Jacob felt Westward High had an effective and supportive 1:1 program and looked forward to teaching and helping students and teachers in their future endeavors. Jacob's perspective on how Westward High implemented the 1:1 program was different from Mark and Stacy's perspective on Eastland High's 1:1 program. Mark and Stacy did not feel supported and had reservations when discussing the effectiveness of the 1:1 program for the entire district.

#### **Ashley: An Enthusiastic Teacher**

Ashley was a very positive thinker and took risks with technology if she thought it would help students learn. She was outgoing and had a pleasant personality. When Ashley was in my presence it seemed like she was an old acquaintance that I had known for years because she was so inviting and charming. Ashley was in her mid-thirties and had taught Spanish at Westward High for more than ten years. She was a veteran teacher who loved her job and the interaction she had with her students. Like Jacob, she was in the pilot program for the district and had been steadfast in making the transition to implement technology. Ashley was excited to participate in this study because she felt she was truly making a difference and loved the 1:1 program.

As I arrived to observe Ashley for the first time I was eager because in our initial conversation I felt like we connected. There was something about her that charmed me, and I felt like I would find her 1:1 classroom interesting. After I checked in at the office, a student escorted me to her room. Ashley's class had desks in traditional rows and her desk was off to the side. She

was on the second floor, so she had windows across an entire wall. There were posters throughout her room displaying inspirational quotes as well as posters in Spanish. As class began, Ashley introduced me and told them that I was observing their 1:1 program. Her students smiled and waved in my direction. I smiled and waved back. I wondered what prompted Mark and Ashley to introduce me to their class while Stacy and Jacob did not introduce me. During both observations, Ashley had Spanish music playing in the background while she lectured to the class, or when students were working on assignments.

Since the 1:1 program was implemented, Ashley had used technology every day for organization and communication. She was not afraid of using technology or trying something new that might help her students. Ashley's classroom was set up in a traditional design, with students sitting in rows, but she spent most of her time walking among the students and conversing with them about the lesson. She was hardly ever in her seat. She used multiple approaches in teaching and curriculum design and was also very comfortable in a 1:1 program. Her students seemed to be thriving because of her positive attitude.

### **Blending Multiple Teaching Styles**

#### *Enacting the Art of Teaching*

Ashley's pedagogy was crafted like a fine art. She used a variety of techniques to reach her students and produce an atmosphere that was conducive to student confidence, which led to learning. During my observations and interviews, it was apparent that Ashley loved what she did and she loved her students. She often went from one task to another to keep students engaged and interested. She shared her love of Spanish music with her students so they could learn to appreciate the art and culture as it relates to language. As Eisner (1998) argues,

Literacy is far more than being able to read and write. When we include forms of representation such as art, music, dance, poetry, and literature in our programs, we not only develop forms of literacy, we also develop particular cognitive potentialities. (p. 16)

It was apparent that Spanish literacy was important to Ashley because she played and danced to Spanish music while teaching. She had colorful posters on display around the room that created an atmosphere similar to a Spanish oasis. I often saw students tapping their feet to the rhythm of the music while they worked individually or in groups. During both observations, Ashley started the class with Spanish music while students looked at the day's lesson on Canvas. Ashley's mixture of teaching styles was apparent from the beginning to the end of class. She intertwined her lecture with group work, and had students compete in language vocabulary games on their computers. Ashley often moved from student to student helping them achieve. The lessons were short but had meaning. She kept her students focused by moving from one activity to another. She had mastered her teaching profession.

#### *A Pedagogical Relationship with Open-Mindedness*

Ashley informed me that she allowed her students to use their phones or another technical device that is not school-issued when they need to go to a website. As long as they got the assignment done, she did not care what electronic device was being used. Before Westward High implemented their 1:1 program, checking out the computer carts was a struggle, so she adapted to the situation by allowing students to use their own devices. She informed me that personal devices definitely enhanced her teaching before Westward High implemented the 1:1 program. Sometimes her students used their phones for personal reasons. I was surprised that during my first observation, one of Ashley's students asked if she could call her mom to tell her the grade she had made on her Spanish quiz. Ashley had no problem letting her use her phone to call her mom. I admired Ashley's positive attitude with her students because she did not dampen her

students' eagerness to show pride in their work. I think many teachers would have told the student to wait until after class and that would have impeded her dignified moment. I thought it showed that Ashley respected her students and had a trusting relationship with them.

### *Limitations in a 1:1 Program*

Ashley's pedagogy was unencumbered by traditional approaches because she believed students thrived when they had a choice and a positive classroom environment. However, in an interview she explained that some students did test the waters,

If students haven't completed their schoolwork I don't want them to play games or watch videos. There is one particular young man that I have to continually monitor what he is doing, and I have to tell him to get out his book and that he can play games after he finishes his assignment. I don't care if they play on their laptops after they are done.

Distractions that Ashley and Jacob mentioned are a major concern in 1:1 programs. According to Islam and Gronlund (2016) a study showed that 40% of teachers thought that the 1:1 program made it harder for students to concentrate in class, but 84% of students disagreed. Lei and Zhao (2008) asserted that "students were able to recognize the distraction that laptop could pose, and they were learning to deal with these problems" (p. 116). Both Jacob and Ashley also had some concerns about students getting distracted by their laptops, although they thought the positives outweighed the negatives and believed technology helped most students learn.

Ashley also claimed that there was another limitation in a 1:1 classroom environment because some students became lax and started looking up translations from online sites such as Google Translator. In our last interview she commented that

They tend to get lazy sometimes. They go to Google Translator, which is a horrible translation, but they go to it and get inaccurate information, but it is easy and they can get their assignment done quickly, so they do it because it is easy.

Ashley pointed out this was frustrating for her, but it did not overshadow the positives to having a 1:1 program. She thought her curriculum was better because students had access to laptops. Prior to the 1:1 program, she would often have students pair up and use their phones or tablets to complete the online component of her curriculum, and sometimes it was more of a hassle to get the assignment completed. Now in a 1:1 program it is effortless for student to complete the online component of her class.

### *Scaffolding the Lesson*

Another teaching approach Ashley used in her classroom was modeling what she wanted students to know. In an interview she pointed out,

I usually do modeling for them because as a learner that helps me to see like with this [she points to a worksheet]. With challenging stuff that we have been going over I try to give them as many examples [as possible] because that is what I need. I have them write down as many examples [as possible]. I try to guide them through a lot [at first] and then slowly take myself away.

She combined modeling with scaffolding when she explained Spanish concepts to her students. Ashley felt that students learned the language and could retain the information more effectively when she used this teaching strategy. According to Warschauer (2006), having access to the computers provides support for language scaffolding and promotes academic literacy and language development. Ashley scaffolded the lessons by taking advantage of interactive vocabulary games, visual aids, pre-teaching of vocabulary words, audio of the Spanish language, building on concepts previous learned, peer groups and assessments, and reviewing. In my

observations I also saw Ashley share a concept with her students, pause for reflection, ask her students a question about the topic, pause again, and review the concept. Ashley also explained the content in different ways to reach the most learners in her classroom. She used interactive websites, games, worksheets, student collaboration, and hands-on learning in her pedagogy. Her mixture of teaching styles was fast-paced and dynamic. It seemed her student moved effortlessly from one task to the other without getting bored or off task. Ashley combined lecture with interactive digital assignments and individual work with student collaboration to create an atmosphere that was conducive to student learning.

### **Curriculum Design Using Both a Textbook and Online Materials**

#### *Reinforcing the Textbook With Online Materials*

Even though Ashley relied on her textbook for the basic concepts of the Spanish language, her curriculum contained an abundant amount of other resources. When designing curriculum in a 1:1 program, Ashley believed having a textbook was vital when teaching Spanish. In an interview she communicated,

Now for a subject like mine, Spanish, I still think having a paper textbook is huge. They can open their textbook and type on their computers. We have access to the online textbooks, but they have to split their screens, and their screens are small, so that makes it harder.

Ashley also thought that having the online component was important for her curriculum because the online component offered additional resources that could help the students retain the information. She further explained that the middle school did not have a 1:1 program and would not for several years, and the foreign language department was aware of that. In our second interview she pointed out, “We offer Spanish 1 in the middle school and it has to be the same curriculum we are using in our high school for it to count [as high school credit].” Ashley knew



that the middle school students could still use the online materials on the Smartboard, but they would not be using it like the high school students did. She hoped the middle school would implement the 1:1 program soon. Regardless, Ashley felt it was important for her students to have a paper textbook and she would reinforce the textbook with online materials.

Ashley believed the 1:1 program had offered more curriculum choices in the classroom because students had access to a vast amount of resources. In addition to the class textbook, Ashley designed curriculum that included online games, interactive websites, resources about current events, and websites that taught students how to speak and understand the written language of Spanish. She was also looking for a Spanish school to Skype with the class so students could learn more about the language and culture. As McKernan (2007) argues, “The vital thing about the curriculum is that it invites all teachers to improve their knowledge of their craft and how to get knowledge by the exercise of that craft and art” (p. 120). Ashley continually improved her art of teaching by searching for meaningful and relevant curriculum materials and designing them to meet the needs of her students. She also modified the curriculum as needed when students found some materials too simple or challenging.

Besides the Spanish textbook, two curriculum resources that I observed Ashley using in class were Conjuguemos and Quizlet Live. The first, <https://conjuguemos.com> is an online resource that allows students to practice grammar, vocabulary, and audio sounds for French, Latin, Portuguese, Spanish, Korean, German, and Italian. These lessons have games, worksheets, and other features imbedded to reinforce language. Students seemed to enjoy working on this website. The second resource was the same website Jacob used, Quizlet Live. Again students were very vocal and could hardly stay seated when playing games on this website. Some were tapping to the beat of the music playing in the background. They worked in teams on Quizlet Live to answer as many vocabulary questions in Spanish as possible. The team that answered the questions the fastest was declared the winner. They played several rounds of this game and

Ashley walked around smiling and encouraging the teams to work faster. Ashley's classes were fast-paced throughout the duration of the period and time seemed to fly by. Students participated and were eager to complete the tasks she had them do. It was a very pleasant experience. It made me wish that I were in 9<sup>th</sup> grade, so that I could take this Spanish class.

Ashley combined textbook and online materials in various ways depending on the lesson. Most of the time, the students had their paper textbook sitting next to their Chromebook for reference when typing or completing an assignment. Ashley thought the digital version of the textbook was too big for the students' screen, and they could not maneuver very well between the text and their assignment. Students used the textbook for the fundamental concepts of Spanish 1 and the online resources for review and reinforcement.

#### *Curriculum Assessment Both on Paper and Online*

Ashley was still conventional in keeping track of student grades because she knew that sometimes technology did not necessarily make it easier. She also said that her digital grade book and Canvas did not communicate so she kept her grades on paper and then recorded them online. Ashley put everything on Canvas, so that students and parents had easy access to the syllabus, classroom assignments and lessons, grades, attendance, and communication. In an interview Ashley communicated,

I still keep a paper grade book. I like that because some things are easier to check and not everything is turned in to Canvas. Like I had them do a game, on a website, [and] when they finished what they were doing they just emailed me.

Ashley kept paper and online records for most classroom materials because it helped her stay organized and made communicating with students and parents easier.

