

THE ROLE OF MINDSET
IN DIFFERENTIATED INSTRUCTION
IN A 1:1 CLASSROOM ENVIRONMENT

By

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Abstract: The purpose of this qualitative study is to explore the role of mindset regarding differentiated instruction in a 1:1 environment in a northeastern Oklahoma school district. The rationale for choosing the selected district was that the district was not brand new in the 1:1 initiative. All the teachers at the high school were asked to complete the Mindset Survey Quiz. From there, participants were selected based on their score on the quiz. Three teachers with a strong growth mindset and three teachers not with a strong growth mindset agreed to participate. Data included artifacts the school is using for the 1:1 instructional initiative, results of a mindset quiz from all teachers in the high school, two observations of each of the six teachers in the classroom, and interviews of six teachers. Two administrators were also interviewed for this study. Identification of mindset theory, espoused by Dweck (2006), and the concept map of differentiated instruction, espoused by Tomlinson and Allan (2000), occurred prior to conducting the study and provided a lens through which to present and analyze the school setting. Within mindset theory, a person is described to have either a fixed or a growth mindset. In the concept map of differentiated instruction, there are three main areas of differentiation: content, process, and product. Findings reveal that there is a difference in how teachers in this study with a growth mindset versus a fixed mindset incorporate differentiated instruction in the 1:1 environment. Those teachers having a growth mindset are completely on board with the technology integration. They are ready and willing to learn more in order to implement the technology as effectively as possible. The teachers having more of a fixed mindset did not always have that same outlook. A recommendation for future research is to explore the connection between mindset of district and site leadership and the design and implementation of a 1:1 instructional initiative. Another interesting area would be to research how district and site leadership work together to support teachers' work through the challenges of a 1:1 environment.

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CHAPTER I

INTRODUCTION

On a daily basis, teachers attempt the challenge of meeting the needs of their students (Tomlinson & Allan, 2000). Teacher preparation programs discussed differentiation and offered it as professional development (Holloway, 2000). Differentiation takes practice and does not typically come naturally to a teacher (Tomlinson & Allan, 2000). A teacher must recognize the differences among students in a multitude of ways. Teachers must learn and grow in order to be able to understand how to differentiate in the classroom (Tomlinson & Allan, 2000). This change is necessary for a teacher to implement differentiated instruction successfully. “Whatever does not change does not grow, and what does not grow atrophies” (Tomlinson & Allan, 2000, p. 34).

Mindset (Dweck, 2006) is a theory relevant to education. Everyone has a mindset, including students, teachers, and administrators (Dweck, 2006). Dweck asserted that individuals might have a fixed mindset or a growth mindset. Teachers having a growth mindset have the capacity to implement effective instruction. Dweck includes a statement from a teacher in her book: “I use my teaching to grow, and that makes me,

even after all these years, a fresh and eager teacher” (p. 201). This teacher’s growth mindset allows her to see her teaching as a learning experience.

In 1:1 environments, every student has a technological device of some kind, maybe a ChromeBook, laptop, iPad, or something similar. The technology is a tool that teachers have available at all times in the classroom to provide access to learning opportunities.

Technology “in the classroom can increase students’ motivation, and their ability to gain understanding, and can also increase their overall educational achievement” (Tallvid, Lundin, Svensson, & Lindstrom, 2015, p. 238). Teachers have the autonomy to implement the use of technology in a variety of ways in the classroom to achieve these possibilities. Teachers may or may not utilize differentiation when using technology. Mindset plays a role in how people go about daily activities, so one wonders what role mindset plays in the differentiation of instruction in a 1:1 classroom environment.

Problem Statement

In order to place technology in the hands of students in the classroom, the 1:1 classroom environment provides a device to every student. Through design, the 1:1 classroom environment enhanced differentiated instruction in every classroom through the work of the teachers (Green & Mahoney, 2017). “Differentiated instruction is a way of recognizing and teaching according to different student talents and learning styles” (Morgan, 2014, p. 34). As districts begin technology initiatives, it is important to determine how the use of technology to respond to learner needs can fall under the umbrella of differentiated instruction in the classroom (Tomlinson & Allan, 2000, pp. 56-57). Instructional technology may help teachers meet the varied learning styles of students in their classrooms. In order to meet these needs, teachers will need to implement effectively varied instructional strategies.

“An important strategy for differentiating instruction in the twenty-first century that will likely benefit students greatly involves the effective implementation of technology” (Morgan, 2014, p. 37).

Although through design 1:1 classroom environments enhance differentiated instruction, some teachers successfully use 1:1 technology to differentiate instruction, while others do not. Implementing differentiated instruction is a big task for teachers. “Although differentiated instruction is designed to benefit all students, it requires extremely hard work by knowledgeable and well-prepared teachers” (Morgan, 2014, p. 37). By providing differentiated instruction, teachers are showing their students how much they care about their individuality as learners. When this happens, teachers meet student needs and the learning environment shifts. “We need to change in order to craft schools where we earn each student’s trust that his or her particular capacities will be maximized” (Tomlinson & Allan, 2000, p. 35). Tomlinson & Allan (2000) suggest three considerations when leading teachers in differentiation. “Differentiation that is rooted in ineffective classroom practice cannot succeed. Differentiation is more than a strategy or series of strategies. Movement toward differentiation in teaching is movement toward expertise” (Tomlinson & Allan, 2000, pp. 12-13). Some teachers provide varied instructional strategies to meet the different learning styles of the students in their classrooms and some do not.

One potential reason for teachers’ varying levels of success implementing differentiated instruction is teacher mindset. When a teacher has a growth mindset, they put forth great effort to implement highly effective instruction. The “growth mindset is based on the belief that your basic qualities are things you can cultivate through your efforts” (Dweck, 2006, p. 7). The 1:1 environment presents new challenges to teachers on a daily basis. The

growth mindset “allows people to thrive during some of the most challenging times in their lives” (Dweck, 2006, p. 7).

Purpose Statement

The purpose of this qualitative study is to explore the role of mindset regarding differentiated instruction in a 1:1 environment in a northeastern Oklahoma school district.

Research Questions

This study answers the following research questions:

1. How is differentiated instruction manifested in a 1:1 environment?
 - a. How is content differentiation manifested in a 1:1 environment?
 - b. How is process differentiation manifested in a 1:1 environment?
 - c. How is product differentiation manifested in a 1:1 environment?
2. How do teachers with a growth mindset differentiate instruction in a 1:1 environment?
3. How do teachers with a fixed mindset differentiate instruction in a 1:1 environment?

Epistemological Perspective

Constructivism is the epistemological perspective guiding this study. This perspective helps to describe how people in the setting have constructed their reality and what the consequences are of what is perceived as real (Patton, 2015). Constructivism is described as “the meaning-making activity of the individual mind” (Patton, 2015, p. 122). Constructivists observe individuals in their setting as they seek understanding of the world in which they operate (Creswell, 2014). In this study, constructivism is appropriate as the

teacher's reality unfolds in the 1:1 classroom environment as they work to differentiate instruction for students.

Theoretical Framework

In order to provide a lens or a framework for the study, the theoretical framework was decided a priori in order to analyze the data collected in the study (Creswell, 2009). This study utilized two frameworks: Mindset Theory and Concept Map for Differentiated Instruction.

Mindset Theory describes two different mindsets: fixed and growth. These two mindsets help to explain how people approach challenges in life. Fixed mindset causes a person to think that talent alone causes success, without effort, and that intelligence and talent are fixed (Dweck, 2006). Growth mindset causes a person to believe that with hard work and dedication, a person can grow in their abilities. Dweck (2006) suggested that the growth mindset naturally produces resilience in people.

The Concept Map for Differentiated Instruction presents a method of visualizing and describing differentiated instruction. The fundamental definition of differentiated instruction is a teacher's response to a learner's needs. Teachers can differentiate content, process, or product according to a student's readiness, interests, or learning profile through a vast range of instructional or management strategies (Tomlinson & Allan, 2000).

The two theories work together in order to determine the role mindset will play in the teacher differentiating instruction in the 1:1 classroom environment. The concept map of differentiation shows multiple strategies to utilize with students. The theory of mindset may help to show how well teachers can utilize differentiated instruction, a multifaceted approach

to teaching students and meeting their needs. The study considers how growth mindset helps a teacher use differentiation to benefit students in the classroom.

Methodological Procedures

This study is a naturalistic inquiry study. According to Patton, naturalistic inquiry is “studying real-world situations as they unfold naturally; nonmanipulative and noncontrolling; openness to whatever emerges” (Patton, 2002, p. 46). By looking at observations, artifacts, and interviews, themes emerge in order to answer the research questions. Looking for themes and analyzing all data together, yields a rich understanding of the information.

Erlandson, Harris, Skipper, and Allen (1993) write about the need to establish trustworthiness. “Establishing trustworthiness enables a naturalistic study to make a reasonable claim to methodological soundness” (Erlandson, 1993, p. 131). The researcher must show credibility, transferability, dependability, and confirmability. Chapter III outlined trustworthiness strategies used in this study.

For the purpose of this study, data were collected in one suburban high school with a 1:1 instructional initiative in the entire high school, grades 9-12. Data included artifacts the school is using for the 1:1 instructional initiative, results of a mindset quiz from all teachers in the high school, two observations of six teachers in the classroom, and interviews of observed teachers. Two administrators were also interviewed for this study. By analyzing all of these data elements together, the study draws connections to begin to answer the research questions.

Definition of Terms

1:1 Classroom Environment: Every student is given a device from the school to utilize throughout the school year in an interest to increase the amount of technology in the hands of students.

Differentiation: “In the context of education, we define differentiation as a teacher’s reacting responsively to a learner’s needs” (Tomlinson & Allan, 2000, p. 4).

Fixed Mindset: “Fixed mindset creates an urgency to prove yourself over and over” (Dweck, 2006, p. 6). People in a fixed mindset tend to see effort as worthless and not achieve their full potential.

Growth Mindset: “Growth mindset is based on the belief that your basic qualities are things you can cultivate through your efforts” (Dweck, 2006, p. 7). People in a growth mindset utilize effort to achieve their very best and reach higher levels of success.

Summary of Study

This study is organized into six chapters. Chapter I introduces the study through several sections: introduction, problem statement, purpose statement, research questions, epistemological perspective, theoretical framework, methodological procedures, significance of study, definition of terms, and a summary of the study. Chapter 2 discusses the literature important to this study in order to unveil the themes in the literature about differentiated instruction, technology in the classroom, and mindset. Chapter 3 discusses in detail the methodology, epistemological perspective, and theoretical framework. Chapter 4, 5, and 6 focus on reporting data, findings, and conclusions.

CHAPTER II

LITERATURE REVIEW

Chapter II presents a comparison of the literature and research available for the topic of this study. Key topics presented in this chapter are: (1) technology in the classroom at the national and state level (2) differentiated instruction in the 1:1 classroom environment, (3) transitioning to a 1:1 environment, (4) objectives of the 1:1 environment, (5) professional development, (6) differentiated instruction explanation, (7) differentiated instruction examples, (8) unsuccessful differentiation, (9) mindset as a role when incorporating differentiated instruction, (10) shift in teaching, (11) challenges with a 1:1 environment, and (12) teacher's mindset.

Technology in the Classroom at the National and State Level

This section describes the policy, at the national and state levels, relevant to the use of instructional technology in schools.

National Level

In 1996, President Clinton made a statement about funding grants to supply a computer in every classroom in every state and not denying any school or classroom that opportunity (Dorning, 1996). In 2002, President George W. Bush signed into law the

historical No Child Left Behind Act, which marked the beginning of education reform and education accountability through standardized testing. With the flexibility in funding the new law provided, states could choose to allocate up to fifty percent of funding they receive to other areas including educational technology (Executive Summary, 2004). In February of 2014, President Obama allocated nearly three billion dollars to be spent on educational technology by the Federal Communications Commission and several private technology companies. This funding intended to “close the technology gap in our schools” (Bidwell, 2014, para. 1) by improving internet access, distance learning, discounts from large technology companies, and professional development for teachers. In 2017, President Trump directed the Secretary of Education to prioritize STEM education. The focus was to be on computer science. Leading private technology companies and organizations pledged over three hundred million dollars to the efforts focused on computer science (Trump, 2017).

The frameworks and standards created by national organizations assist educators in effective technology integration. In 2002, the Partnership for 21st Century Learning (P21) championed the 4C’s, which are Critical Thinking, Communication, Collaboration, and Creativity. A critical component of this philosophy is teaching information, media, and technology skills (Framework for 21st Century Learning, 2019). “The Partnership for 21st Century Learning recognizes that all learners need educational experiences in school and beyond, from cradle to career, to build knowledge and skills for success in a globally and digitally interconnected world” (Framework for 21st Century Learning, 2019, p. 2). P21 has become a network of Battelle for Kids and continues to spread the importance of these 21st Century Learning skills. Battelle for Kids is an organization

that strives to “collaborate with innovative education leaders to ensure all students have access to experiences that will prepare them to be lifelong learners and contributors in an ever-changing world” (Battelle for Kids, 2019, para. 1). Along with the P21 framework that has evolved since 2002, the International Society for Technology in Education (ISTE) created National Education Technology Standards. ISTE is “a passionate community of global educators who believe in the power of technology to transform teaching and learning, accelerate innovation and solve tough problems in education” (International Society for Technology in Education ISTE, 2019, para. 1). In these technology standards, there are segments pertaining to students, educators, education leaders, and instructional technology coaches. Many states, including Oklahoma adopted these technology standards (Oklahoma State Department of Education, 2019).

State Level

In Oklahoma, the State Department of Education encourages the use of technology in the classroom to enhance student learning. Oklahoma House Bill 1576 requires professional development for every teacher covering "digital teaching and learning standards to enhance content delivery to students and improve student achievement" (Oklahoma State Department of Education, 2019). The state department provides a listserv for educators to subscribe to in order to communicate with other educators interested in incorporating technology in their classrooms. Oklahoma has adopted the ISTE standards as the state’s education technology standards encompassing standards for students, educators, education leaders, and instructional technology coaches. All of these items and information can be found on the Oklahoma State

Department of Education's website under Education Technology/Services (Oklahoma State Department of Education, 2019).

Differentiated Instruction in the 1:1 Classroom Environment

School leaders have chosen to integrate technology through the 1:1 classroom environment in order to provide teachers a powerful tool to meet students' needs. The transition to the 1:1 environment has happened in schools for a variety of reasons with the biggest being student learning. Objectives concerning the 1:1 environment include giving students a more personalized learning experience and igniting excitement for teaching and learning (Jones, 2007; Rahimi, Berg, & Wim, 2015). Professional development must be provided for teachers during the implementation of technology in the classroom. The professional development must be very intentional, focused on curriculum, address attitudes and perceptions, and be ongoing (Jones, 2007; Pierce & Ball, 2009). Teachers integrate technology into their teaching in a variety of ways. One powerful way teachers can utilize technology is to provide differentiated instruction. Differentiated instruction using technology meets students' learning needs with different styles of instruction.

Transitioning to a 1:1 Environment

The 1:1 environment across different school environments. Leadership, teachers, and students are going to transition their schools to 1:1 implementation in various ways. By providing a laptop device to each student, the possibilities are endless. As laptops have been integrated and introduced to education as the next great educational innovation, many opportunities, including potential benefits and pitfalls, are presented to

the classroom (Tallvid, Lundin, Svensson, & Lindstrom, 2015, p. 238). Many studies have examined various aspects of the 1:1 environment, which will be referenced in this section. “In 2010, President Obama’s National Education Technology Plan called for revolutionary transformation rather than evolutionary tinkering” (Armstrong, 2014, p. 46).

Studies have shown various results concerning 1:1 school environments. Tallvid et al. (2015) noted both positive and negative results in 1:1 school environments. “In comparative studies, students involved in 1:1 programs improved their education outcomes, compared to students without personal laptops” (Tallvid et al., 2015, p. 238). In contrast, there have been negative descriptions as well. “Laptops have also been described as a possible reason for a decreased academic performance” (Tallvid et. al, 2015, p. 238). Authors have discussed the reasoning behind the 1:1 initiative and best practices for implementation. “So don’t lead with the devices. Lead with the learning. It’s about purposeful learning - what are your learning objectives, what is your instructional model, and what are the right tools to help you meet those needs?” (Green & Mahoney, 2017, p. 53). These questions are important for leaders to ask when preparing to transition to a 1:1 environment.

Objectives of the 1:1 Environment

Researchers have discussed many objectives resulting in various benefits and outcomes of the 1:1 environment in schools. Rahimi et. al (2015) suggested two main objectives with the 1:1 environment involving personalized learning: “(1) making students competent and responsible to achieve and assume control for their learning and (2) providing students with opportunities to design and develop their learning

environments” (p. 780). When school leaders keep these in mind, successful implementation is possible. Another benefit is less paper consumption. “The paperless learning environment, while not the goal of most fledgling programs, represents the ultimate result of technology transforming the classroom” (Scherer, 2014, pp. 37-38). Furthermore, Jones (2007) and Haelermans, Ghysels, and Prince (2015) wrote about how the 1:1 environment will affect teaching and how it will benefit student learning. “Increased use of technology has helped ignite excitement in teaching and learning while building students’ critical-thinking and problem-solving skills” (Jones, 2007, p. 26). Other benefits are noted by Haelermans et. al (2015) in a more global perspective. “It has become increasingly popular to use educational technology in class in order to be able to serve students in a more individual way and to be able to introduce certain didactical aspects without tremendously increasing a teacher’s workload” (Haelermans et. al, 2015, p. 1102). As seen in the research cited above, the 1:1 environment positively affects student learning.

Professional Development

Professional development is vital for any new initiative or requirement for teachers (Mizell, 2010). The success of the initiative, program, or requirement linked to the training that teachers had access to (Pierce & Ball, 2009). Pierce and Ball (2009) researched technology use in math classrooms. Their results showed how important professional development is for teachers concerning new requirements or expectations to use technology. Pierce and Ball (2009) noted, “The responses to this survey confirm that professional development for teachers needs to address attitudes and perceptions as well

as technological skill development” (p. 315). Professional development provides skills necessary to create buy-in from teachers.

The professional development needs to address multiple avenues for the teachers. One important element noted by Jones is the need for using the technology in specific subject areas in order to address student learning. “Rather than simply learning the basics of a technology tool, teachers must learn how to use it to improve teaching and learning” (Jones, 2007, p. 23). Researchers and leaders note the importance of content-specific professional development. Additionally, professional development should be ongoing. Jones (2007) noted, “During their first experience with laptop learning, district leaders learned the importance of providing ongoing training and support for teachers” (Jones, 2007, pp. 24-25).

Differentiated Instruction

Some teachers use differentiated instruction as a technology-integration strategy. As explained before, differentiated instruction provides different learning strategies in order for students to understand the material effectively regardless of their learning styles and abilities (Morgan, 2014; Rosen & Beck-Hill, 2012); these studies have shown successful outcomes when utilizing differentiation in the classroom, which is why technology and differentiated instruction go hand in hand. Other studies have shown that when not utilizing differentiated instruction, students struggle to learn as much as their potential allows (Armstrong, 2014; Morgan, 2014). In these cases, the teacher is more of a sage on a stage rather than a guide on the side. In other words, the knowledge is bounded by what the teacher provides instead of letting students construct their own knowledge (Armstrong, 2014; Morgan, 2014).

Differentiated Instruction Explanation

Differentiated instruction can be explained in a variety of ways. It is important to understand the difference between differentiated instruction and two other strategies, individualization and personalization. Much research is available using these strategies with technology use. Green and Mahoney (2017) provided the following distinction between the three strategies:

There are key differences in some terms that I think are important to expound upon, the first of which is “differentiation.” This is where the teacher drives instruction and adjusts learning needs for groups of students - with “groups” being the operative word. Then we have “individualization,” where the teacher drives and accommodates learning needs for an individual learner. Finally, we have “personalization,” where the learner and the teacher collaborate to drive learning and to determine the needs, plan and learning design for the learner. (p. 52)

Differentiated instruction is a method utilized to adapt to student differences, assist collaboration amongst teachers, and meet student needs using varying strategies. Cobb (2010) utilized a definition of direct instruction in order to explain the difference that differentiated instruction can provide. Cobb (2010) described, “direct instruction as being skills-oriented and emphasizing the use of small group, face-to-face instruction by teachers and aides, using carefully articulated lessons” (p. 38). In contrast, Cobb (2010) explained, “differentiated instruction is a teaching philosophy based on the premise that teachers should adapt instruction to student differences” (p. 38). Morgan (2014) described, “Differentiated instruction is a way of recognizing and teaching according to different student talents and learning styles” (p. 34). Morgan (2014)

emphasized “students’ responsibility, peer tutoring, flexible grouping, and student choice” (p. 34) as key components of differentiation. Cobb (2010) also described that through differentiated instruction “students and teachers collaborate with one another to meet the targeted goals” (p. 38). Rosen and Beck-Hill (2012) stated,

Differentiated teaching and learning refers to providing students with different avenues to acquiring content; to processing, constructing, or making sense of ideas; and to developing teaching materials so that all of the students within a classroom can learn effectively, regardless of differences in ability.” (p. 228)

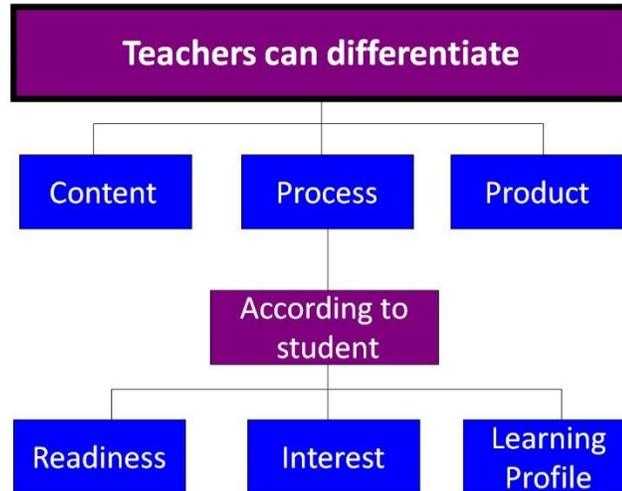
By using differentiated instruction, teachers respond to a learner’s needs guided by general principles of differentiation, such as respectful tasks, flexible grouping, and ongoing assessment and adjustment. Teachers can differentiate the content, process, and product according to the student’s readiness, interests, and learning profile. This can happen through a wide range of instructional and management strategies (Tomlinson & Allan, 2000).