In general, Ashley felt the 1:1 program has transformed her curriculum and impacted student learning. In an interview she explained, “I have seen our test scores skyrocket since we became a 1:1 school.” Even though Ashley believed textbooks were important, she thought when students had access to a laptop, the online resources gave students more options to understand the content. When I observed her class, she went from one lesson to another using different kinds of curriculum materials to get students engaged and motivated to learn the concepts she was teaching. Ashley believed the 1:1 program has changed her curriculum because it made it easier for her students to not only access the online resources, but also become engaged with them.

### **A Positive Outlook on the 1:1 Program**

#### *Effective Implementation*

Ashley believed that her school environment was supportive and encouraging. Throughout our interactions, she had nothing but positive comments to make about the 1:1 program, the way the district implemented it, teacher buy-in, family support, and the way it has impacted students’ success. Her words were very positive and she believed that her classes were thriving in a 1:1 program. Ashley said the notion of a 1:1 program started with their IT director:

This program was his baby. He was the contact person and was here all the time helping us and fixing all the glitches. He helped us with stuff we needed. He is in charge of all the training. He has done a phenomenal job. Along with the principal they worked really well together encouraging all the staff and training the staff in a positive way.

Ashley believed her administration did a good job implementing the program because they did not have “high-in-the-sky” expectations. Integrating technology was done in small steps with everyone helping one another. Ashley felt some of the teachers were not technically inclined, but they rose to the challenge and were doing great things in their classroom. Ashley believed her fellow teachers were what made their program a success. In an interview she commented, “We

have so much buy-in, and I think that helps the 1:1 be successful because if teachers don't buy-in it's just like a textbook that is not opened." She explained that even though some schools have implemented laptops into the classroom, some teachers fail to use them. Experts believe this occurs because there is a lack of planning, teacher training, and preparation (Kim, Kim, Lee, Spector & DeMeester, 2013). The laptop functions as a paper weight and serves no educational support when not used meaningfully. Ashley claimed her district had and continued to have excellent training and support, and teachers were excited about the 1:1 program. In an interview, Ashley described one teacher in her building that was getting ready to retire,

Yeah, there were some who were very reluctant, but like I said those teachers surprised the socks off of me. One of the teachers is going to retire next year and technology is not her thing. She struggled the first few days, but she does so much now because teachers feel supported.

Ashley thought their program would continue to thrive because of the support from administration, and all stakeholders wanted the 1:1 program to be successful because they want the students to be successful. Both Ashley and Jacob gave credit to Westward High for implementing their 1:1 program in a way that advocated teacher buy-in and student learning. Islam and Gronlund (2016) and Holcomb (2009) found that teacher buy-in was a crucial component to the effective implementation of a 1:1 program.

#### *Motivated by Her Students*

Another aspect to Ashley's positive outlook was the way she was motivated by her students to always do what was needed to give them a first-class education with technology. In our second interview she explained,

I have amazing students this year. This year and last year I cannot get over how great my students are. I tell them all the time, and I think that it helps motivate them, but I am not

lying to them. My kids have their faults. I do have a handful [of the challenging students], but most are doing so wonderful and participating so well. I think Chromebooks aren't all the reason for that, but I think they are a good part because it does engage them.

When I observed Ashley's 1:1 program I could see that her positive attitude was contagious and students were motivated to learn. She often went from one website to another because she did not want her class to be boring. Ashley informed me that she constantly asked herself if this lesson or the use of technology was hindering or helping her students. She strived to prepare them for the test and real-world applications. Tee Ng (2015) points out that quality teachers furnish students with the knowledge and skills for their future and imbue them with a positive attitude. Her positive disposition and open-mindedness gave her the self-assurance to keep moving forward. Ashley was constantly developing her craft for the art of teaching by creating and modifying her curriculum.

### **Summary**

In summary, this chapter presented my hermeneutical interpretations of the individual cases of the participants: Mark, Stacy, Jacob, and Ashley. My intentions were to understand their perspectives on teaching and curriculum change in a 1:1 program. Mark used technology with a direct instructional approach but hoped to set the stage for more student collaboration and student-driven teaching in the future. He videotaped himself each day and put his lesson on his website for students to view at home or whenever needed. Mark did not like textbooks, so he wanted to get his online curriculum completed before venturing out to try more teaching strategies in the classroom. He added layers to his curriculum through videos that demonstrated math concepts to encourage and engage students. Stacy used technology to shift the power relationship in her classroom. Students had more choice and control of their learning in her teaching style. Stacy also felt her curriculum had improved because of the online resources

available to her and her students, and that technology produced a flexible learning environment in her class. However, she thought that the 1:1 program was not as successful as it could be due to lack of leadership and commitment. Jacob felt the 1:1 program did not change his pedagogy or curriculum too much in its current state because he already taught in a way that was compatible with the use of technology. He believed that in the future his curriculum design would be changed since paper textbooks would no longer be available. Like Mark, Jacob thought that transformation is a process and takes time. He was very satisfied with his school's support of the 1:1 program. Like Jacob, Ashley loved the way the district implemented the 1:1 program and was excited to see where the journey would take her colleagues and students. Ashley felt the 1:1 program impacted her pedagogy and curriculum because it gave so many choices and so much variety. She depended on a textbook for her curriculum but supplemented it with online resources.

In his explanation of a hermeneutic approach Gadamer (1996) posits that it clarifies the interpretive circumstances in which understandings occur. He also explains,

One intends to understand the text itself. But this means that the interpreter's own thoughts too have gone into re-awakening the texts' meaning. In this the interpreter's own horizon is decisive, yet not as a personal standpoint that he maintains or enforces, but more as an opinion and a possibility that one brings into play and puts at risk, and that helps one truly to make one's own what the texts say. (p. 388)

I attempted to not let my own thoughts or perspectives impose meanings on data analysis and to dig deeper into the text to reveal meanings and understandings of interviews and observations. I strived to understand the participants' perspectives by analyzing our conversations, observations, and document analysis. It was interesting to listen to participants' own stories and understand their different perspectives. Even though they all believe that the 1:1 program had increased curriculum choices and student engagement, they demonstrated it with a mixture of teaching

styles and curriculum choices. It seemed that their previous teaching experiences and use of technology influenced their approaches to the role of technology in teaching. In the next chapter, I discuss the cross-case analysis of participants by comparing different teachers and school sites to deepen understandings of pedagogy, curriculum design, student learning, and school climate. Chapter five finishes the data analysis of my study.

## Chapter V

### The Cross-Case Analysis

Working with the hermeneutic circle I move from individual cases to all case in order to synthesize the data across participants to identify themes that were similar and different. The qualitative nature of this case study places high value on participants' perspectives (Merriam, 1998) as they relate to one another across cases. The participants in this study had unique experiences working in a 1:1 program, but their perspectives from different classrooms in two districts seem to converge. The themes found in my cross-case analysis are explained through an interpretative lens.

#### **Pedagogical Approaches Were Improved by the 1:1 Program**

In order to understand whether the 1:1 program had impacted pedagogy, I interpreted the discussions and observations of my participants during our individual interviews as well as our focus group discussion. Mark, Jacob, and Ashley felt that pedagogy was enhanced by technology, and Stacy felt that technology had shaped her teaching strategies. Stacy felt technology helped form her pedagogy because she had been saturated with technology throughout her own educational career. Stacy was a new teacher, while the other participants were veteran teachers who had established their teaching strategies prior to the implementation of the 1:1 program. Mark, Jacob, and Ashley used technology to enhance how they had taught throughout their career, and Stacy's pedagogy was created around the technology available to her and her students. Throughout my career as a 1:1 integration specialist, I have observed



and helped many teachers who knew how to use technology but not effectively implement it into their teaching and curriculum design. However, Stacy integrated technology into her classroom effectively and she felt confident her students were thriving in a 1:1 classroom environment. I also believe Ashley knew how to effectively implement the 1:1 program because of her past experiences with technology.

Analyzing Mark, Jacob, and Stacy's teaching reveal that technology supplemented their pedagogical approach, and it changed how they approached the delivery of the content and how they had students work on assignments. My participants' stories reveal that teachers have to be comfortable in their instructional approach because without solid pedagogical insight using technology will not enhance student learning or classroom procedures. Effective teachers are comfortable with both the cognitive and affective dimensions and can use technology for developing positive pedagogical relationships with their students.

To attain constructive pedagogical relationships with students teachers need to be available to students, invest the time to prepare meaningful activities and lessons, show that they are glad to be in class with them, and take an interest in the happenings of their lives. All participants spoke about how the 1:1 program had impacted their teaching positively because it set the stage for collaboration, improved communication and transparency, contributed to diverse teaching strategies, and built pedagogical relationships. My participants, who took an interest in their students' lives and tried to be the most effective teachers they could be, found that the 1:1 program helped them reach their pedagogical shift.

### **Collaboration Among Students**

With the exception of Mark, all participants in this study used a variety of strategies to facilitate their collaborative teaching environments. The participants focused on group learning and collaboration, and played that role of a facilitator. They moved throughout the classroom as necessary and activities were structured to emphasize collaborative, active, student-driven learning. Stacy, Jacob, and Ashley also incorporated class discussions, small group discussions, and student presentations; they also organized

their content to include multi-tasking and non-linear access to information. The 1:1 program accommodated this teaching environment because each student had multimedia technology at their fingertips. For example, in an interview Jacob said, “I have a pretty open-collaboration classroom. The 1:1 program offered more collaboration for sure, more chance for them to interact with one another and bounce off ideas with each other.” Ashley disclosed that collaboration was also a huge part of her classroom practices. She explained in our focus group, “I get them to collaborate, try to get them to understand, to study using other techniques.” Ashley wanted them to work together because when students communicated with one another it helped them make sense of the concepts. Stacy also had her students collaborate on a regular basis, especially when working on projects. In an interview she explained, “I do a lot of lessons where they teach a certain aspect of the lesson or work together on a group project. I also encourage them to get feedback from one another when they are working on an individual assignment.” Stacy felt students could learn a great deal from one another because they all had unique experiences.

Personally, I have had positive experiences facilitating and observing students working together while using technology. I have seen students complete their classroom assignments with positive results when collaborating with one another while using technology. Students not only learn from one another, but also share their knowledge, which can enhance motivation, confidence, and a secure learning environment. For example, when I observed Stacy’s classroom, students had to create a slideshow and a song with their own lyrics about a vocabulary word. Then they had to record their song and post the video on YouTube. Each student had to determine their specific role within their group. One student knew how to create doodles that contained slow action and stop action, so she completed that aspect of the assignment. Two other students created the music and lyrics, while another student was in charge of recording the video. All students completed various tasks of the assignments while working together for a common result. Then those students also shared with the class how they completed their projects because they got to use any online source they chose. Basically, everyone was learning from one another. In the

school district where I work, I have also observed students Skyping with another class from across the globe. These classes were working together on an assignment about cultural differences. When technology is available to students, they can complete elaborate assignments such as Stacy had her students complete, or work together using a program like Google Docs to complete a research project. Jacob had his students collaborate using Google Docs. Google Docs allows students to work together on the same assignment when they are in the classroom or in different locations. Jacob's students wrote research papers, made presentations, or corrected each other's work through Google Docs. Jacob felt this type of interaction enhanced the social skills among the students, while it also expanded their knowledge base because the tasks were intertwined rather than being separate.