The three ways to differentiate are through content, process, and product. These three areas will be expounded further here. “Content consists of facts, concepts, generalizations or principles, attitudes, and skills related to the subject, as well as materials that represent those elements” (Tomlinson & Allan, 2000, p. 7). Content includes what the teacher plans and how students gain access to the concept. “What is most likely to change in a differentiated class is how students gain access to core learning” (Tomlinson & Allan, 2000, p. 8). One example is how certain math manipulatives or technological resources might be used by some learners, but not all, to help understand a new concept (Tomlinson & Allan, 2000, p. 8). “Process is how the

learner comes to make sense of, understand, and ‘own’ the key facts, concepts, generalizations, and skills of the subject” (Tomlinson & Allan, 2000, p. 8). Another way to think of process is activity. A teacher needs to utilize an effective activity for the learner. The differentiation could be through varied levels of difficulty or differing student interests. Alternatively, there could be varied amounts of teacher and student support for the activity. An example of process differentiation could be giving “students choices about how they express what they learn during a research exercise” (Tomlinson & Allan, 2000, p. 8). Product refers “to the items a student can use to demonstrate what he or she has come to know, understand, and be able to do as a result of an extended period of study (Tomlinson & Allan, 2000, p. 8). Products can be a wide variety of examples that can span over one day of material to a whole semester or year of material. “A good product causes students to rethink what they have learned, apply what they can do, extend their understanding and skill, and become involved in both critical and creative thinking” (Tomlinson & Allan, 2000, p. 9). An example of differentiating product could be to “allow students to help design products around essential learning goals” (Tomlinson & Allan, 2000, p. 9).

Figure 1

Concept Map for Differentiating Instruction



Note. Adapted from Tomlinson & Imbeau, 2010.

Differentiated Instruction Examples

“Technology integration has been defined as educators’ use of technology to enhance instruction and to create rich environments to help each individual student develop a depth of understanding and critical thinking skills” (ChanLin, 2007, p. 45). Key in this statement is the mention of the individual student. Educators desire to see students develop their individual understanding. Therefore, integrating technology holds potential for improving student-learning outcomes.

Differentiating instruction can be utilized through the implementation of technology. “An important strategy for differentiating instruction in the twenty-first century that will likely benefit students greatly involves the effective implementation of technology” (Morgan, 2014, p. 37). This statement by Morgan explains why using

technology to differentiate instruction is a beneficial way to educate students in the twenty-first century. “In contrast to traditional classroom instruction, this requires that we put students at the center and empower them to take control of their own learning by providing flexibility” (Armstrong, 2014, p. 46).

When working to meet the needs of individual students, teachers can utilize different strategies with differentiated instruction. “There are eight kinds of intelligences: linguistic, musical, interpersonal, intrapersonal, kinesthetic, logical, nature, and spatial. While learners may possess multiple intelligences, they prefer different learning tasks and methods of expressing learning based on their preferred intelligence” (Parrott & Keith, 2015, p. 15). In addition, Armstrong stated that schools must develop their individual plans in order to “offer engaging and empowering learning experiences for all learners” (Armstrong, 2014, p. 46). In conjunction with that point, Parrot and Keith (2015) explained that the student’s maximum learning occurs if the teacher can utilize the student’s strongest intelligence. To put this into practice, Warschauer and Tate (2015) describe strategies to utilize through differentiated instruction: “written text, video explanations, and games that explore concepts, and also give students flexibility in their own content creation...interpret a poem by composing music to it, or analyze a book by photographing scenes that illustrate its contents” (p. 62).

Some examples of using differentiated instruction with technology have been noted in the following studies. Cobb (2010) stated, “In an urban school setting, differentiated instruction has proven to be effective in increasing student achievement in reading” (p. 38). Specific programs and tools were utilized in this school to make this achievement possible, but the concept remains that differentiation while utilizing

technology is successful. The study recommends “combining differentiated instruction and Compass Learning, and resources with curriculum development and high-quality professional development, to establish research-based instructional methods” (Cobb, 2010, p. 43). Time-to-Know was another program utilized to provide differentiated activities; results of this program were described as follows: “Overall, teachers and students report high levels of satisfaction from the program while also suggesting several aspects for program improvement” (Rosen & Beck-Hill, 2012, p. 237). One statement summarizing the reason for the success of differentiating with technology is that “in general, learners tend to resist to the one-size-fits-all learning approaches that often fail to address their individual differences, expectations, preferences, and needs” (Chatti, Jarke, & Specht, 2010, p. 74).

Unsuccessful Differentiation

With technology in the classroom, differentiation is not always implemented to meet students’ needs. Without differentiation, the interactions in the classroom have typically been highly controlled by teachers. “Knowledge is often received by students in bounded terms mediated by the authoritative source of the teacher and students merely regurgitate things that resemble what was received” (Lim, Lee, & Hung, 2008, p. 220). The use of technology in teaching is also linked to the amount of technology the teacher used in their own education, causing less tech-savvy teachers to be highly disconnected from students (Morgan, 2014).

Despite a broadly accepted premise that educational technology provides differentiated teaching and learning in classrooms, findings from a series of empirical studies have consistently shown only peripheral change in educational

practices. In most cases, the technology is designed and implemented for traditional practices, while paradigmatic change in teaching, learning, and assessment in technology-rich environments is rare. (Rosen & Beck-Hill, 2012, p. 228)

It is vitally important that technology be implemented appropriately as a resource to meet student-learning needs. It has been “noted that not all teachers are confident in their ability to engage students interactively” (Armstrong, 2014, p. 45). Therefore, preparing teachers is necessary. It is also important to set goals involving the technology for teachers in the building. “The digital devices are not always used, let alone used effectively to support high-quality curriculum and pedagogy. Some initiatives focus on the technology instead of the content” (Warschauer & Tate, 2015, p. 61).

The implementation of technology in the classroom when utilizing technology varies by teacher. The teacher is seen “as less of an instructional transmitter...but more of a facilitator of social learning” (Rosen & Beck-Hill, 2012, p. 227). When looking at the teacher’s role through this lens, differentiated instruction becomes even more prevalent. When changes happen in education, challenges are inevitable. The main challenge noted in studies is effects on classroom management. Laptops provide an opportunity for distractions for students that have to be carefully managed by teachers (Tallvid, Lundin, Svensson, & Lindstrom, 2015).

Mindset

Teachers’ mindset is a large factor in the success of the 1:1 environment. The mindset of teachers encompasses preparation, training, experience, and comfort. Dweck

(2006) developed the theory of mindset, suggesting individuals may have a fixed or a growth mindset. Mindset may play a role when incorporating technology in the classroom. In the words of Dweck (2006) in reference to people with a growth mindset: “They may appreciate endowment, but they admire effort, for no matter what your ability is, effort is what ignites that ability and turns it into accomplishment” (p. 41).

Carol Dweck pioneered the development of the theory of mindset. Her explanations of mindset involve two different mindsets: fixed mindset or growth mindset. “Fixed mindset creates an urgency to prove yourself over and over” (Dweck, 2006, p. 6). Whereas, “growth mindset is based on the belief that your basic qualities are things you can cultivate through your efforts” (Dweck, 2006, p. 7). People operate in either a fixed or a growth mindset. This affects the outcomes of a person’s work in regards to what outcomes can be expected. Dweck provided many examples of people working hard to achieve their goals, regardless of talents they possess. She explains, “the passion for stretching yourself and sticking to it, even (or especially) when it’s not going well, is the hallmark of the growth mindset...[which] allows people to thrive during some of the most challenging times in their lives” (Dweck, 2006, p. 7). The figure below shows a visual description of growth and fixed mindsets.

Figure 2

Mindset: Fixed and Growth

Mindset		
<i>The view you adopt for yourself profoundly affects the way you lead your life.</i>		
Fixed Mindset		Growth Mindset
Qualities are carved in stone		Qualities are cultivated through efforts
<i>Leads to a desire to look smart and therefore a tendency to...</i>		<i>Leads to a desire to learn and therefore a tendency to...</i>
	<i>CHALLENGES</i>	
...avoid challenges		...embrace challenges
	<i>OBSTACLES</i>	
...get defensive or give up easily	<i>s</i>	...persist in the face of setbacks
	<i>EFFORT</i>	
...see effort as fruitless or worse		...see effort as the path to mastery
	<i>CRITICISM</i>	
...ignore useful negative feedback		...learn from criticism
	<i>SUCCESS OF OTHERS</i>	

...feel threatened by the success of others		...find lessons and inspiration in the success of others
<i>As a result, they may plateau early and achieve less than their full potential.</i>		<i>As a result, they reach ever-higher levels of development.</i>

Note. Adapted from Dweck, 2006.

Dweck’s (2006) theory of mindset is pertinent to this study concerning teachers working to be successful utilizing differentiated instruction in the 1:1 classroom environment. The 1:1 classroom environment is a shift in education requiring teachers to incorporate new strategies to address the needs of their students. Morgan (2014) noted, “An important strategy for differentiating instruction in the twenty-first century that will likely benefit students greatly involves the effective implementation of technology” (p. 37). The success of implementation is affected by multiple factors, teacher mindset being one of them. If a teacher has a fixed mindset, differentiated instruction may not be implemented as effectively as a teacher with a growth mindset. The hard work of the teacher in the classroom may strongly affect the results of the 1:1 classroom environment. Students are considered digital natives. Therefore, if teachers can adjust instructional methods to utilize technology to enhance instruction, students will benefit (Morgan, 2014). School leadership must provide varied and ongoing professional development and training, as well as setting a clear vision and set of goals. When teachers utilize technology through differentiated instruction, student needs are met on an individual basis. Dweck’s theory of mindset is the lens this study will look through, as well as the concept map for differentiated instruction, in order to determine the role mindset plays in the 1:1 classroom environment. When describing growth mindset, Dweck stated, “it’s

not about immediate perfection. It's about learning something over time: confronting a challenge and making progress" (p. 24). The teacher's mindset can affect the success of the classroom in many ways. It will be important for school leaders to understand this role.

Shift in Teaching

Ziegel (2004) stated, "The shift in the teaching and learning paradigm (both pedagogical and relating to content area) as a result of technology integration is raising questions about professional development" (p. 111). Many traditional pedagogical methods have been shown to be less effective in today's classrooms. "Memorization, repetition, and basic comprehension are lower-order skills that were once useful but are now considered insufficient when compared to higher-order skills, such as critical and creative thinking, elaboration, and evaluation" (Gunn & Hollingsworth, 2013, p. 202). The role of the teacher has changed in the classroom as well. "The traditional paradigm of schooling is shifting...the changing role of the teacher as less of an instructional transmitter...but more of a facilitator of social learning whereby learners construct their own knowledge" (Rosen & Beck-Hill, 2012, p. 227). For example, a study by Subramaniam (2007) "has shown that teachers' roles are more than spatial and temporal movements in the classroom and has demonstrated that teachers teaching with computer technology work at different and complex levels" (p. 1068). Technology integration into the classroom is causing the shift in education to become even more prevalent.

Challenges with a 1:1 Environment

When implementing a 1:1 program in a school, leaders need to think through the process in order to be effective. "Rather than being a cure-all silver bullet, one-to-one

laptop programs may simply amplify what's already occurring - for better or worse - in classrooms, schools, and districts" (Goodwin, 2011, p. 79). This being said, the implementation and training by school leaders has to be well thought out and delivered. "It has been suggested that teachers use computers less when asked to simultaneously implement other initiatives" (Anthony, 2012, p. 347). Careful implementation of 1:1 needs to happen when teachers are not bombarded with too many other requirements and expectations.

In the classroom, teachers have challenges as well when implementing the 1:1 environment. "The main problem experienced by teachers is that the laptops offer distractions and tempt students to engage in use that is not in line with the teacher's idea of what would be suitable in relation to the current assignment" (Tallvid et. al, 2015, p. 238). Classroom management must be clearly planned and communicated to students. "Student behavior is not only a question of rules and regulations enforced by teachers, but also a matter of collectively developing an educational practice in which laptops are integrated" (Tallvid et. al, 2015, p. 245). When teachers are designing a task for the 1:1 environment, it must be complex and engage students while taking various components into consideration (Tallvid et.al, 2015).

Teacher Preparation & Training

Chambers, Hardy, Smith, and Sienty (2003) noted that technology transformation is leading to a technology rich and blended learning environment for students. "However, in a recent study conducted by the US Department of Education, only 23% of public school teachers felt well prepared to use computers and the Internet in their teaching" (Chambers et al., 2003, p. 185). Therefore, teachers need to be prepared

for the technology integration expected to happen in their school. A study by Goodwin (2011) “attributed the poor implementation to lack of teacher knowledge and buy-in, concluding, it is impossible to overstate the power of individual teachers in the success or failure of 1:1 computing” (p. 79). School leaders have a huge responsibility concerning preparation for technology integration. “Fostering changes in learning and teaching requires environmental, social, and curricular support” (ChanLin, 2007, p. 53). All three of these elements will need to be taken into account when preparing for technology integration.

“Although differentiated instruction is designed to benefit all students, it requires extremely hard work by knowledgeable and well-prepared teachers” (Morgan, 2014, p. 37). Teachers will need to be provided very beneficial training in order to effectively implement the use of differentiation, especially while effectively implementing technology in the classroom. “Transition from a traditional mathematics classroom to one where technology is used as an integral part of teaching requires teachers to be prepared to change and to make a commitment to learning to use the technology in an effective manner” (Pierce and Ball, 2009, p. 315). Pierce and Ball explained the need for focused professional development during the transition to utilizing more technology. Anthony (2012) addressed a professional development concern from teachers: “Workshops did not emphasize ways in which technology-supported, constructivist-oriented teaching might differ from teachers’ existing practice” (p. 348). Highlighting those changes for teachers is important. Leaders may emphasize that the shift will be gradual in their classrooms in order to implement effectively technology-integrated instruction. In order to achieve this, leaders need to consider many aspects. “Integrating

computer technology into teaching involves complex issues interrelated with curricular, environmental, social, and personal factors” (ChanLin, 2007, p. 53). Elliot and Hall (2002) argued,

Simply integrating technology into their classroom/curriculum will not in and of itself necessarily enhance the learning environment. The need for thoughtful and appropriate selection of how and where technology should be integrated is essential. The success of technology integration into instructional programs appears to be more dependent on human and contextual forces than on hardware, software of connectivity. (p. 59)

School leaders must remember that only integrating technology into the classroom will not enhance the learning environment without professional development. “All professional development must be approached from an instructional rather than a technical viewpoint” (Jones, 2007, p. 23). The technology support and planning must be finely tuned, but the training for use in their classrooms is the most important for teachers. “In addition to technical training and addressing pedagogical questions, they can and often should participate in the change process in order to provide support and assure the perpetuity of successful advances towards an engaging learning process for all students” (Ziegel, 2004, p. 111). Including teachers in the change process increases teacher buy-in and success with the integration. Anthony (2012) described an innovative professional development model in which teachers had a more individualized approach: “Each teacher had unique professional goals for technology integration that could change over the course of the year, so they developed a framework intended to enable each

teacher to pursue individual professional learning goals” (pp. 350-351). Such models may yield more success in technology integration initiatives.

Experience/Comfort

Some researchers have explored the relationship between teachers’ experience with technology and technology integration. Lim et al. (2008), using a sociocultural lens, asserted that teacher identities and technology integration are tied. “This view is productive in examining the lives of teachers as they resist or embrace technology in a grounded manner” (Lim et. al, 2008, p. 226). Teachers have varied levels of experience and expertise in the classroom concerning many different components. “The best teachers, meanwhile, are able to integrate the computers into an active lesson, rather than plugging them in for six hours a day” (Scherer, 2014, p. 38). Teachers will resist or embrace technology for various reasons, but those who embrace will have varying levels of success. Teachers will learn many techniques to integrate technology in the classroom on a daily basis. In one study, “increased competence and longer experience seem to correlate positively with the activities in all types of use” (Tallvid et al., 2015, p. 246). As schools decide to integrate technology, teachers are required to use the tools in their classrooms, which forces them to prepare for the changes. “Educators at different educational levels are forced to adapt and rethink their teaching approaches in conjunction with the advent of new...technologies without a clear road map for attending to students’ various needs” (Rahimi et al., 2015, p. 781).

“Although teachers believe that the use of computer technology is a useful tool for teaching and learning, uncertainty exists when teachers try to cope with a new teaching tool and a new teaching philosophy” (ChanLin, 2007, p. 45). Teachers need

training in order to feel more confident when integrating technology. For example, Chambers, Hardy, Smith, and Sienty, (2003) found in a study that “secondary teachers identified as Intuitive/Thinking are more receptive to the use of technology than the Sensory types. Teachers labeled as Sensory/Feeling were least likely to be comfortable with technology” (p. 187). This distinction could help school leaders when planning professional development and training for teachers in regards to technology integration. “Teachers are reluctant to use technology involves a lack of confidence. Many teachers resist using it for fear of appearing unprepared in front of their students who are likely to know more about digital resources” (Morgan, 2014, p. 37). This study provides a strong rationale for training teachers in such a way that boosts their confidence.

Teacher age is a commonly used explanation for lack of confidence with technology. “I often hear educators say they expect older faculty to be the most reluctant and younger faculty to be the most eager to move forward with a technology innovation” (Tusch, 2012, p. 43). This is not necessarily the case but may be a part of the reason for lack of confidence. “Digital natives often have older instructors who are referred to as digital immigrants because they use technology in a manner that matches their non-digital upbringing” (Morgan, 2014, p. 36). Digital immigrants sometimes require more training in order to be prepared for change. In a study by Gunn and Hollingsworth (2013), digital immigrants’ lack of confidence was explained. “The trend was that older teachers were the least confident in their abilities...suggesting a greater resistance or lack of efficacy amongst teachers who were likely students in the years prior to technological literacy” (Gunn & Hollingsworth, 2013, p. 213). In contrast, Tusch (2012), found “a

teacher's willingness to participate in the laptop program was influenced by his or her personal mind-set, attitude, and approach to teaching and learning" (Tusch, 2012, p. 43).

In one study, Anthony (2012) looked at the linkages between district leadership and classrooms in order to find the effects of this relationship. "The ways these district-classroom systems interact can have profound influences on the nature and frequency of teachers' technology use" (Anthony, 2012, p. 351). The strategy of implementation set forth by school leadership is profoundly important in the success of technology integration. Anthony (2012) also stated that, "effective technology leadership extends beyond the work of vision setting, developing strategic plans, purchasing equipment, and coordinating professional development" (p. 351). Teacher training by the district is important. Teachers will eventually need to attempt to integrate technology, as they feel comfortable in order to be ready for the upcoming changes. "By experimenting today with digital tools that make customized learning possible, you'll be better prepared for the changes that will define teaching tomorrow" (Ferriter, 2010, p. 89).

Summary

Using Dweck's (2006) mindset theory, this study explores the role of mindset regarding differentiated instruction in a 1:1 environment. Chapter II provided an overview of relevant research. Several studies were cited that discussed the importance of professional development and support from school/district leadership in technology integration. Additionally, because differentiation is a key construct considered in this study, this chapter also included a summary of definitions, models, and research relevant to differentiation. Several studies discussed in this chapter also noted that the successful use of both differentiation and technology require teachers to make dramatic shifts in

practice, particularly as they become facilitators of learning rather than distributors. The studies discussed in this chapter demonstrate the importance of exploring the role of mindset in technology integration. Mindset could possibly play a role in the success of incorporating technology in the classroom. This study explores what that role is and how extensively it affects the implementation of the 1:1 classroom environment.

CHAPTER III

METHODOLOGY

John Wooden, a famous basketball coach, once said, “It isn’t what you do, but how you do it” (Middleton, 2016, para. 37). This quote is important to my study in that the role of mindset is important to everything a person sets out to do. When teachers are faced with the challenge of effectively implementing 1:1 instructional technology, how teachers do what they do in the classroom is more important than what they do. Chapter III outlines the methodology of this study. This methodology purposefully aligned with the problem statement, research questions, and theory chosen for this study. This chapter explains the researcher’s role and bias, research design, methodological procedures, data analysis strategies, and data verification strategies.

Problem Statement

The 1:1 classroom environment places technology in the hands of students in the classroom and should enhance differentiated instruction. However, in some 1:1 classes, differentiated instruction takes place and in other classes, it does not. One reason for this difference may be explained by teacher mindset.

Purpose Statement

The purpose of this qualitative study is to explore the role of mindset regarding differentiated instruction in a 1:1 environment in a northeastern Oklahoma school district.

Research Questions

This study will attempt to answer the following research questions:

1. How is differentiated instruction manifested in a 1:1 environment?
 - a. How is content differentiation manifested in a 1:1 environment?
 - b. How is process differentiation manifested in a 1:1 environment?
 - c. How is product differentiation manifested in a 1:1 environment?
2. How do teachers with a growth mindset differentiate instruction in a 1:1 environment?
3. How do teachers with a fixed mindset differentiate instruction in a 1:1 environment?

The Researchers Role and Bias

Upon graduating with a bachelor's degree in secondary mathematics education, I began teaching juniors and seniors at the age of 22. I taught Algebra 2 and Math of Finance my first year. Throughout the next twelve years in the classroom, I was given the opportunity to teach all high school math subjects from Algebra 1 through AP Calculus. The administration was supportive of me and gave me many opportunities for leadership, including math department chair, district curriculum committee member, and site leadership committee, among many others. My goal in the classroom was to engage

my students as effectively as possible every day and to pass along my love and appreciation for mathematics and learning.