Schrameyer, Graves, Hua and Brandt (2016) claim that "Collaborative learning in the school setting has been found to promote social and cognitive benefits" (p. 541). Whether the group format is face-to-face or strictly online it provides students with the opportunity to develop the collaboration skills that are demanded by employers. Wendt and Rockinson-Szapkis (2015) found that there was no significant difference in terms of connectedness between students who collaborated face-to-face verses online, but when students engaged in face-to-face group activities these interactions gave students a higher sense of community. Stacy, Jacob, and Ashley created and encouraged an online learning environment where students collaborated face-to-face while in class or in another location. Their students also organized and managed their project. This type of classroom environment allows student to share ideas and beliefs, work on separate parts or the same parts of a project, and access the materials from different locations.

Most teachers are mindful that in some student group settings one student may do most of the work. I believe my participants were aware of this because they had their students complete a specific task of the project while assessing one another on the completed project. In Jacob's case, Google Docs allowed students to correct one another or add information to a research project by assigning different font colors to specific students. This process made it easy for Jacob to see who was contributing to a

project. Whether students use blogs, emails, educational websites, online applications, or a specific software, technology offers students and teachers various ways to connect with one another while in the classroom or from across the world.

### **Increased Communication and Transparency**

Mark, Stacy, and Ashley commented that the 1:1 program paved the way for communication with parents and students while helping teachers build relationships with them. Parents and students had access to the assignments, grades, and absences at anytime because everything was in one place for them to see what was going on in class. If there were any questions, they had access to emails or could post a comment on Canvas. They also noted that students could complete assignments when they were absent because they knew their assignment was posted on Canvas. These components enabled students and parents to know how students were achieving and enabled them to keep track of what they were doing in class. Mark relayed,

I am able to layout my entire class, my entire curriculum, with the videos and put everything out there. If there are any questions, they can email me or even send me a little video question. [There are] just all those ways of interacting and communicating with parents, students, and peers. It is a game changer.

Mark felt that if students and parents had questions about an assignment or grades, they had access to an open line of communication. Ashley also felt that the 1:1 program has changed communication for the better in her classroom. In an interview she explained, “Students will message me through the day, where they may not have said anything before or during class. It is usually a valid question. I think the quality of communication has been changed and that has been great.”

Stacy also believed that communication was better because students and parents could access Canvas to see what they were doing in class. However, there were some limitations with the continuous flow of communication. Stacy worried that her AP classes may have added pressure because

communication was so readily available. In our focus group Stacy commented, “I get submissions for assignments at 2:00 or 3:00 in the morning. That is troubling to me.” She was concerned that technology followed students everywhere 24/7 and that may add pressure to their already busy schedules. Stacy thought it was a positive attribute for contacting parents and students when needed, but she had to set boundaries or they would expect her to answer questions all the time. Therefore, teachers and students should establish procedures for when emails or discussion posts will be answered. Stacy informed her students that she would check her messages on Sunday afternoon by 5:00. Jacob commented that he replied to student messages at night when they have questions. The teacher has to set the boundaries for communication.

Literature also reinforces the participant’s claim that there was improved communication between all stakeholders in a 1:1 program (Langham, 2014; Spector, 2012). From my experiences both professionally and personally, I have seen that parents and students benefit from having everything online because they can see what the assignments are for any given day, student grades, and absences. However, teachers need to be aware of the limitations because students and parents will try to contact teachers at all times throughout the day and on weekends. I have parents and students sending me emails or Facebook messages at all times of the day and night. Like Stacy, I had to explain to parents that I would only reply to them at certain times.

Transparency refers to openness and accountability, and it overlaps with communication. Teacher transparency is a term to describe a teaching environment in which curriculum, classroom procedures, class discussions, student grades, and attendance are accessible to administrators, parents, and students at all times. Ahern (2009) claims the greatest impact of teacher transparency is an increased involvement between students and parents, and that parental involvement improves student achievement, motivation, and positive changes in students’ emotional and social well-being. Participants in this study overwhelmingly expressed that the 1:1 program had enabled their classroom practices and curriculum to be transparent to parents and students. In an interview Mark pointed out,

It [the 1:1 program] has been motivational. It has taken a lot of pressure off me as far as responsibility. I think with the 1:1 situation, I can lay out my entire class, my entire curriculum, and put everything out there. If there are any questions as to if the students are doing their part, I can tell parents to look at my site and see that they haven't turned in the last 3 or 4 assignments.

Mark and Stacy also felt the 1:1 program helped with students who were absent, too. This was because students could log on, see what they missed, and email them any questions they might have. Mark and Stacy thought the 1:1 program created a more efficient method for communicating with students and parents and fostered a platform that makes it easier to stay up on curriculum because everything is housed in one place. During our focus group Mark commented that,

It [the 1:1 program] puts more responsibility on the kids. That is where it impacts kids. They have to take on more personal responsibility and self-discipline. For me, one part I learned in a 1:1 was the fact that I can put it out there--their assignment, their grades, everything-- and ask them what they are going to do about it.

Mark felt this was a perfect situation for everyone involved in the educational process. The other participants in this study thought the 1:1 program cultivated the same conditions for their teaching environment. Teacher transparency was also found to be a prominent theme in a study conducted by Carlson. Carlson (2016) examined middle schools in Maine and found that teachers felt the 1:1 program provided more openness and transparency for the teaching and learning processes in their classrooms. Carlson (2016) points out, "Increasing transparency has created a more open and visible window into how teachers are teaching, how they are assessing students, and what student work and learning look like" (p. 230).

Stacy added that by having everything online for students and parents to view outside of class time, she was able to use the class period to go over content and help students with assignments. Stacy

said that the 1:1 program had allowed her to post online rubrics when grading assignments, too. During our interview she explained, “It lets them see what they missed and why. Writing assignments are so subjective, but when you put a rubric there they can see what part of the assignment they didn’t do.” Stacy said that all aspects of communication, curriculum development, grading assignments, and posting grades have become more efficient because of the 1:1 program. Carlson (2016) revealed that the participants in his study felt students’ grades and completed work was more accessible to parents and students. Jacob also had similar satisfaction with the 1:1 program because it streamlined the ability to post daily lessons, students’ grades, absences, and all modes of communication because they were all on the same technological platform. Like the other participants, he was especially pleased with how the 1:1 program had enabled students who are absent to get their assignment, complete it, and turn it in from anywhere. All participants in this study liked the idea of having one place to review each student’s assignment and communication history because parents can see exactly what their child was doing or not doing in class.

The 1:1 program also enabled administrators to evaluate what teachers and students were doing in their classes. I consider improved communication and teacher transparency to be a positive result for 1:1 programs. When teachers have the ability to showcase their entire curriculum, classroom policies, student grades, and other relevant components of the classroom’s functionality on the same platform, it provides easy and convenient access for everyone involved. I have experienced improved transparency within my school district and while attending graduate school. Students have the capability to see what and how they are doing in class and can communicate through email or another online tool with the teacher or classmates. However, teachers need to be conscious of the limitations and set boundaries for communication. It was apparent that all my participants valued the fact that they could put their entire classroom online, so that anyone who has interest in classroom procedures could access the information.

### **Diverse Teaching Strategies that Improved Pedagogical Relationships**

There are a variety of teaching strategies that teachers can use in their classroom to improve relationships and student learning. Through differentiated instruction, collaboration, student choice, discussions, humor, games, and individualized teaching my participants believed they were building pedagogical relationships with their students that directly affected student achievement. Teaching in a 1:1 program allowed them to focus on essential skills, be responsive to students' differences, and provide students with multiple avenues to learning due to the presence of technology. In traditional classrooms, whole-class instruction and the use of the textbook drives the teaching strategies because most of those classrooms do not have the resources that technology can provide. The teacher is limited because the lecture or textbook they provide students is generally the same for every student, and the classroom time is spent mostly lecturing with little time left for the students to experiment or engage in the concepts. The 1:1 program makes it possible for teachers to use multiple teaching strategies because students have access to a wider array of resources that support their learning and gives them more freedom and individual choice. Ashley and Stacy pointed out that the 1:1 program had enabled them to work on an individual basis with students. This is due to the fact that students have more initiative to complete the assignments because they now had options on how they were going to show what they learned. For instance, in an interview Stacy commented,

I feel like they do better to have more choices. If I didn't have the technology, I could not offer them that type of choice. I feel like I can know more students better because I can spend more time with them.

Ashley also alluded to the importance of providing choice for students when completing assignments. For example, she said, "It [the 1:1 program] opens up the opportunity for giving students a choice which increases engagement and paves the path for individual instruction." In our focus group conversation Jacob commented that the 1:1 program "allowed students to take control of what they know." Mark also wanted to interact with students as much as possible in order to build their confidence up. He felt that interaction was a key element in a math class. Across three cases in this study, student



choice and students having ownership of their learning led to improved pedagogical relationships in the classroom because the participants had more time to interact on an individual basis with students. Even though the participants taught this way before the implementation of the 1:1 program, technology fostered a nurturing environment for diverse teaching strategies.

According to Langham (2014) and Branch (2014) student-centered classrooms are highly effective in 1:1 programs because having the technology offers students more choice in obtaining information and demonstrating what they have learned. Carlson (2016) also conducted a study in Maine and found that after ten years of participating in a 1:1 program student-centered classrooms were the most innovative and successful than teacher-centered classrooms. Estes (2004) points out that “Student-centered learning environments describe a learning process where much of the power during the experience resides with students. In some cases, students and teachers are collaborators, sharing equal power” (p. 144).

However, my participants’ experiences demonstrated a somewhat different picture because they also used direct instruction in their classrooms. It was apparent that all four participants used some form of direct instruction to teach their students while embracing the technology available to them and their students. According to Magliaro, Lockee, and Burton (2005) direct instruction “is an instructional model that focuses on the interaction between teachers and students. The components are modeling, reinforcement, feedback, and successive approximations” (p. 41). Modeling and reinforcement were part of Mark’s, Stacy’s, Jacob’s, and Ashley’s teaching strategies. My participants modeled by demonstrating the tasks students were expected to do on their own. All my participants’ use of technology modeled specific procedures in class. For example, my participants expected students to save class assignments in particular folders, routinely accessed Canvas for the day’s lessons, or modeled how to use a particular online resource. In addition, Mark used video demonstrations to explain math concepts. Stacy modeled by demonstrating to students how to focus on interpreting information, analyzing statements, and making conclusions about what had been learned. Jacob modeled by having students who had mastered a specific

concept demonstrate the new concept to the class. Ashley would often model the task for students, and then have students begin the task at their own pace. Sometimes Ashley would model the same task multiple times until students understood the concept. All my participants gave students grades and feedback on their assignments and incentives for doing their best. Stacy, Jacob, and Ashley had students present projects to the class, which not only gave the students ownership of their learning, but also made them accountable for teaching the class.