In 2010, I decided to begin my journey in the Teaching, Learning, and Leadership Master's program at Oklahoma State University. Throughout this journey, my passion grew for helping teachers develop their strengths and talents in the classroom. It became extremely important to me to give every student the biggest chance possible to be successful. Upon completion of my master's degree, I had the drive to acquire my administration certificate. In 2015, I stepped into my first assistant principal position. During my first year in school leadership, I was able to support teachers and ensure students were provided the best instruction possible in order to achieve success. Observing the pilot year of the 1:1 instructional program was so beneficial. Watching different teachers implement the use of technology in their classrooms enhanced my curiosity as to why some teachers are effective with the use of technology and why some are not. After taking an assistant principal position back at the school I taught in for twelve years, I was granted the opportunity to lead the implementation of the 1:1 instructional initiative. I worked hard daily to make this a smooth and effective transition for teachers, students, and community.

Throughout my journey in education, I have always tried to determine the best way to meet student needs. As technology becomes an integral piece of education today, I desire to help teachers implement this effectively so that students have the most opportunity for success. My interests throughout my first 15 years in education have helped to shape this research topic. I am aware of my preconceived notions about teachers implementing technology effectively, and I made certain to analyze the data with

the utmost trustworthiness and credibility. I followed university and federal policy concerning my research, as well as the recommended qualitative research standards.

My bias as a researcher in this study is rooted in the fact that I served in an administrative role as the lead of implementation for a nearby district. By researching in another district, I guarded against comparing the two districts in my research. It was important to keep the research questions as the focal point. I ensured that the data collected was used to gain insight as to what was happening at the research site and not comparing that data to other districts. Teachers in my building have begun to get more comfortable with me coming into their rooms on a regular basis. At the research site, this was not the case. I was truly a researcher at the research site when gathering data. In order to guard against comparing the two districts, I observed all protocols when observing to be as least intrusive as possible.

Research Design

Constructivism is the epistemological perspective that guided this case study. This perspective helps to describe how people in the setting have constructed their reality and what the consequences are of what is perceived as real (Patton, 2015). Constructivism is described as “the meaning-making activity of the individual mind” (Patton, 2015, p. 122). Constructivists observe individuals in their setting as they seek understanding of the world in which they operate (Creswell, 2014). In this study, constructivism was appropriate because the teacher’s reality unfolds in the 1:1 classroom environment as they work to differentiate instruction for students.

This study is a naturalistic inquiry study. According to Patton, naturalistic inquiry is “studying real-world situations as they unfold naturally; nonmanipulative and noncontrolling; openness to whatever emerges” (Patton, 2002 p.46). By collecting data in the natural setting, the researcher can gain important information about what is really happening in that environment. When analyzing all data, themes relevant to the research questions emerged. By looking for themes and analyzing all of the data pieces together, a better understanding of the information emerged. Erlandson (1993) wrote about the need to establish trustworthiness. “Establishing trustworthiness enables a naturalistic study to make a reasonable claim to methodological soundness” (Erlandson et. al, 1993, p. 131). The researcher must show credibility, transferability, dependability, and confirmability. This study considered teachers’ construction of reality in order to analyze the implementation of technology when utilizing differentiated instruction.

Methodological Procedures

Site Selection

The study took place in a suburban district in northeast Oklahoma. The district’s high school was the research site. The high school contained ninth, tenth, eleventh, and twelfth grade on two campuses. There were approximately 150 teachers across both campuses. During data collection, the school was in their fourth year of the 1:1 initiative. The rationale for choosing this district was that the district was not brand new in the 1:1 initiative. Because I knew the school’s administrators had begun a successful implementation effort, this school offered an excellent context for exploring how teachers utilized technology in their classrooms. Teachers at this site utilized technology in a

variety of ways. Therefore, I observed how teachers were differentiating instruction with technology.

Participant Selection

“Purposive sampling...increases the range of data exposed and maximizes the researcher’s ability to identify emerging themes that take adequate account of contextual conditions and cultural norms” (Erlandson et. al, 1993, p. 82). Erlandson et. al (1993) described opportunistic sampling as allowing “for following new leads during fieldwork, taking advantage of the unexpected, and flexibility” (p. 83). I asked all teachers to take the Mindset Quiz electronically. From there, I chose participants by selecting three teachers in a fixed mindset and three teachers in a growth mindset.

Participants were selected using the Mindset Quiz as a tool. The Mindset Quiz was sent out through email via Survey Monkey to all East Bay High School faculty. In April 2019, the invitation to participate in the quiz was sent out to 212 total recipients. For three weeks, the invitation was open and a total of 73 responses were collected. A summary of responses is shown in the table below.

Table 1

Participant Mindset Quiz Score Chart - East Bay

Mindset Quiz Score Chart		Number of Respondents who Scored in This Range	Percentage of Respondents who Scored in This Range
22-30	Strong Growth Mindset	33	45%
17-21	Growth with Some Fixed Ideas	26	35%
11-16	Fixed with Some Growth Ideas	6	8%
1-10	Strong Fixed Mindset	0	0%
0	Incomplete or Opted Out	8	11%
Total Participants		73	

Selection of participants was based on their score, their subject area, and their willingness to participate. The goal was to choose three participants who have a growth mindset and three participants who have a fixed mindset with all six spread amongst the four core subject areas. Since there were no respondents scoring in the “strong fixed mindset” range, the respondents scoring in the “fixed with some growth ideas” range were considered. Upon obtaining a master schedule from the head principal of East Bay, the respondents were matched to their subject area. In the “fixed with some growth ideas” range, two were support personnel, so they were not asked to participate. One worked only in a virtual setting, so they were not asked to participate. One was a special education teacher only teaching study skills and work adjustment, so they were not asked

to participate. The other two out of the six in the “fixed with some growth ideas” range were asked to participate and agreed to do so. These two teachers taught special education English and regular high school English. One more participant with a fixed mindset was needed. Therefore, the respondents in the lowest end of the “growth with some fixed ideas” range were then considered. Four respondents scored the lowest in this range with a score of 17. One was a counselor and one was a Spanish teacher, so these two were not asked to participate. One was an AP science teacher who worked part-time at the high school. One was another full time science teacher who was asked to participate and agreed to do so. The other three participants were selected from teachers who scored in the “strong growth mindset” range. Three respondents scored a 28, which was the highest score. One respondent with a 28 was an English teacher. Since two teachers already chosen were English teachers, she was not asked to participate. The other two with a 28 were math teachers. They were both asked to participate. One agreed and the other did not wish to be a participant. At this point, there were two English teachers, one math teacher, and one science teacher. The goal with looking at the next highest respondents was to choose a history teacher and either a math or science teacher. There were two respondents who scored a 27. One was an assistant principal and one was a virtual only teacher, so they were not asked to participate. There were five respondents who scored a 26 who were considered next. Two were English teachers, one was an accounting/business teacher, and one was special education for study skills and work adjustment only, so they were not asked to participate. The fifth one was a special education history teacher, who was asked to participate and agreed to do so. The next group of respondents were the three who scored a 25. One from that group was another

math teacher who was asked to participate and agreed to do so. The table below shows information about the teachers who agreed to participate.

Table 2

Participant Profile Summary - East Bay

Participant	Mindset Quiz Score	Mindset Quiz Score Category	Subject Area Taught
Eloise	28	Strong Growth Mindset	Math
Becky	26	Strong Growth Mindset	SPED History
Monica	25	Strong Growth Mindset	Math
Ben	17	Growth with Some Fixed Ideas	Science
Tracy	15	Fixed with Some Growth Ideas	English
Lori	15	Fixed with Some Growth Ideas	SPED English

In addition to the teachers listed above, the head principal, Mr. Smith, was interviewed, as well as one of the assistant superintendents, Mrs. Jones.

Ethical considerations. For participant selection, it was important to remember to safeguard participants' privacy. Erlandson et. al (1993) stated "informed consent cannot be entirely achieved at the beginning of the study...because the research context is

constantly in flux and neither researcher nor anyone else really knows what is being consented to” (p. 155). Informed consent was achieved as soon as possible before any observations and interviews during the study in order to satisfy authenticity. The informed consent form used in this study is located in the appendices.

Data Collection

Data collection for this study contained many elements. I utilized the mindset quiz, interviews, observations, and documents. All elements aided in the analysis in order to inform the purpose of the study and the research questions.

Surveys. I asked all teachers to fill out the mindset quiz and return it to me via email. The mindset quiz was a ten-question quiz with statements that are answered on a Likert scale. The total scored on the quiz places respondents into categories: strong growth mindset, growth mindset with some fixed ideas, fixed with some growth ideas, and strong fixed mindset. When the survey was closed, respondents were categorized into these four areas. This piece of information was used to select participants. The highest and lowest scores were focused on, as well choosing participants in all four core subject areas. Three teachers with a fixed mindset and three teachers with a growth mindset were selected. It was helpful to understand throughout the study the respondent’s score on the mindset scale in relation to fixed and growth mindset. The quiz data was also utilized when analyzing the makeup of the school concerning the number of teachers with a fixed/growth mindset.

Interviews. The interviews tried to achieve a “conversation with a purpose” (Erlandson et. al, 1993, p. 85). The interviews happened after the first observation, but

before the second observation, in order to gain insight into why participants did what they did in the classroom. I interviewed six teachers from the selected site during the school year. Interviewees were chosen after the quiz was given to all teachers. I chose three teachers with a fixed mindset and three teachers with a growth mindset. I interviewed two administrators at the school as well. The interview questions can be found in Appendix A. The interview questions were carefully designed to foster a conversation in order to gain the information needed for the purpose of this study.

I conducted audio-taped interviews with participants at a convenient location in a one-on-one, face-to-face format. The interview questions, which are included in the appendices, were carefully designed as open-ended questions in order to foster a conversation rather than just a question and answer session. Erlandson, et. al (1993) encouraged the researcher and the respondents to “engage...in less structured conversations (p. 81)” so that participants felt relaxed enough to reveal more of their unique thought and feelings. I transcribed the interviews as quickly as possible afterwards in order to help preserve and document the memories I had from the interview. Being able to listen to the teacher’s account of their experiences in the 1:1 classroom environment, I had the opportunity to see a glimpse of their everyday experiences and their perceptions of the 1:1 classroom environment. I recognized that it could be difficult for people to open up to answer the questions as truthfully and completely as possible since they did not know me. In order to overcome this challenge, I made the interview as laid back and comfortable as possible and tried to make a connection through casual conversation at the beginning of the interview.

Observations. Marshall and Rossman (1989) defined observation as “the systematic description of events, behaviors, and artifacts in the social setting chosen for study” (p. 79). Data collected from observations was an integral piece to the study. Through this study, I performed non-participatory observation. Observations happened in each of the six teachers’ classrooms. I observed each teacher once and then followed up with an interview. When observing in the classrooms, I utilized the qualitative research observation protocol. The observational data collected were recorded utilizing detailed field notes with thick, rich descriptions. Strengths of observations were that teachers would not perceive me as an evaluator, but rather as a researcher in the environment. A weakness or challenge of the observation was myself being seen as intrusive in the environment when I stayed to observe for a whole class period. Therefore, my goal was to blend in as much as possible in order not to be intrusive. My role could be described by Erlandson et.al (1993) as an “observer-participant,” in which my role as a participant was secondary to my role as a researcher in this setting. By observing twice with an interview in between, I was able to allow the focus of the picture “to develop and evolve over the course of the study” (Erlandson et. al, 1993, p. 95).

Merriam (1988) suggested a checklist of items to utilize during the observation: the setting, participants, activities and interactions, frequency and duration, and subtle factors. Erlandson et. al (1993) summarized those points from Merriam as follows. The setting should be described as to what the physical environment looks like by creating a map of the space, the context, and the kinds of behaviors the setting encourages or discourages. The participants should be described as to who all is present; the roles people are playing; and what their reasoning is to be together. The activities and

interactions should include a thick, rich description of what is going on and how people are interacting with the activities and with one another. The frequency and duration should be described as how often the group meets and for how long. The subtle factors (such as unplanned activities, connotations, and physical cues) may be less obvious, but possibly as important to the observation. Appendix G is the observation tool that was utilized during the observations.

Documents. Many documents were collected during the course of this study. In order to paint a picture of the design of the 1:1 instructional initiative, any documents that could be shared by school administration concerning the 1:1 program were collected. Other important documents were the school's mission statement, strategic plan, and goals for the initiative. When observing and interviewing, I asked for the lesson plans utilized for the day and any other helpful documents participants utilized in the classroom to understand the technology integration in their specific classrooms. I also asked them to share any classroom procedures and expectations they may have had in regards to technology use in the classroom. These documents aided in understanding the 1:1 instructional initiative and how teachers utilized technology in their classrooms.

Data Storage and Security

To preserve participants' confidentiality, I utilized pseudonyms in the study's report. The data were stored on my personal computer to ensure privacy and security. The survey was sent via email from Survey Monkey. The data was secured as data in Survey Monkey. Any observation notes were taken in a journal specific to this study and kept with me, in my office, or at my home throughout the study. Artifacts were shared in

a variety of ways with me, such as Google Drive, email, or hard copy. These were safely stored in a file on my personal computer as well. Every attempt to protect participants' privacy was taken. All data were backed up on an external hard drive and placed in the safety of my home.

Data Analysis Strategies

Patton (2015) explained that there are many qualitative data analysis techniques. However, none of those processes “can substitute for the skill, knowledge, experience, creativity, diligence, and work of the qualitative analyst” (Patton, 2015, p. 521). Patton (2015) directed researchers to do their very best to fairly portray the data and communicate what that data reveals in relation to the problem statement. The data analysis process began with the first data piece collected (Erlandson et. al, 1993). It was important to keep detailed notes and records throughout the data collection process. “The collection and analysis of the data obtained go hand-in-hand as theories and themes emerge during the study” (Erlandson et. al, 1993, p. 111). Lincoln and Guba (1985) explained, “Data analysis involves taking constructions gathered from the context and reconstructing them into meaningful wholes” (p. 116). The constant comparative method of analysis was used (Merriam, 1998). In order to work through the data analysis, I used the steps clearly identified by Creswell (2014) in the data analysis process: organize and prepare the data for analysis, read or look at all the data, start coding all of the data, use coding to generate themes or categories, use a narrative passage to convey the findings, and interpret the findings or results.

Organization, Preparation, and Reading of Data

I transcribed interviews as soon after the interview as possible. Observation and field notes were typed and stored in an organized fashion. While collecting data, I organized data into an electronic file, as well as printed out and stored in chronological order in order to read the data multiple times. By reading the data several times, it helped me to gain an understanding of the data collected in order to move into the coding process. “The analysis of qualitative data is best described as a progression, not a stage; an ongoing process, not a one-time event” (Erlandson et. al, 1993, p. 111). Triangulation was the strategy utilized to gather multiple sources of data in order to gain a picture of relevant information to analyze (Erlandson et. al, 1993).

Coding Data

Erlandson et. al (1993) described that the data analysis process is interactive in that there are two stages: analysis at the research site during data collection and analysis away from the research site following the data collection. By taking very detailed field notes, I began to form some of the analysis in the field. After reading the data multiple times to gain a better understanding of the data collected, I began to make notes on the data in the margins. It is important to emphasize that data collection and analysis went hand-in-hand during this naturalistic inquiry (Erlandson, et. al, 1993). I used a combination of highlighting, making notes, and creating note cards in order to sort the data. Through this data analysis process, I focused on the four elements described by Erlandson et. al (1993): “unitizing data, emergent category designation, negative case analysis, and bridging, extending, and surfacing data (p. 116.).

Generate Themes

Creswell (2014) explained, “Themes...appear as major findings in qualitative studies and are often used as headings in the findings sections of studies” (p. 199-200). These themes were representative of multiple perspectives of the data as evidenced by direct quotations (Creswell, 2014). These themes were developed by utilizing the note cards developed during the coding process. The coded data were separated into categories, which represented the themes that emerged from that process. The themes were not predetermined. The themes were utilized when writing chapter IV and V of this dissertation.

Convey and Interpret Findings

In order to paint a detailed picture of the setting, I wrote a narrative portrait with thick, rich description to begin to convey findings. This narrative portrait helped in the description of the findings. Chapter V was utilized to explain the interpretation of findings. The findings were carefully explained through the lens of the theoretical framework for the study. If further questions arose, those were mentioned as possible future research.

Theory Applied to the Analysis of Data

In order to provide a lens for the study, the theoretical framework was decided beforehand in order to analyze the data (Creswell, 2014). The data was analyzed through the lens of mindset theory, and the concept map of differentiated instruction provided a scope to the study. By choosing this framework, the study was able to be tailored around the theory itself and the theory constructs. The theory was utilized in the study “a priori”

or beforehand. Anfara and Mertz (2015) stated, “The way it works is that the researcher approaches the world with a set of ideas, a framework that specifies a set of questions that he or she then examines in specific ways” (p. 9).

The data gathered was analyzed in order to discover common themes in the data. The themes naturally emerged from this analysis. The interview questions were designed to look for data with the theoretical framework in mind. Once the themes were discovered from the data, they were aligned with the theoretical framework utilized for this study.

Data Verification Strategies

In this study, trustworthiness was established. Erlandson et. al (1993) explained this is done “through credibility, applicability through transferability, consistency through dependability, and neutrality through confirmability” (p. 132).

Credibility

Prolonged engagement, persistent observation, triangulation, peer debriefing, member checks, and the reflexive journal were all utilized to establish credibility. Prolonged engagement came naturally due to my experience as an administrator. Persistent observation was important to provide (Erlandson et. al, 1993). Persistent observation helped to recognize the relevant pieces of observation to the study. Triangulation occurred by looking at multiple data sources and comparing all of them. Peer debriefing occurred by having other students in the program read and analyze my writing and data sources. Member checking was utilized during the interview process by clarifying information and by checking before submission that the results were

interpreted correctly. Reflexive journaling was utilized to keep a log of activities during the study to refer back to when putting the study results together.

Transferability

Thick description, purposive sampling, and the reflexive journal established transferability. Thick description helped to describe what one should “feel...like to actually be in the context” (Erlandson et. al, 1993, p. 146). By painting a vivid picture of the setting, the study came to life and the emergent themes became more apparent. Purposive sampling was used in order to use insight as to relevance to the study to seek “both the typical and divergent data to maximize the range of information obtained about the context” (Erlandson et. al, 1993, p. 148). Reflexive journaling was used as stated before and for use during an audit if needed.

Dependability and Confirmability

Dependability and confirmability were established through the audit trail. Lincoln and Guba (1985) suggested preparing for the audit trail by remembering six different categories: “raw data, data reduction and analysis products, data reconstruction and synthesis products, process notes, materials relating to intentions and dispositions, and information relative to any instrument development” (pp. 319-320). In order to prepare this study for a possible audit, I kept structured notes, interview materials, observation materials, transcriptions, journals, and any other materials used throughout the study in order to be organized. I carefully noted and recorded any changes that occurred throughout the study in order to be fully transparent.

Table 3

Trustworthiness Table

Criteria	Term	Result	Example
Credibility	Prolonged Engagement	- Build Trust	In the field from March 2019 to May 2019; Follow-up conversations June 2019 to August 2019; Avenues of communication: email, appointments, face-to-face, and phone calls
		- Form Relationships	
		- Obtain a wide scope of the data	
		- Obtain accurate data	
	Persistent Observation	- Obtain in-depth data	Observations in the classroom both pre and post interview
	- Obtain accurate data		
	- Obtain data pre and post interview		
	Triangulation	- Verify data	Multiple sources of data: interviews, observations, documents, website, and email
	Peer Debriefing	- An additional perspective and guidance from a trusted source	Gathered feedback on research, interview questions, and methodology; Helped other doctoral students in the process of writing this dissertation
	Member Checks	- Verify documentation and conclusions	Participants received a copy of the transcripts and information about conclusions to verify accuracy
Transferability	Thick Description	- Provide a solid data base for transferability	History of 1:1 instructional initiative implementation; education and background of participants; rich description

		- Provide rich detail for the reader	of school setting, observations, and conclusions
	Purposive Sampling	- Site and participant selection will provide a great venue for showing the role of mindset in a 1:1 environment	Purposeful selection of the site with 1:1 instructional initiative; Purposeful selection of participants in relation to mindset survey results
Dependability/ Confirmability	Access to an Audit Trail	- Allow auditor to determine trustworthiness of study	Observation and interview protocol and notes, documents, notecards, peer debriefing notes, emails, etc. are readily available for an audit

Limitations

One limitation to this study was limited time in the setting. Since I do not work in the district utilized in this study, I was not able to observe some of the small things that happened on a daily basis. I was limited to the times that I could go observe the classrooms.

Summary of the Chapter

By performing this study as prescribed in this chapter, my research is sound and significant. The study was conducted following the methodology outlined in this chapter. The methodology was aligned with the suggestions of exemplary researchers and scholars in order to be a valid and accurate research study. I worked to be as transparent as possible throughout this study and noted any changes needed throughout the progression of the study. The study followed the structure that Patton (2015) and

Erlandson et al. (1993) explained for a qualitative naturalistic inquiry. The data results and summary of findings are explained in the final two chapters of this dissertation.

CHAPTER IV

DATA PRESENTATION

Chapter IV presents a narrative portrait of the collected data. The purpose of this qualitative study is to explore the role of mindset regarding differentiated instruction in a 1:1 environment in a northeastern Oklahoma school district. In order to set the stage for understanding the 1:1 environment, it is beneficial to take a broader view of the changes in educational technology at the national level. This chapter begins by explaining the changes in technology in the classroom at the national and state levels and then narrows the focus to the changes implemented at the district and site levels.