Magliaro, Lockee, and Burton (2005) also suggest that the pedagogical pendulum will eventually swing back to favor direct instruction when using technology because it offers the flexibility of supplementing teaching strategy or providing independent units of instruction. I think that the teacher has to communicate, either by lectures or videos, some aspects of the instructional task, knowledge, or skills. Even though Mark aimed to include more student-centered instruction in his class in the future, Mark believed his students were understanding the content in his classroom by watching his demonstrations on how to complete math problems. As I observed Mark's lectures, in class and online, I realized that his videos online also provided a personalized learning experience for his students. In Mark's 1:1 classroom, students were successful and Mark only taught with direct instruction.

Furthermore, I think student-centered classrooms have certain limitations because students may not construct systematic knowledge. There could also be some disadvantages to using only student-centered instruction in 1:1 programs. For example, students may not learn some of the basics if they depend too heavily on their computers for instruction, such in writing because most computer word processing programs can edit their work and correct their spelling, and the advanced calculators for math instruction can give students results without increasing student understanding. Also, personal use of computers during instruction can create a distraction from the lessons.

On the other hand, there are also disadvantages to teaching only with direct instruction because students work mostly alone and do not learn to collaborate with other students, so their collaboration

skills may suffer. Second, students might be bored when listening or watching lectures, and their minds may wander and they may miss important facts. Last, direct instruction does not allow students to express themselves or direct their own learning. The advantage of direct instruction is that teachers can teach the content systematically to students. Therefore, there needs to be a balance of teaching strategies in most classrooms for effective teaching to happen. Students who sit in a classroom all the time and listen or watch a lecture will become passive learners, and students who are left completely on their own may not complete the proper task or learning activity.

I believe that teaching strategies are more important than the tool, which in this case is technology. Tools do not drive education; technology cannot create an atmosphere where learning can occur. It is teachers who inspire students to become lifelong learners, create a culture of inquiry, and nurture students' passion and enthusiasm. Good technology can be beneficial for providing better opportunities for students to engage in learning, but good teachers know how to reach and get the best out of most students in their classroom. Technology can enhance pedagogy but not replace it.

### **Redesigning Curriculum Through Innovation in a 1:1 Program**

Curriculum transformations were revealed through the participants' conversations that indicated curriculum design required innovation in a 1:1 program because the content was perpetually changing. Since curriculum design was bound together with online and paper curriculum materials, teachers had to keep a watchful eye on online curriculum changes throughout the academic year because online resources were continuously being developed. All participants in this study felt that the 1:1 program revamped the resources available to them and their students. As Jacob explained, "It [the 1:1 program] offers more venues to get information." The other participants expressed the same perspective about the 1:1 program and how technology modified the curriculum design. When talking about major changes in curriculum the participants pointed out that it was something they had to constantly shape, tweak, and modify because there are new technologies made available every day.

Most of the participants in this study used a limited amount of curriculum resources from a textbook. Jacob used a textbook, but was going to write his own curriculum the next year. In an interview when I asked him if the 1:1 program changed his curriculum, he explained, “It has not yet, but next year is our textbook adoption year and we aren’t going to adopt textbooks.” Ashley was in a different situation. Ashley felt she needed a paper textbook in her class and was in the process of adopting a new one. While holding her textbook Ashley explained in an interview, “Now [for] a subject like mine, Spanish, I still think having a paper textbook is important.” Ashley relayed that she also used the online component to her textbook, but a paper copy was still important. I also believe it is important to have a paper copy of books because students are trained from early childhood through elementary to interact with and read a hard copy text. A hard copy text engages the tactile sense, and students learn to rely on that sense when interacting with a piece of text. I think there is something unique about touching, feeling, and turning a page. When teachers offer students an e-book that tactile sense is removed and for many students their engagement with material is discouraged or stifled because they no longer have a hard copy. From my experiences and observations, I have found that teachers should use a combination of e-books and paper books to allow students a choice so that they will engage their preferred senses in learning. In addition, sometimes students will come to class without a laptop, and teachers should have hard copies of the text available so that they can still participate in the class or work on their assignment. In 2002, Grunwald Associates said that Thomas Edison predicted in 1913 that a complete transformation of our educational system would occur within a ten-year period and that textbooks would phase out of our curriculum as these electronic applications became more and more widespread (as cited in Langham, 2014, p.26). However, it did not happen. We are in 2017 now, and textbooks are still used. In today’s world, we definitely have abundant information at our fingertips, but I do not think that textbooks will disappear because many educational professionals feel they are invaluable and many teachers still use them.

In most of today's educational platform, textbook companies offer not only paper textbooks, but a multitude of online resources for teachers to use in their classrooms that support 1:1 programs. The online comprehensive textbook organizes the content in a systemic and organized platform. It also gives teachers the capability of utilizing an online student management system for tracking student progress and evaluation. These online programs are built to engage digital learners because they provide teachers and students with real-world texts, videos, and writing resources. Most textbook companies also support students with the requirements needed to pass high-stakes tests. Most teachers believe that having a textbook, both paper and online, is important to their curriculum.

However, textbooks are often very expensive and some school districts cannot afford them, so many districts in the state where this study was conducted are requiring teachers write their own curriculum. An example would be Jacob's situation. His school district, one of the largest in the state, is requiring the English department to write their own curriculum. The district where I work also requires most secondary teachers to design their own curriculum. The US Department of Education is also advocating for teachers to shift curriculum design to digital content or to Open Education Resources because the content does not have copyright laws and is freely available (Rivero, 2016). Resources on OER include "full courses, course materials, modules, textbooks, streaming videos, tests, software, and any other tools, materials, or techniques used to support access to knowledge" (Rivero, 2016, p. 5).

Ashley believed that the online resources are advantageous for the core subjects because there are free curriculum materials available. Many of the sources contain textbooks that can be printed out, or students can use the online version. For example, iTunes U and OER contain a plethora of information all the way to college level, or teachers can use a variety of websites to design their own curriculum. However, writing curriculum is a huge undertaking that normally takes an entire department to work on, over an extended amount of time. Mark has written his entire curriculum at least two times. He spent a significant amount of time thinking about ways to present the content without relying on textbooks because he felt textbooks were not written in a student-friendly way. In an interview he explained, "I

don't have lessons; it is more demonstrations. I try to simplify it [curriculum] for students. I want to hook them." So during the current academic year of this study Mark solely focused on curriculum development. He felt that textbooks made math too complicated. He wanted to break down the math problems so that student could see the movement in math. I believe that Mark thought he could explain math problems in a more suitable way for student understanding. He would also supplement his curriculum with online games because it engaged students and at times connected math problems to the real world. For example, some of the math games he used had students construct a building or an airplane. Students had to use algebraic reasoning when designing their objects.

Stacy also felt that curriculum design took time to develop and was always changing because her students had different interests and the lessons changed at various times throughout or over the years. She wanted the content of her curriculum to be relevant to her students' experiences. In our focus group Stacy relayed that "The curriculum has been more individualized because of the 1:1 program." She researched to find resources specific to the content objective and the students. Stacy did not rely on the use of textbooks because there were so many online resources available. The participants also conveyed that most online curriculum resources are continuously changing or developing. In our focus group discussion Mark explained,

It allows me to be out of the box in a 1:1 environment because I have at my fingertips other websites or links that I can put on my calendar for kids to check out, so that is going to come with time and things change so often.

Mark confided in an interview that he searched for games and interactive tools for teaching math concepts because most students learn best when they see the movement in math. His goal was to make math fun for them. Ashley also used a variety of vocabulary and Spanish- speaking games with her students. She also believed that students would retain more if they were having fun while processing the information. In addition, Stacy tried to incorporate websites about real-life events that were happening in

Spanish communities around the globe. Stacy used textbook for the fundamental concepts of Spanish, but enriched her curriculum with online materials to engage students and make it relevant for them. I also observed Jacob's class engaging in several different types of online resources and games when they were learning the objectives for his lesson. His students seemed totally immersed in the lesson and were enthusiastic when playing in groups. Like textbook companies, many free online educational resources are developed using common core standards that are both fun and educational. These online programs are built to engage digital learners because they provide teachers and students with real-world texts, videos, and writing resources. As Langham (2014) points out, "Teachers try to incorporate modern day electronics and digital devices into their daily curriculum for the purpose of increasing student achievement of learning and remain accountable with the current educational laws and mandates requiring the infusion of educational technology" (p. 45).

The participants in this study were also teacher leaders. Mark and Stacy embraced the 1:1 program at Eastland High while many other teachers resisted the change. Mark wanted to help fellow math teachers move out of their comfort zone because the Internet offered many useful resources that helped students, and Stacy went against tradition because she took the initiative to design her curriculum around students' experiences and interests. Jacob and Ashley provided support and encouragement to other teachers at Eastland High. My participants' leadership roles in their classroom impacted educational change. Through their own initiative they made curriculum changes and implemented teaching strategies that they believed would result in improved learning.

It was obvious to me that my participants were doing their best to incorporate technology into their curriculum while striving for an increase in student engagement and student learning. Mark and Stacy did not use textbooks because they did not feel that type of curriculum met their students' needs. They believed that they could develop a more suitable curriculum than what textbooks could provide their students. Jacob did use textbooks, but thought the online resources engaged students more. Ashley believed textbooks were important to her subject matter, which was Spanish. In Jacob's and Ashley's

classes, the online tools served as add-ons to the curriculum, rather than as an embedded tool for delivering the curriculum. Mark's curriculum was orientated by manipulatives and demonstrations. Stacy's curriculum was orientated by multimedia programs that were relevant to student lives and interests. I believe that my participants designed their curriculum by ensuring that learning resources supported the learning activities and assessments planned for their classes. They made sure their curriculum aligned with the needs, interests, and abilities of their students. They also kept in mind that their students were "digital natives" and they searched for interactive and multimedia resources to use in their classroom to keep students motivated and engaged in their learning. A key feature of effective curriculum design is the selection of curriculum materials that meet the needs of students in a particular teaching and learning environment. In a 1:1 program, my participants demonstrated their innovative uses of online materials in combination with textbooks to engage students in learning. They also used alternative forms of curriculum assessment provided by technology to allow students to demonstrate their learning in multiple ways.

### **The 1:1 Program Positively Impacted Student Learning**

As I continued to interpret and analyze the data, the participants' perspectives on how the 1:1 program influenced student learning was another theme that surfaced from the participants' stories. Jacob was the only participant who said the 1:1 program did not change student learning. In our focus group discussion Jacob commented, "It [the 1:1 program] has turned the role in some classrooms where the students are teaching the teachers how to do stuff on the computer, but I don't think it has changed teaching and learning in itself." Mark replied to Jacob's comment by saying, "I think it [the 1:1 program] does. It is what we talked about earlier: giving students the opportunity to take charge of their own learning and knowing more about the world around them." Mark was referring to the dialogue that occurred in the beginning of our focus group discussion. I think that Jacob felt that the role of technology was not as important as the role of teacher or learner because teaching and learning are about attitudes and



the desire to be successful at a task. Overall, the participants expressed that student learning was positively impacted by the 1:1 program.