Technology in the Classroom at the National and State Levels

As presented in Chapter II, the last four presidents of the United States, President Clinton, President Bush, President Obama, and President Trump, have had an impact on the use of technology in the classroom. By allocating funding from grants and private sources, emphasis was on giving teachers and students access to various forms of technology. In 1996, President Clinton made a statement about funding grants to supply a computer in every classroom in every state and not denying any school or classroom that opportunity (Dorning, 1996). In 2002, President George W. Bush signed into law the

historical No Child Left Behind Act which marked the beginning of education reform and education accountability through standardized testing. With the flexibility in funding provided by the new law, states could choose to allocate up to fifty percent of funding they receive to other areas including educational technology (Executive Summary, 2004). The funding allocated by President Obama in 2014 intended to “close the technology gap in our schools” (Bidwell, 2014, para. 1) by improving internet access, distance learning, discounts from large technology companies, and professional development for teachers. In 2017, President Trump directed the Secretary of Education to prioritize STEM education with a focus on computer science.

The frameworks and standards created by national organizations assist educators in effective technology integration. In 2002, the Partnership for 21st Century Learning (P21) championed the 4C’s, which are Critical Thinking, Communication, Collaboration, and Creativity. A critical component of this philosophy is teaching information, media, and technology skills (Framework for 21st Century Learning, 2019). Along with the P21 framework that had evolved since 2002, the International Society for Technology in Education (ISTE) created National Education Technology Standards. In these technology standards, there were segments pertaining to students, educators, education leaders, and instructional technology coaches. Many states adopted these technology standards, including Oklahoma (Oklahoma State Department of Education, 2019). In Oklahoma, the State Department of Education encouraged the use of technology in the classroom to enhance student learning. Oklahoma House Bill 1576 required professional development for every teacher covering "digital teaching and learning standards to

enhance content delivery to students and improve student achievement" (Oklahoma State Department of Education, 2019).

Technology in the Classroom at East Bay Public Schools

Demographics & Statistics

When this study was conducted, East Bay Public Schools was one of the largest 6A suburban school districts in Oklahoma serving approximately 9,720 students at 14 instructional sites, including eight elementary schools, a sixth grade center, a seventh grade center, an eighth grade center, East Bay High School, and the East Bay Alternative Academy. The school system incorporated 72 square miles including territory in two northeastern Oklahoma counties. With continuing improvements, East Bay Public Schools was working to meet the needs and providing for the safety of its growing student population. The East Bay School District provided excellent physical facilities and equipment to support quality educational programs. School buildings and auxiliary facilities afforded maximum safety, protection of health, and accommodations to the physical conditions of those who use them. In addition to a highly qualified teaching staff, every school had a qualified counselor and a media specialist. East Bay Public Schools also had seven full-time registered nurses to provide health services and accommodate the needs of the students in the system. The East Bay community had experienced tremendous growth in the ten years prior to this study and was continuing to grow towards the north and east. East Bay schools and community worked together to provide children with quality educational opportunities aimed at preparing them for a prosperous future (East Bay Public Schools, 2019).

East Bay had seen great academic success as shown by the statistics on the East Bay Public School's report card released from 2017-2018. Student demographics were as follows: 61% White, 12.5% American Indian, 9.4% Hispanic, 9% two or more races, 4.7% Black, and 3.4% Asian or Pacific Islander, 30.7% economically disadvantaged, 2.4% English Learners, and 10.8% of students had disabilities. At the district level, 71.4% met or exceeded their state level target on standardized state assessments. The average amount of progress students made district wide on English and math assessments over consecutive years was 66.9%. District wide, 93% of students had good attendance, 34.3% of students had earned credit in postsecondary opportunities, and 94.5% of students had graduated in four or five years (East Bay: 2017-2018 School Report Card, 2018).

East Bay Mission

The mission of East Bay Public Schools, also known as "The East Bay Way," stated, "Our Mission is to provide a safe environment that equips, educates, and empowers East Bay students on their journey toward outstanding character and success" (East Bay Public Schools, 2019). The mission was posted in many places and in a variety of forms at East Bay Public Schools, including the website, various planning documents, a plaque at the front of the high school, and picture frames with the mission statement in high school classrooms. All decisions made in the district were intended to be aligned with this mission. From professional learning communities (PLCs) to extra-curricular activities, the East Bay team of educators aimed to help students along their journey toward great character and success.

In 2016, the district put together a strategic planning task force which consisted of physicians, teachers, attorneys, pastors, businesspersons, parents, PTO members, city officials, higher education representatives, career technology officials, administrators, school board members, and retired patrons in the community. This task force faced the huge responsibility of developing a five-year plan for the district. The district's superintendent led the task force. All decisions made for the strategic plan were driven by the district's mission statement. The district's strategic plan was created in 2016 with five focus areas, including curriculum and instruction, facilities and construction, student services, technology, and extracurricular activities. Each area of focus contained goals complete with strategies and action plans for each.

For the purpose of this study, the technology area of focus was elaborated upon. One goal in the technology focus area was "the district technology department will maintain, upgrade, and expand infrastructure and technology devices that best support all students and staff" (The East Bay Way, 2016). Three key strategies embedded in the focus area were: (1) to maintain and enhance data security, (2) provide equal access to technology, and (3) use techniques to help drive efficiencies in school administration and business practices. One specific action plan of this focus area was to implement the 1:1 instructional initiative for ninth through twelfth grade students. The second goal in the technology focus area was "the district will coordinate technology and curriculum to develop and support a strong foundation of innovative learning opportunities for all students" (East Bay Public Schools, 2019). Two strategies for this goal were: to provide students with technology training to prepare them for college/career opportunities and that all teachers utilize technology to support differentiated instruction and best practices.

Specifically, the district utilized “technology as a tool, not as a replacement of teachers or good teaching” (East Bay Public Schools, 2019). Action plans included developing a student technology support team, implementing 1:1 in the 2016-2017 school year, building community partnerships to promote free Wi-Fi access throughout the community, providing training and technology for all faculty, and continually reviewing and upgrading technology course offerings (East Bay Public Schools, 2019).

1:1 Instructional Initiative

East Bay’s Teaching and Learning Department was comprised of several district leaders under an assistant superintendent. Teaching and Learning has many areas of focus, one of which was blended learning at East Bay, which encompassed the 1:1 instructional initiative at the high school. The Teaching and Learning Department at East Bay Public Schools created a guide called “Blended Learning in East Bay Public Schools”, which contained the goal statement for blended learning in East Bay Public Schools:

East Bay Public Schools is continually making strides to provide the best possible educational experience for each and every student. As the developments in technology continue to advance, our goal is to create an environment that encourages independent 21st century learners and to prepare students for the world beyond East Bay.

At the high school, students checked out nearly 3,000 devices to use in the classroom to enhance learning. At the sixth, seventh, and eighth grade centers, there are approximately 1,600 devices in carts used by students at school. At the elementary sites,

students at school used over 400 iPads and 700 ChromeBooks. East Bay Public Schools had digital textbooks/curriculum for secondary English and elementary and secondary math classrooms. The model used to evaluate technology integration was SAMR, which stands for substitution, augmentation, modification, and redefinition. The SAMR model was utilized to continually strive for excellence in the classroom to successfully integrate instructional technology. Google Suite, apps, and keyboarding were among some of the tools utilized by teachers and students. The district focused on the importance of each teacher being able to differentiate in the classroom to enhance student learning. Instructional Technology Site Leaders (ITSLs) were a part of the integration by offering voluntary technology-focused professional development at each site. Professional development for 1:1 consists of summer training, monthly professional development offering, district professional development days, and Google Bootcamp Tour Stop (East Bay Public Schools, 2019).

East Bay High School

School Setting

East Bay High School was the heart of East Bay's community. East Bay students, along with their community, were involved in a multitude of activities and events, such as homecoming, trail days, and many sporting and fine arts events. East Bay students were involved in school and community events throughout the year. East Bay High School was comprised of three sites, which included two main campuses and an alternative school campus. Freshmen and sophomores were mainly housed on one campus while juniors and seniors were housed on the other campus. The two campuses were directly across the street from each other in the middle of East Bay. Students crossed back and

forth all day long to go to classes on both campuses. East Bay was working through construction projects on one campus to add a multipurpose building and eight new science labs/classrooms to one of the main campuses. The alternative school was located in an old elementary school building in the older part of East Bay. Alternative academy students, the virtual program, and alternative placement were housed at the alternative academy at East Bay.

East Bay High School employed one head principal, one associate principal of the alternative academy, six assistant principals, and 145 teachers for the two main campuses to serve 3,000 students. The student population consisted of 63% White, 5% Black, 3% Asian, 9% Hispanic, and 15% Native American. Twenty-five percent of students qualified for free or reduced lunch. East Bay offered 110 courses for students. Ninety-five percent of students had good attendance and the school consistently achieved scores above the state average in state testing.

Professional Learning Community Structure

East Bay's teachers were organized into PLCs by subject area. Each team consisted of members from both main campuses. Each department had a designated department head to help relay information and lead the PLCs. Teachers were asked to contact their department head for curriculum/teaching issues and then their evaluating principal. PLCs met once a week to look at and develop pacing guides, resources, student assessments, and student data. The teams also worked together to choose curriculum during textbook adoption phases. The teams helped each other with the digital aspect of incorporating 1:1 technology into their instruction. PLCs were charged with answering the four questions of a PLC. What do we want students to learn? How

will we know if they have learned it? What will we do if they do not? What will we do if they do? These four questions were the essential building blocks of a PLC. It was the expectation that all teams work together to answer these four questions. Teams were expected to identify essential standards, develop common formative assessments (CFAs), and examine assessment data together. Most teams were doing these first four things on a regular basis.

Instructional Technology Site Leaders

Every building in the district has Instructional Technology Site Leaders (ITSLs) who assist teachers with integrating technology and relay information from the district technology department to teachers in the building. This role was outlined in the Blended Learning guide from the Teaching and Learning department of East Bay. East Bay High School had four ITSLs. ITSLs met with the Instructional Technology Integration Coordinator once a month to get updates and information for their teachers and to find solutions to technology-related problems in their buildings. Their responsibilities were to assist teachers in solving technology problems, push out information regarding technology, and hold voluntary professional development. The voluntary professional development was held monthly for teachers to learn more about integrating technology in the classroom. At the high school, the ITSLs sent out a Google Form to teachers asking what they might need assistance with in the area of instructional technology. The ITSLs used this information to create the material for the monthly “Lunch and Learn” professional development. One of the ITSLs reported that the Lunch and Learn events are not well attended by teachers. Some teachers submitted the form to express what they want to learn more about but then did not attend the training session. She hoped that

more teachers would decide to come to the professional development (Tracy, interview, May 3, 2019).

Participants

This section provides a description of each participant selected using the sampling methods described in Chapter III.