### **Increasing Student Engagement**

All participants, including Jacob, had experienced an increase in student engagement and motivation in their classrooms. In our focus group discussion Jacob pointed out, “It [the 1:1 program] has definitely helped their engagement and they are more on top of things. I am getting notifications at night. They ask me questions and I am able to email them back.” Then Ashley commented, “I have seen more student engagement because I can do more on the Internet than I could do before.” In another conversation, Ashley revealed that her students got excited about playing vocabulary games and student participation significantly changed when she used technology. She said she was lucky if she got half of her students to participate when she did not use technology. During the focus group Stacy explained, “It [the 1:1 program] opens up opportunity for giving students choice, which increases engagement. Instead of playing one video for everybody, they can go to the website and pick a video that is relevant to them.” Stacy also pointed out that she used the same philosophy when assigning texts or written language. Strom, Strom, Wing, and Beckert (2009) conducted a large-scale study and found that students were more engaged and motivated to learn on the Internet because students could work at their own pace to discover information which in turn supports feelings of autonomy. In an interview Stacy explained that if students were paying attention, asked relevant questions, and were on task then they were learning. Stacy felt the 1:1 program had produced that type of learning behavior among her students because she could see they were on task by their interactions with the lesson on the laptop and their questions about an assignment. Mark also felt that an ideal learning environment is when students had the capability to produce a presentation and teach the class. Stacy added that when students were engaged they were learning, and having access to technology had improved student engagement tremendously. Students were more engaged in my participants’ classrooms because they used technology to work collaboratively on assignments, had choice, and took ownership in their learning. In addition, technology allowed students to

complete assignments using multimedia tools, which stimulates more than one sense and holds their attention longer. They were exposed to global issues, had the ability to watch podcasts rather than reading material, could communicate through social media, and learn concepts through interactive gaming.

### **Increasing Equal Access in the Classroom**

Another factor that the participants felt impacted student learning in a 1:1 program was that students had an equal opportunity to learn through the use of a laptop. Mainstream media claims that when students are given the same educational tool it levels the playing field because all students have access to technology. In an interview Mark commented,

I think it is always nice for students to have access to the laptop no matter where they are, and it helps those without at home. The 1:1 laptop environment evens out the playing field because it gives students the opportunity to have access to information and is a part of their learning.

In an interview Stacy agreed with Mark's quote by saying,

It has leveled the playing field out for everybody because all of them have access to my notes, Powerpoint, or whatever to study or review. Whereas before, it was only those who had privilege, or [who] were able to come up after school.

Stacy also felt the 1:1 program gave students access to resources that could help them, and without the 1:1 program some students would not have access to the online resources at home. She believed these gaps in the educational process could affect student learning. Furthermore, all participants felt that knowing how to use the Internet and credible resources would help students throughout their lives while in college, work, or at home. According to the Office of Educational Technology (2017), when a significant amount of technology is used in the classroom it better prepares 21<sup>st</sup> century students for the skills they will need in their future.

To some extent giving every student the same tool, in this case a laptop, does give underprivileged students more opportunity for success. However, I would argue that the 1:1 program does not necessarily produce equality among the students. I do not assume every child has an Internet connection at home or transportation to a location that has Internet, so that does not make the access equal. More importantly, learning involves many more factors involving family, social and cultural contexts. However, I would suggest that the exposure to technology does increase technological knowledge for students coming from low social economic backgrounds.

### **Are Distractions a Problem?**

Each participant also felt that using laptops could pose some distractions for students that could affect their learning as well. In our interview Mark commented,

The biggest challenge with 1:1 is the kids learning how to manage their time with the world at their fingertips. That is often difficult because they are young and don't have a world of experience to monitor that for themselves.

He continued to say that you have to remind certain students to put their phones away, go to this website, and pay attention. As Mark was explaining this I thought many adults had this problem, too. Mark did say most students used their laptops responsibly but with some it was a constant struggle. Stacy had the same issues as Mark, but she thought those students would get distracted in any type of classroom environment and at least in a 1:1 classroom they weren't bothering their peers. Although the disruptive student or students were engaged in watching videos or playing games on their laptop and not engaged in the class assignment, other students were not being disturbed as they would in some in traditional classrooms.

Jacob also felt that sometimes the laptop distracted student learning, especially for IEP students. During our first interview Jacob maintained that "Sometimes it is too much engagement because there is no way to block all the games and sites that they shouldn't go to, but overall it is positive because they are in touch with their assignments." Jacob also believed that distractions with student laptops was more of a

classroom management issue. He thought teachers should walk around and monitor where students were going on their laptop; he also believed teachers needed to establish a relationship of trust with their students. On the other hand, Ashley did not mind if students went to games or websites of personal interest as long as her assignment was finished. That battle is one she didn't want to fight because she knew that students were always going to figure out how to get around the filter, and at least getting around the school filter required investigating and critical thinking. Ashley relayed that she only had a couple of students who sometimes got distracted and it wasn't a big problem in her classroom.

Ashley's lack of concern for student distractions, along with Mark's and Jacob's concern over it, shows that perspectives on the distractions of technology depend on the mindset of the individual teacher. Stacy believed that students who become distracted by the laptops would be distracted by something else in a traditional classroom, and thought the technology kept them from disrupting their classmates. Nevertheless, prior to teaching in a 1:1 program teachers need to be aware that some educators believe that technology can be a distraction to students because they have the ability to watch videos, surf the Internet, and engage in social media. If school districts find the distractions too cumbersome, there are affordable programs available that allow teachers to monitor student computer screens and even control them. The school district I work at purchased this type of software because many teachers thought technology was a distraction, especially at the middle school level.

### **Beyond Test Scores**

Last, my participants did not frame student success by their test scores, but believed that student learning took place if students demonstrated that they understood the concepts. As Maschmann (2014) argues, most educators evaluate student success by several indicators because many teachers do not feel the high stakes test is a true measure of student performance. In an interview Ashley pointed out, "I believe the kids are grasping the concepts better because of what we are doing with technology. Sometimes it means higher vocabulary scores and sometimes it doesn't." Ashley went on to explain that

she has seen an increase in test scores and knew that was attributed to the Chromebook. During the focus group she pointed out, “I have seen our test scores skyrocket.” During our interview, Jacob also expressed that students were more engaged and told me his test scores were better because the 1:1 program made it easier for students to obtain information and study for his tests.

The participants’ stories presented here reveal that teachers believed student learning was positively impacted by the 1:1 program. Teachers have experienced academic growth in their students because technology engaged and motivated them to learn in new ways. Even though some students were distracted by technology, the overall assumption by teachers was that students were doing better on quizzes and tests while gaining technologic experiences that would prepare them for life in the 21<sup>st</sup> century.

### **The Importance of Teacher Support and Buy-In**

As discussed in the literature review, many educational professionals are convinced that teacher buy-in is an essential component to the successes of the 1:1 program. Windschitl and Stahl (2001), Stanhope and Corn (2014), and Maschmann (2014) assert that without teacher buy-in, implementing technology in a 1:1 classroom will fail to promote student learning. Without any reservation, each of my participants also felt that teacher buy-in without support was the determining factor for the successes of their 1:1 program. Jacob and Ashley felt supported at Westward High’s 1:1 program, and acknowledged the principal and IT department for implementing the laptops with procedures in place that supported all teachers. In our second interview I asked Jacob how he would determine the successes of the 1:1 program, and he responded by saying,

I think teacher buy-in is a very big factor. If the teachers are bought-in, then the students will be more likely to buy-in. If the teacher has a good attitude about it, knows how to work it well, and actually makes good use of it, and there is actual learning going on through the computers, than that makes it successful.

Ashley's positive disposition was also displayed when she spoke about the 1:1 program at Westward High. Again, she gave kudos to the administration and the 1:1 integration specialists because they implemented the program gradually while encouraging teachers along the way. In an interview Ashley commented, "We have so much buy-in, and I think that helps the 1:1 to be successful because if the teachers don't buy-in then it's just like a textbook that is not open." She also expressed that teachers had excellent support from the 1:1 technology director, and that he walked teachers through the individual steps that should to be taken when implementing technology.

On the other side of the spectrum, Mark and Stacy were somewhat disappointed by the lack of support and accountability from their administration. Stacy commented that it was very frustrating when they had access to student laptops but most teachers were not using them in their classrooms. Stacy believed this was due to the lack of support. In our first interview she pointed out,

I feel like we don't have anyone to go to for that [technology integration support]. For example in our individual disciplines, Ron has really done a good job of setting things up, like Canvas or how to create a quiz, and that has been great, but there is not a lot of support on how we use this effectively in our disciplines. A math teacher is going to be different than how an English teacher uses it.

Stacy continued to say that teachers were unassisted when searching for software or websites, and many teachers became frustrated so they stopped using the new technology. Stacy believed that it would alleviate most of the dissatisfaction with technology if Eastland High offered a mass introduction on how to do specific things on the Chromebook. Stacy believed students needed this support too, because technology frustration can be like a domino effect throughout the entire school. Mark, on the other hand, did not feel as frustrated as Stacy did, but he did not feel supported and knew nothing about the device students used, which was a Chromebook. In our interview he complained that "As a teacher, I am out of the loop when it comes to a Chromebook. They gave use training on Google, but I don't have a

Chromebook to work with day in and day out.” Later in the conversation, Mark explained, “I could let that be a distraction if I wanted to. I choose not to go there. There is not enough time in the day to learn a new platform.” I was surprised that neither school district in my study gave the teachers the same technological tool the students were given. Teachers had to either buy their own laptop or use the desktop in the classroom. Mark informed me that the desktops were outdated and slow. This could pose some frustrations and obstacles for teachers who could not afford to purchase a laptop. Therefore, Mark focused on useful websites to accentuate his videos and hands-on material. Even though Mark was not letting the lack of support affect him in his teaching, I sensed an underlying negative tone in his demeanor and the stress in his language. I assumed since he had worked in a 1:1 classroom environment before and felt confident in this learning environment, his frustration level was not as high as Stacy’s. Stacy’s comments reflected dissatisfaction with how Eastland High had supported teachers in the 1:1 program because she felt it negatively impacted teacher buy-in and student learning. Howard and Gigliotti (2015) support Stacy’s perspective; their study found that when proper support and guidance were present in integrating technology in a 1:1 program, it increased teachers’ positive attitude about student learning through technology.

The focus group’s interactions and discussions also supported the importance of teacher buy-in and support that I found from the individual interviews. I asked the group if they had any training before or during the implementation of the 1:1 program. Jacob and Ashley immediately responded by stating administration had procedures in place that required teachers to implement the 1:1 program in stages. For example, in our focus group Jacob commented,

They gave us low expectations for each quarter. First quarter we did things on the calendar, next quarter we built a quiz and developed some slides, etc. They didn’t just throw the 1:1 at us with high expectations right off.

After Jacob's response, Ashley reiterated how Westward High prepared the teachers because the district started with the "One to Stay" program to work out and solve any kinks or problems before the whole grade went to a 1:1 program. The "One to Stay" was what their district called the pilot program in which some teachers received proper support and training so that they could teach the other teachers the next year. Once the "One to Stay" program was doing well, then the 1:1 initiative was integrated into the entire 9<sup>th</sup> grade. Stacy and Jacob said the teachers involved in the "One to Stay" program supported other 9<sup>th</sup> grade teachers, so there was always adequate support throughout the building. In our focus group, Jacob explained, "The 'One to Stay' teachers were part of the team that helped the building acclimate to technology."

Even though Mark and Stacy were secure in a 1:1 program, Eastland High did not have a program like the "One to Stay" to support teacher pedagogy and curriculum, and the district did not have any other programs in place to support teachers or determine whether teachers were using technology in their classrooms. Stacy felt that without accountability, teachers were not going to move out of their comfort zone because they were afraid of failure. Stacy told the group,

We need teacher buy-in for the program to succeed. The technology team does teach the basics like how Canvas functions and that is great, but a lot of teachers need to know how to adapt the curriculum and teaching style or strategies in the 1:1 because now students can Google answers. When there are problems teachers often shut down. They think, "I tried and it was too stressful, so I am going back to what I was doing before."

In our last interview, Stacy relayed to me that she had spoken to the IT director and explained that teachers needed training specific to their disciplines and was optimistic that next year the district would provide effective training. Overall, each participant felt the 1:1 program could positively impact teacher



pedagogy, curriculum design, and student learning if proper support was present because adequate support could then affect teacher buy-in.

Based on the literature and my participants' stories, the following suggestions are the building blocks that create teacher buy-in and adequate support when implementing 1:1 programs:

- Teachers' perspectives need to be heard prior to implementing the 1:1 program.
- Teachers need to have clear expectations of how technology will impact pedagogy and curriculum.
- Teachers need to consider how their classroom structure will be changed in a 1:1 classroom environment.
- Districts must provide ongoing professional development tied to curriculum support and development.
- Teachers need to participate in professional learning communities for peer support and collaboration.
- Districts must provide teachers with technology integration specialists and their role is to provide daily support for pedagogy and curriculum needs.

Inadequate support in 1:1 programs can lead to myriad problems, especially for veteran teachers who need support when integrating technology into the classroom environment. If teachers have an understanding of where technology is taking their instruction, they are more likely to use it as an educational tool dedicated to student learning. When technology is placed into the classroom without proper professional development, in many cases it will be nearly useless. Districts need to not only advocate vigorously for the functional aspects of technical aptitude, but also demonstrate to teachers how instruction and curriculum design can be transformed through a digital paradigm.

### **Summary**

In review of my interpretive cross-case analysis, I introduced four themes structured around teachers' perspectives in a 1:1 program related to pedagogical transformation, curriculum re-designing, students' learning and successes, and teacher support and buy-in. I used a hermeneutical lens to understand teacher realities and perspectives in a 1:1 classroom. Hermeneutics provides a lens for understanding and interpreting the basic ontological insights of human experiences and phenomena, which in my study focused on teacher perspectives in a 1:1 classroom environment (Heidegger, 1976). I interpreted each participant's perspectives and also did a cross-case analysis of all participants' intertwining experiences with adequate quotations in order to respect each individual participant as a unique and important individual who teaches in a 1:1 program.

The next chapter presents the conclusions of my study. I first present a summary of my study and a review of the research questions. Next, I attempt to answer the research questions from the perspectives of my participants, and last I discuss the implications of my study.

## CHAPTER VI

### Conclusion

The purpose of this study was to explore teachers' perspectives in a 1:1 classroom environment, particularly regarding how teachers' pedagogy and curriculum design may have been transformed by using computer technology, in two different school districts in a state in the U.S. Midwest. The experiences of Mark, Stacy, Jacob, and Ashley offered intricate understandings of the successes and struggles in a 1:1 program. Teachers understandings and perspectives are an important determinant to the effectiveness and outcomes in a 1:1 program (Garthait & Weller, 2005; Stanhope & Corn, 2014). My aspirations for this study were to share and interpret my participants' experiences and perspectives when teaching in a 1:1 classroom environment. Their stories can help us understand what it means to teach students when they have technology at their fingertips 24/7, and how school protocols and procedures influence the 1:1 program.

In this final chapter, I begin with the research questions I used to conduct my study and summarize my data analysis. My study was designed using a qualitative case study in which I applied hermeneutic inquiry as my theoretical framework. I presented interpretive case analysis and cross-case analysis in which I interpreted the emerging themes from the participants' stories. I attempted to create a holistic understanding of my participants' experiences when interpreting the findings (Bloomberg & Volpe, 2012). This chapter includes a research reflection, the

implications and limitations of my study, and recommendations for future research.

Hermeneutic tradition provides a lens for understanding and interpreting the fundamental ontological insights of human experiences and phenomena (Heidegger, 1976). Heidegger also suggests that human experiences embody particular way of “being in the world” and are subject to interpretation because all are various forms of social interaction in an organization, and exist because people act in a certain way based on their experiences and perceptions. Hermeneutic inquiry is not about reporting how things are or how things were (Walker, 2016). Rather hermeneutic inquiry is situated by the “difficult interpretative play for which we live our lives together” (Agrey, 2014, p. 397). I drew upon the hermeneutical insights to interpret, reflect, and understand my participants’ perspectives, so that I understood what it means to teach in a 1:1 classroom environment.

### **Interpretation of Findings**

In chapters four and five, I presented an interpretation of the data in an organized and readable narrative. Multiple themes were presented for each participant, and then a cross-case analysis was presented using the same method of presentation. I had two research questions in this study and I will summarize the findings of those questions.

#### **What are secondary teachers’ perspectives on how their pedagogy has been transformed while implementing computer technology into teaching in a 1:1 classroom environment?**

This study found that Mark, Stacy, Jacob, and Ashley used a combination of pedagogical approaches in their 1:1 classroom environments, which transformed traditional teaching in different ways and to different extents. These changes in pedagogy can be summarized through aspects of classroom management, desk arrangement, classroom interactions, and teaching strategies.

## **Classroom Management**

My participants' stories revealed that Canvas, the schools' educational platform, had changed the dynamics of classroom management for the participants. Canvas enabled the participants to post their classroom procedures, assignments, grades, and absences online so that students had access to the learning environment when they first arrived in class. Students knew to check Canvas each day upon arriving in class to see the course content for that day. This change helped with classroom management because it gave teachers more time to give students meaningful feedback on their assignments. Teachers spent less time explaining the day's assignment, waiting on students to get their materials out, or collecting the day's assignment. Canvas kept their class organized and efficient.

Another area that impacted classroom management was how participants kept students focused and on-task. The participants constantly moved around the room making sure students were doing their assignments and helping them as needed with feedback, encouragement, and redirection. The participants also engaged in class discussions to ensure students were paying attention. As a result of students' engagement, there were fewer disciplinary problems to address such as students browsing the Internet for pleasure or behaving disruptively.

Finally, I found the participants managed their classrooms with flexibility. Students could ask questions without raising their hands, listen to music on their phones when completing assignments, and move freely around the room anytime they wanted. Students knew classroom expectations and followed them accordingly. These freedoms helped them avoid feeling restricted in their classroom environment.

## **Desk Arrangement**

The participants arranged their rooms so that it was easy to walk around and they could see student computers, but only Stacy had students sitting at tables and changed traditional desk

arrangement more drastically. The other participants had students sitting in a traditional design with desks in rows, and only Jacob had his desk at the back of the classroom. I did not see any problems with participants' classroom design because students could see the Smartboard and turned their desks to face one another when working on group projects. Stacy's desk arrangement, however, did provide more convenience for students' collaborative interactions.

### **Classroom Interactions**

I found that classroom interactions changed dramatically in a 1:1 classroom environment because teachers' relationships with students had improved. This was due to improved communication and the teacher's ability to work with students on an individual level. The study also found that the participants did not have to spend as much time lecturing as they did in a traditional classroom, and this allowed them to work with students to give them personalized instruction. I also found that positive classroom interactions resulted from the participants' classroom management because students had freedom in the class and did not feel confined in their environment. The participants' pedagogical approach also had a tolerance for noise during discussions, allowed students to work in groups, and gave students a choice when completing assignments. All these pedagogical arrangements contributed to improved classroom interactions. I also found classroom interactions improved because my participants knew their students, shared experiences with students, and took an interest in students' lives. I found the teacher-to-student and student-to-student interactions built a classroom community that supported a productive classroom environment.

### **Teaching Strategies**

This study found that the participants approached teaching with multiple strategies in their 1:1 classroom environments. Direct instruction was combined with a student-driven approach because having technology enabled students to research and complete assignments in

unique ways that were meaningful to the individuals. Some of the specific strategies used were lectures, demonstrations, modeling, scaffolding, student collaboration, differentiated instruction, student choice, discussions, humor, games, individualized teaching, and flipped classroom instruction. I found that these combined teaching strategies were effective in a 1:1 classroom environment and led to effective teaching that gave students the opportunity to experience, conceptualize, analyze, and apply meaning to new skills and knowledge.

### **What does it mean for secondary teachers to make modifications to curriculum design in a 1:1 classroom environment?**

This study investigated how the 1:1 program influenced secondary teachers' curriculum design. The aspects of curriculum design examined included the use of textbooks, documents, films, Internet sites or online software, and other tangible or abstract devices used to teach the intended instructional agenda, and how they assessed their curriculum. For these secondary teachers, modifying curriculum design meant simultaneously meeting the demands of the state standards and objectives, making curriculum relevant to their students' needs and learning experiences, and assessing their educational goals, all while using the various resources of their 1:1 classroom environment. These teachers considered the nature of the subject matter, students' needs, and what the use of technology could provide in their re-designing of curriculum in a 1:1 classroom environment.

#### **Paper Textbook**

Two of the participants used a paper textbook during this study. Jacob was going to write his own curriculum the following year from online resources, but Ashley thought the paper textbook was extremely important for her subject and was in the process of adopting a new textbook when this study took place. Ashley taught Spanish and had not found online resources for her subject that matched her educational goals because second language learning requires

specific linguistic concepts. Both participants supplemented their paper textbooks with online materials produced by the textbook company.

### **Online Curriculum Materials**

The other two participants did not use paper textbooks. They had developed their own curriculum based on state standards and objectives, so they played a creative role in designing their own curriculum. The participants posted their materials as presentations or video demonstrations. All four participants designed their curriculum with a variety of online resources such as games, interactive websites, quizzes, films, documents, and other Internet sites they considered useful to the content of their courses. I found the participants used the 1:1 program to design curriculum that promoted cognitive learning, helped students with critical thinking and social skills, and prepared students for college and their future careers.

### **Curriculum Assessment**

This study found that curriculum assessment was an on-going process. Curriculum assessment refers to the participant's classroom curriculum. My participants continually evaluated the content of their curriculum to ensure students were meeting the classroom standards and learning objectives. These teachers would often change the language or materials of their curriculum until students understood the concepts. In a 1:1 classroom environment, my participants had the ability to allow students to choose materials from the paper and online curriculum that were relevant to them to promote engagement. Participants also reported an increase in testing scores as students' learning outcomes reflected the positive effects of curriculum design in a 1:1 program. The teachers in this study believed that curriculum assessment was a continuous act because a dedicated teacher always has to question and revise the content of their curriculum design.

### **Philosophy of Curriculum Design**



Participants' curriculum design reflected their philosophy of teaching by balancing subject matter, societal expectations, and instructional resources to promote students' learning. The participants in this study had the subject knowledge, competencies, and experiences to be the designers of their own curriculum, and intentionally designed it around students' learning experiences and interests to promote engagement and motivation. Curriculum design was also a process and the participants were aware that it had to meet the needs of students while at the same time incorporating state standards. These teachers were aware that when teaching in a 1:1 program they had to be adaptable to changes because technology was constantly changing the ways students learn or obtain knowledge. The findings reveal that the participants were continuously revising their curriculum and creating a culture of continuous improvement to adapt to changing needs, conditions, and educational resources.

### **Research Reflection**

Research reflection is an essential step when conducting qualitative research. I used a research journal throughout the entire process of data collection, and it served as a valuable tool when I reflected on my study near its conclusion. My research journal gave me awareness that the interactions within the individual interviews were different from the interactions in the focus group discussion. First of all, when we were all together the male participants were more outspoken than their female counterparts. Ashley was very reserved during the focus group discussion, and I found this surprising. The focus group also seemed to give the participants more control over the discussion and they talked back and forth about the positives and negatives of the 1:1 program. Jacob and Ashley were more positive because of support while Mark and Stacy were more negative because of the lack of support. Mark and Stacy were very interested in Westward High's "One to Stay" program and wanted to know as much as they could about their 1:1 program. Ashley seemed surprised at Mark and Stacy's complaints. She commented that some of their teachers had visited Eastland high before implementing Westward High's 1:1

program, and it seemed their staff was supported by administration and the 1:1 program was doing great. Ashley also pointed out that some of the procedures that Eastland High used in their 1:1 program were included in the vision for Westward High's 1:1 program. Stacy responded by stating that Westward High had probably just visited the teachers at Eastland High who were using technology in their classes, and more than likely they observed a "dog and pony show." Stacy even said it was more than likely that her class was one they observed.

Second, after reflecting on the research process, I think the different reactions to my presence during the observation were a result of the participants' personalities. Mark and Ashley were very outgoing, friendly, and relaxed. Even though Jacob and Stacy were also friendly and welcoming, I sensed they were more reserved and wanted to maintain a relationship only for the purpose of this research project.

Third, I was surprised that the students at Westward High had no lockers and were expected to carry backpacks full of their classroom supplies to each class with them. Both school districts allowed students to use cell phones in class. This made me question my school's policies that prohibit student backpacks and cell phones at school. In the future, I will spend more time researching this issue. In 1:1 programs, many students will not have as many books as in a traditional classroom, which may lead to students being in class more throughout the day because students do not have to stop at their lockers. Cell phones could also be used as a learning tool when students do not have their laptops.

The participants in this study gave different perspectives on their pedagogy and curriculum changes but all thought the changes positively impacted student learning. After reflecting on the data, the participants were confident in their abilities to effectively integrate technology. Mark and Stacy felt there was inadequate support in their district, and believed their fellow teachers were not using the new technology and were simply teaching the same way they

had before the 1:1 program. I also question the literature surrounding pedagogy and feel that all teachers, whether they are in 1:1 programs or not, need to use multiple teaching strategies to impact student learning. That is the primary goal for teachers. Effective teachers want to make a difference and prepare students to be successful in future school and life endeavors.

### **Implications**

This study includes implications for policy, professional development, and teacher education. To a large extent, this study suggests school districts need to invest in adequate training and continued support for educators who are teaching in 1:1 programs. I believe support is vital, especially for veteran teachers who might not have much exposure to teaching with technology every day. This study provided a more comprehensive understanding of what it means to teach in a 1:1 classroom environment. These findings indicate that researchers and educational policy makers need take into consideration teacher perspectives on teaching and curriculum, so that the 1:1 initiatives enhance student learning and prepare them for future school and life experiences.

### **Implications for Policy**

As I observed my participants in their classroom and when I read my field notes, I wanted to share their experiences with my colleagues because their policies surrounding the 1:1 program were different from ours. First, allowing phones in school is something we have never allowed, and I found myself questioning some of the reasons why our district does not allow them. The protocol in my district for not allowing cell phones is because they may pose a distraction for the students and for safety reasons. I assume in a 1:1 classroom environment the laptops could pose a bigger distraction. I thought it was interesting that both schools had a class where they taught students to repair student Chromebooks. Both schools called it “helpdesk,” and I think it empowered students while also teaching them a skill they could always use. I also

believe it would relieve some of the information technology departmental duties as well.

The implications for policy that directly influenced the 1:1 program had to do with a technology plan and support for the teachers who taught at Westward High. This study showed that it is necessary to have a plan before integrating a 1:1 program because some teachers will not use the technology if they have no vision or buy-in.

If there is no commitment from the teacher prior to the implementation of the 1:1 program, then there is a possibility it will not positively impact student learning. Furthermore, teacher insecurities are the foundation for their unwillingness to use technology, and these insecurities are often caused by the absence of professional development, teacher buy-in, and vision for transformation (Bebell & O'Dwyer, 2010; Goodwin, 2011). Therefore, having a policy established prior to implementing a 1:1 program is essential.

### **Implications for Professional Development**

Professional development plays a major role in managing a 1:1 program. My participants' stories gave me insights into the pitfalls and successes when a 1:1 initiative is properly implemented. First, if possible, teachers should be given the same technological device as the students will have before the 1:1 program is implemented, so that they can become familiar with the device. Second, professional development should focus on how the teacher's and students' roles will change in this type of learning environment and what kind of methodologies teachers will use in their classroom. Third, I think trainers need to be aware of which teachers are comfortable with technology and which teachers might be reluctant to use it in their classrooms. It would be best to separate the traditionalists from the technology users, so that the trainings can meet the different needs of those specific groups of teachers. Fourth, as the professional development continues throughout the year, the objective should be to focus on the specific content areas and train those teachers accordingly. This is because math teachers will integrate

technology differently from English teachers. The same is true for other core subjects, too. If the professional development classes cannot focus on the individual content disciplines, the trainings could combine the math with the science department and English with the social studies department.

Even though media literacy was not discussed as a curriculum component in these 1:1 classroom environments, based on research and personal experiences media and information literacy education are fundamental to 1:1 classroom environments. Teachers and students need to have an understanding of what it means to access, analyze, evaluate, create, and participate with media content. Students also need to develop critical thinking skills when interacting with 21<sup>st</sup> century media culture.

From listening to my participants I have come to an understanding that the following types of professional development are important when implementing a 1:1 program.

- Teachers need to have an understanding of how technology will impact their pedagogy and curriculum.
- Teachers need to consider how their classroom procedures and structure will change in a 1:1 classroom environment.
- Districts will need to provide ongoing professional development related to curriculum support and development and media and information literacy
- Teachers will need to participate in professional learning communities for peer support and collaboration.
- Districts will need to provide teachers with a technology integration specialist to provide daily support for pedagogy and curriculum needs.

Professional development should show teachers how to engage their students and reflect on their own teaching practices. Teachers need to know how to transform their curricula by rethinking

their content to engage students. I think professional development needs to continue throughout the first two years of a 1:1 program implementation, so these teachers have the skills and abilities to train teachers that are hired by the district in the future. I also believe that the training should be video recorded and put on a website for future reference when needed.

### **Implications for Teacher Education**

As I read through my field notes and listened to my participants' transcriptions, I admired their determination and drive, but wondered about other new teachers around the country and what colleges were doing to prepare students to teach in a technologically enriched atmosphere. According to Barmore (2015) many college programs around the nation are struggling to prepare teachers to use a wide range of technologies as classroom tools. Universities and colleges are aware that public schools are spending billions of dollars on new technology devices, but are finding it difficult to integrate technology education into their teacher education programs. This is because their curriculum is already filled with so many requirements. Barmore (2015) also mentions that most students in teacher preparation programs already know how to use the technology, but that does not translate in knowing how to properly implement it to engage students or modify technology to fit a lesson. From my participants' successes and struggles, I think we must find a way to incorporate technology education into the course work in teacher education, so that future teachers have the exposure and experience needed to effectively integrate technology into their teaching. These future teachers need to learn how technology, teaching, and curriculum mutually influence each other, and it is possible to enhance this technology component in existing courses.

### **Limitations**

My work and personal experiences as a 1:1 integration specialist may have been a limitation to this study. Although the participants were not my colleagues and the districts where

my study was carried out was not my own, I felt my role as an educator with an emic perspective could have influenced our interactions and participants' answers to interview questions. The small number of participants was another limitation of the study. It would have been beneficial to this study if I could have included more teachers who work in 1:1 school districts to add breadth to the data, but considering this study was organized using a qualitative case study method, the findings were unique to the individual teachers and their 1:1 program, and that adds to the richness of my study.

### **Future Research**

As this study wraps up, there are some areas to consider for future research. First, I think there is a need for future research on student learning in 1:1 programs. I believe this because there are inconsistencies in previous research about the educational value of 1:1 programs. Some literature and/or research studies point out that student achievement depends on the teacher, and some schools have even phased out 1:1 programs because there was no indication of academic gains in students. On the other hand, some literature and/or studies claim that 1:1 programs improve educational outcomes in students. My study revealed the positive effects on student learning from teachers' perspective. Future research can focus on the effect of 1:1 programs on students' learning.

Second, I found that some teachers are designing curriculum by intertwining online textbooks with websites, or by building their curriculum with only online resources and not adopting a textbook. As I read the literature surrounding the shift from paper textbooks and novels to online textbooks and eBooks, I found myself wondering if there will be any consequences for students who read everything online. School districts around the nation are seeking ways to integrate a 1:1 classroom environment, and with that push many policy makers and administrators are requiring teachers to write their own curriculum or they are not adopting a

paper textbook because of the added cost. Future research could investigate how this affects student learning and preparedness for future careers, both in college or the work force.

Third, I found there were some concerns about how veteran teachers were implementing technology in the 1:1 classroom environment. The voices of veteran teachers working in 1:1 programs need to be heard because their experiences teaching with technology will be different from those of new teachers. Many veteran teachers have predetermined beliefs about what constitutes effective instruction and some lack technological expertise, while many new teachers embrace innovative uses of technology because many of those teachers are digital natives who grew up using technology. Future research could also use a survey to reach a large group of diverse teachers, veteran and those reluctant to embrace the 1:1 program, to understand their perspectives of why they do not use technology in their classrooms. Future research could examine the voices of these teachers in 1:1 programs in order validate to their frustrations and implement solutions to the obstacles they may face. Future research could focus on incentives and barriers to learning and using technology in the classroom, professional development approaches, and teaching roles indicate

Fourth, my participants were all white. Future research could examine the role of minority teachers in 1:1 programs. Teachers from different racial and ethnic backgrounds could reveal some alternate insights and understandings to the successes and frustrations in a 1:1 program.

Fifth, perspectives from stakeholders other than teachers could be researched to reveal multiple perspectives in 1:1 program. First, students' own perspectives would be interesting to hear because it would uncover their insights on learning and how the 1:1 program may have impacted their learning environment. Second, parental perspectives on how the 1:1 program works at home would be another interesting topic for future research. Parents have a unique



perspective on the 1:1 program because they experience the successes and struggles of the initiative outside of school and in the home environment. Third, principals' and other school administrators' could be investigated because their understandings are also important to research. Principals and administrators would have different understandings and insights on the advantages and obstacles schools face when implementing 1:1 programs.

I was honored to conduct this study because I believe as technology continues to advance, it will impact every school across the world, and it is important to understand how this affects teachers and students in the classroom.

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## APPENDICES

### **Appendix I: Interview Questions**

1. How would you describe your experiences with the 1:1 school environment?
2. Has the 1:1 school environment influenced your teaching practice? If so, in what ways?
3. Has the 1:1 school environment influenced how you design the curriculum in any way? If so, in what ways?
4. Tell me a story of teaching in the 1:1 classroom environment that brought surprises to you.
5. How did the school district prepare you to teach in a 1:1 classroom environment?
6. Tell me a time when you felt like you need more help integrating technology in a 1:1 classroom environment?
7. If you could change some components of the 1:1 program what would they be?
8. Can you tell me a story of how the 1:1 classroom environment positively influenced student learning?

## **Appendix II: Focus Group**

1. Have you seen a change in your classroom or school since students received laptops? Please describe it.
2. Can you explain how you were trained to implement this program?
3. Did you have a chance to give your input in the process of implementing this program? If so, can you elaborate?
4. What are some things that have occurred due to the 1:1 Initiative that you did not expect?
5. What are some things that you have expected but did not occur?
6. Can you explain how the 1:1 program has affected student learning environment?
7. Do you have any additional comments to make about the 1:1 classroom environment?

### **Appendix III: Interview 2**

1. Describe technology integration, as it would occur in your classroom prior to the 1:1 classroom environment, citing specific practices, tools, devices and resources.
2. Describe technology integration, as it currently occurs in your classroom after to the 1:1 classroom environment has been implemented, citing specific practices, tools, devices and resources.
3. Describe the instructional strategies most commonly used in your classroom since the implementation of the 1:1 program.
4. What do you think about a blended learning environment, flipped classroom, or personalized learning?
5. Does technology impact critical thinking or creative work? Please Explain.
6. Could you give me an example of how students collaborate while completing assignments?
7. What has changed because students have instant access to the Internet?
8. How will you determine the success or failure of the 1:1 classroom environment?
9. Please describe how the 1:1 classroom environment has changed the learning activities of your students?
10. Can you describe any major technological hurdles, such as bandwidth, that interfere with the educational process?
11. Any last comments or closing remarks?

## **Appendix IV: Demographic Information Survey**

**1. What is your gender?**

☐ Female

☐ Male

**2. What is the highest level of education you have completed?**

**3. How many years have you been teaching?**

☐ 1-3 years

☐ 4-10 years

☐ 10 years or more

**4. Have you work in another 1:1 school?**

**5. What subject do you currently teach?**

☐ English

☐ Math

☐ Social Studies

☐ Science

☐ Elective class

**6. What grade do you currently teach?**

**7. What experiences do you have using computer technology as an educational tool?**

☐ I have limited experience in using computer technology in the classroom

☐ I have some experience in using computer technology in the classroom

☐ I have moderate experience in using computer technology in the classroom

☐ I have a lot of experience using computer technology in the classroom

**8. How often to you use computer technology, iPads, or any other computing device in your leisure time?**

- ☐ Daily
- ☐ Weekly
- ☐ Monthly
- ☐ None

**9. What do you primarily use these devices for?**

- ☐ Research/information
- ☐ Entertainment
- ☐ Pay bills
- ☐ Social networking
- ☐ Email
- ☐ Something else

**10. I will use pseudonyms to identify your district and name. If you want me to use a specific name, please let me know on this form.**

## Appendix V: IRB Approval

### Oklahoma State University Institutional Review Board

Date: Wednesday, January 27, 2016  
IRB Application No ED161  
Proposal Title: Teacher perspectives on teaching and curriculum change in 1:1 classroom environment

Reviewed and  
Processed as: Exempt

**Status Recommended by Reviewer(s): Approved Protocol Expires: 1/26/2019**

Principal  
Investigator(s):

Andrea Williams Hongyu Wang  
OSU Tulsa 2444A Main Hall  
Stillwater, OK 74078 Tulsa, OK 74106

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The IRB application referenced above has been approved. It is the judgment of the reviewers that the rights and welfare of individuals who may be asked to participate in this study will be respected, and that the research will be conducted in a manner consistent with the IRB requirements as outlined in section 45 CFR 46.

☒ The final versions of any printed recruitment, consent and assent documents bearing the IRB approval stamp are attached to this letter. These are the versions that must be used during the study.

As Principal Investigator, it is your responsibility to do the following:

1. Conduct this study exactly as it has been approved. Any modifications to the research protocol must be submitted with the appropriate signatures for IRB approval. Protocol modifications requiring approval may include changes to the title, PI advisor, funding status or sponsor, subject population composition or size, recruitment, inclusion/exclusion criteria, research site, research procedures and consent/assent process or forms
2. Submit a request for continuation if the study extends beyond the approval period. This continuation must receive IRB review and approval before the research can continue.
3. Report any adverse events to the IRB Chair promptly. Adverse events are those which are unanticipated and impact the subjects during the course of the research; and
4. Notify the IRB office in writing when your research project is complete.

Please note that approved protocols are subject to monitoring by the IRB and that the IRB office has the authority to inspect research records associated with this protocol at any time. If you have questions about the IRB procedures or need any assistance from the Board, please contact Dawnett Watkins 219 Scott Hall (phone: 405-744-5700, dawnett.watkins@okstate.edu).

Sincerely,



Hugh Crethar, Chair  
Institutional Review Board

## **Appendix VI: PARTICIPANT INFORMATION**

### **OKLAHOMA STATE UNIVERSITY**

**Title:** Teacher Perspectives on Teaching and Curriculum Change in a 1:1 Classroom Environment.

**Investigator:** Andrea Williams (Curriculum Studies student at Oklahoma State University)

**Purpose:** The purpose of this study is to understand teacher perspectives in a 1:1 Initiative, particularly regarding how teachers' pedagogy and curriculum design may be transformed by using computer technology.

**What to Expect:** Participation in this research will involve at least two classroom observations, 2 interviews and 1 focus group discussion (each at least one hour long), and the analysis of classroom documents. I will collect data over a five month period. If needed, I will contact teachers during the summer months to clarify any data collected. If convenient, the interviews and focus group discussion can be completed outside the academic day when school is not in session (after school or on weekends). Each participant will be asked to member check the transcripts to ensure accuracy. This means participants have the right to review what they said during the interviews and focus group.

**Risks:** There are no risks associated with this study.

**Benefits:** There are no direct benefits to you. However, you may gain an appreciation and understanding of teacher perspectives about pedagogy and curriculum in 1:1 classroom environments.

**Compensation:** There is no compensation for participating in this study. However, during the focus interviews and focus groups I will have refreshments available.

**Your Rights and Confidentiality:** Your participation in this research is voluntary. There is no penalty for refusal to participate, and you are free to withdraw your consent and participation in this project at any time.

**Confidentiality:** I will use pseudonyms to identify school districts and teachers' identities. Participants can choose their personal and district's pseudonym. This study will only assert that the research sites are in a Midwestern secondary 1:1 school. The data



will be kept on a secure laptop that requires a password. The laptop and printed data will be locked in a cabinet at my private residence. I will be the only person that has access to the data. I will also be the only person to transcribe the audio recordings. After the transcriptions are complete and participants have member checked the data, I will delete the audio recordings. After three years, the data will be destroyed.

**Contacts:** You may contact me, my advisor, or the IRB office, should you desire to discuss your participation in the study and/or request information about the results of the study: Andrea Williams (Ph.D. student in Curriculum Studies) 8745 East 580 Road B Catoosa, Oklahoma 74015, 918-407-3422, fax number 918-266-8644, [andrea.j.williams10@okstate.edu](mailto:andrea.j.williams10@okstate.edu) or [awilliams@catoosa.k12.ok.us](mailto:awilliams@catoosa.k12.ok.us) . My advisor, Hongyu Wang, contact information is 206 Willard Hall, Stillwater, Ok, 74078, [hwang@okstate.edu](mailto:hwang@okstate.edu). The IRB Office at 223 Scott Hall, Stillwater, OK 74078, 405-744-3377 or [irb@okstate.edu](mailto:irb@okstate.edu).

**If you choose to participant, please sign the consent form at this time, you can mail or fax me the document. I will also come to your school to retrieve the consent form. In addition, you will need complete the demographic information form at <https://www.surveymonkey.com/r/KGXDLB5>. This survey will only take a few minutes of your time.**

**Thanks, Andrea Williams**

## Appendix VII: Consent From

### Consent Form

Name of student researcher: Andrea Williams  
Address: 8745 East 580 Road B Catoosa, Ok 74015  
Telephone number: 918-407-3422  
Email address: andrea.j.williams10@okstate.edu

Thank you for agreeing to participate in this study with the student researcher, a graduate student at Oklahoma State University. This form outlines the purposes of this dissertation and provides a description of your involvement and rights as a participant. The purposes of this study are the following:

3. To gain insight into the following research problem or question. To understand teachers' perspectives in a 1:1 Initiative and to identify how teacher pedagogy and curriculum design change because of computer technology.
4. To gain experience formulating and conducting qualitative research methods, including (interviewing, observation, focus groups, and document analysis). This research fulfills my degree requirements for Curriculum Studies at Oklahoma State University (206 Willard Hall, Stillwater OK, 74078. Advisor's Email hwang@okstate.edu).

You are invited to participate in this study by participating in two interviews, focus group, observation and member checking the data to ensure validity.

As the researcher, I agree to meet the following conditions:

1. I will audiotape our interviews/focus group then I transcribe the audio recording.. I will give you a copy of the transcript so that you can double-check thatI have interpreted your words correctly.
2. I will assign a fictitious name on the transcript or you may choose one yourself. Your real name will not be used at any point of information collection.
3. The data collected for this project will be published for dissertation requirements in order to fulfill my degree responsibilities.

As a participant in this research, you are entitled to know the nature of my research. You are free to decline to participate, and you are free to stop the interview or withdraw from the study at any time. No penalty exists for withdrawing your participation. Feel free to ask any questions at any time about the nature of the dissertation and the methods I am using. Your suggestions and concerns are important to me. Please contact Dr. Wang or me at the addresses/email provided above.

The signature below indicates an acknowledgment of the terms described above.

\_\_\_\_\_ I wish to participate in the research described above, have read this consent form, and agree to be audiotaped.

SIGNATURE OF RESEARCH PARTICIPANT      DATE

\_\_\_\_\_

\_\_\_\_\_

VITA

Andrea Williams

Candidate for the Degree of

Doctor of Philosophy/Education

Thesis: TEACHER PERSPECTIVES ON TEACHING AND CURRICUUM CHANGE IN A  
1:1 CLASSROOM ENVIRONMENT

Major Field: Education

Biographical:

Education:

Completed the requirements for the Doctor of Philosophy/Education in Curriculum  
Studies at Oklahoma State University, Stillwater, Oklahoma in May, 2017.

Completed the requirements for the Master of Human Relations at University of  
Oklahoma, Norman, Oklahoma in May, 2009.

Completed the requirements for the Bachelor of Science/Arts in Education at  
Northeastern State University, Tahlequah, Oklahoma in December 1992.

Experience:

1992-2010 English teacher, Catoosa Public Schools

2010-Present 1:1 Integration Specialist, Catoosa Public Schools

Professional Memberships:

Oklahoma Education Association

National Education Association

International Standards for Technology in Education