Eloise. Eloise was a veteran math teacher in her second year at East Bay High School. She spent nine years in a more urban district in the area. She went to college initially to become a nurse because she wanted to help people. She realized that field was not for her and decided to switch to math education, since she enjoyed math and helping kids. She ended up at East Bay High School, because she lives in the area and wanted to be close to where her own child attends school. Eloise said she loves the “light bulb moment” (Eloise, interview, April 30, 2019), that moment when a student really gets it. She taught several students with remedial math needs in her Intermediate Algebra and Algebra III classes that need the extra help from their math teacher. Eloise said, “Once you can build their confidence, they can figure it out and they’re like oh, this isn’t so bad” (Eloise, interview, April 30, 2019). Eloise had a strong growth mindset according to her mindset quiz results.

Becky. Becky was a special education English teacher at East Bay High School in her second year of teaching. She had a degree in health and fitness and worked in the private sector working on fitness with special education students. After shadowing a family member in her job as a special education teacher, she decided to move into education. She said that she “stumbled into this, but it is a happy accident” (Becky,

interview, May 3, 2019). She had students in her classes at many different levels.

Therefore, her strategies in the classroom were varied by student abilities. Becky had a strong growth mindset according to her mindset quiz results.

Monica. Monica was a veteran math teacher in her third year at East Bay High School. She started in college in the medical field and then decided that was not for her. She then went into education. She knew all along that she wanted to be in a field to help and serve others. She spent her first five years of teaching in another district teaching elementary, which was her initial certification area. Before coming to East Bay, she obtained her Master of Science as an Elementary Math Specialist, yet still took a position as a high school math teacher. Monica stated that she enjoys teaching high school students due to being able to “be more direct with the kids, be more open, be more communicative” (Monica, interview, May 6, 2019). Monica had a strong growth mindset according to her mindset quiz results.

Ben. Ben was a veteran science teacher at East Bay High School who had been there for several years. He primarily taught freshman Biology, some on level and some advanced. He stated that “structure’s important” (Ben, interview, May 8, 2019). He believed in planning to the minute for each class period. He stated that ChromeBooks were rarely used in his classroom, only for notes. Ben viewed ChromeBooks as a disservice to students. Ben had a growth mindset with some fixed mindset ideas according to his mindset quiz results.

Lori. Lori was a veteran special education English teacher in her fourth year at East Bay High School. She spent several years teaching special education in other districts before East Bay. Lori explained that she initially interviewed for the secondary

coordinator position, but it came down to her and one other person. She was offered the special education teaching position. She said she was excited about this position, since it was solely juniors and seniors in a special education classroom. She still aimed to be a special education director someday. Lori described what she says to her students: “Some of you are going to realize really quickly I do care about you...But I do have expectations and I do have strict policies and procedures” (Lori, interview, May 6, 2019). This is how Lori viewed her own classroom. Lori had a fixed mindset with some growth mindset ideas according to her mindset quiz results.

Tracy. Tracy was a veteran English teacher at East Bay High School for her thirteenth year. She came from a family of educators. Her desire to be a teacher started as a little girl watching her grandmother teach, getting the extra supplies from her classroom, and playing in a schoolhouse that her grandparents built for the backyard. She talked about her family telling her she could do something different if she wanted to, but she said, “I just didn’t ever see myself doing anything different” (Tracy, interview, May 3, 2019). She served in several capacities at East Bay High School. Being one of the site’s ITSLs is one of the ways she served. Tracy had a fixed mindset with some growth mindset ideas according to her mindset quiz results.

Mr. Smith. Mr. Smith served as East Bay High School’s head principal and was in his second year in this position. Prior to this, he served in a nearby district as an assistant principal at the middle school and high school level and then as a principal at a middle school. He then worked as an executive director of instruction for secondary in that same district. He strived to be back in a leadership capacity at the building level which brought him to East Bay. His experience at the district level aided in his decision

making at the building level. He expected all students at East Bay High School to be treated with respect in such a way that they feel valued. He also said he wanted every classroom to be one where “students are challenged to think and be pushed outside of their comfort zone, because that is where growth occurs” (Mr. Smith, interview, August 2, 2019). His passion for leadership was based upon his belief that organizations rise and fall on the strength of their leadership. He loved having the opportunity to be on a leadership team and helping the school improve. With the 1:1 initiative, he wanted to see continued growth in the use of technology as an instructional tool.

Mrs. Jones. Mrs. Jones was serving as an assistant superintendent for East Bay Public Schools. She was in her first year in this role. Mrs. Jones worked as a math teacher for East Bay and then as an East Bay High School principal. She then went to serve in a nearby district as an assistant principal at the middle school level and then as a principal at the high school level. She received promotions and became an assistant superintendent in that district. She had returned to East Bay to serve as an assistant superintendent at East Bay Public Schools. Mrs. Jones was passionate about student learning. Her areas of responsibility were within the Teaching and Learning department for East Bay Public Schools. Within her department, she was responsible for leading the planning and implementation of instructional technology with the 1:1 instructional initiative.

Leadership for the 1:1 Instructional Initiative

Leadership for the 1:1 instructional initiative came from different sources in a variety of ways. Mr. Smith, the building principal, and his leadership team had not set forth formal expectations for teachers concerning the use of ChromeBooks. Mr. Smith

stated, “I have never really said, ‘Use ChromeBooks’... I have set the expectation for the kids to be engaged bell to bell” (Mr. Smith, interview, August 2, 2019). He elaborated about teachers using ChromeBooks as a tool to make that engagement happen. Mr. Smith said he wanted the integration to be a natural shift for teachers and that teachers would see the benefit of utilizing technology in their instruction. Mr. Smith gave an example of this in relation to adopting textbooks. With every adoption, the site and district focus is “to get curriculum that is oriented around technology” (Mr. Smith, interview, August 2, 2019). While there was leadership from building administration in regards to engagement and using the tools available to be effective, the training and direct focus on the 1:1 instructional initiative itself did not come from building administration.

The leadership of the 1:1 instructional initiative came from the district level. The Teaching and Learning department worked to ensure the technology and resources were available and also provided a district Instructional Technology Integration Coordinator. The Instructional Technology Integration Coordinator was responsible for working with the ITSLs in the buildings. The coordinator provided smooth integration of new resources, training when needed, and collected information from buildings in regards to their needs, which they then relayed to the Teaching and Learning Department. The building had ITSLs there to support teachers and to provide voluntary professional development for teachers to attend. The district had a Blended Learning Guide on the website that provided an overview and expectations for the initiative. This guide outlined the goals, objectives, and expectations for the district in regards to the 1:1 instructional initiative. Some other examples of district leadership were allotment of funding, technology infrastructure, and technology related support positions. The district secured

funding through bond issues to provide ChromeBooks for implementation. The technology department worked to ensure all students had a Google account, the infrastructure was available to support the devices, and troubleshooting support was available for staff. The district paid for a position to provide ChromeBook support at East Bay High School. One teacher also offered a class to repair broken devices. The district office provided substantial support of the 1:1 instructional initiative. The leadership as a whole were continually taking steps to achieve the vision in regards to the 1:1 Instructional Initiative.

When asked about evaluation of the 1:1 instructional initiative, Mr. Smith and Mrs. Jones stated that the use of the SAMR model was important. They both voiced the importance of this model to evaluate the implementation. Mr. Smith stated, “I think we will do a survey...send out the SAMR...and just ask [teachers], ‘Hey just give us your feedback’...’Where are you with this?’” (Mr. Smith, interview, August 2, 2019). Mrs. Jones stated, “I’ve talked a lot with the Teaching and Learning team about the SAMR model” (Mrs. Jones, interview, July 31, 2019). She elaborated to explain, “The goal is to get teachers...to the point where we are redefining how we use technology in the classroom, to redefine that lesson or instruction to take it to the next level” (Mrs. Jones, interview, July 31, 2019). However, there was not a specific plan as to how to implement using the model directly with teachers in order for teachers to make improvements in their implementation. Mrs. Jones stated that technology could assist with the next level of learning for students. Mrs. Jones said that one major goal the Teaching and Learning department was working on is consistency across programs and buildings in the district. She planned to continue that work in multiple areas. “Then, if we are ready to take it to

the next step with technology, then that technology can help support all of those things” (Mrs. Jones, interview, July 31, 2019). Mrs. Jones and Mr. Smith expected teachers to utilize the technology to enhance the student learning experience. Mr. Smith wanted to find out if the ChromeBooks were being used in every classroom and if so, how? He was unsure as to what level they were being used throughout the building. Mrs. Jones explained, “My expectation is that the lessons...are aligned to the standards...and if it’s with 1:1 technology, then it is used to engage students in the classroom and transform their learning” (Mrs. Jones, interview, July 31, 2019). One of the ITSLs, Tracy, stated that she hoped the staff embraced the technology since implementation was no longer brand new. She could see a shift, even in administration, from old school to new school, in which students were more responsible for advancing their learning. Tracy said that she did not know of building expectations for technology integration. She understood that the expectation was to engage students in learning and use the ChromeBooks as a tool in the classroom. Expectations were clear from the district level, but the building leadership was much more flexible with undefined expectations of technology integration.

Teacher Frustrations and Challenges

Mr. Smith spoke about how some teachers struggle to adopt a technology-based curriculum. He explained that the math department adopted math curriculum most recently, and the curriculum chosen was centered on technology. Mr. Smith stated, “It was a challenge for some teachers that really had a hard time getting on board” (Mr. Smith, interview, August 2, 2019). He understood what shifts needed to happen to get everyone on board. Monica spoke of the pushback that she had seen and heard from teachers. Even in her own department, some teachers took a while to begin using the

online curriculum, because they were sticking to their previous teaching techniques. Monica stated, “I’m more of a jump in let’s go...we’re going to have to do it...you’re going to do it next year...you might as well just jump in” (Monica, interview, May 6, 2019). Tracy mentioned that she had seen the teacher buy-in and shift unfold. She said that if teachers would be flexible, they would realize that they would save time in the end if they prepared things ahead of time with the digital resources. Tracy stated, “I think that when they see the positive, they’re like, okay, but there’s also that scary part of technology” (Tracy, interview, May 3, 2019). Tracy was one of the ITSLs and spoke about their frustrations as well. ITSLs had frustrations about not knowing what they needed to do to support teachers. The ITSLs wanted to fill this role for support, because they had a passion for instructional technology. However, they did not know how to engage all teachers effectively in the professional development that they offered. The ITSLs were unclear as to the expectations building administration had concerning instructional technology use expected in the classroom (Tracy, interview, May 3, 2019). Teachers were discouraged by the multitude of technological issues they seemed to have when integrating technology in the classroom. They referred to the Wi-Fi being down on occasion, students not bringing their devices or not having them charged, or student devices not working properly. Teachers wondered if the infrastructure was not strong enough or was not set up efficiently enough to support ChromeBooks. Lori shared that she felt like administration sometimes did not trust teachers completely. For example, to add applications to Chrome, teachers must ask permission from the technology department. Lori stated, “Lock the kids’ stuff down so that they can’t add things, but trust your teachers enough to go in and add an extension we need in our classrooms”

(Lori, interview, May 6, 2019). Lori also mentioned that she desired more consistency in the program, such as expectations from administration for teachers. These were all things that were mentioned in the participant interviews.

It is important to note that the participants each mentioned a variety of challenges with the process with 1:1 technology. Mr. Smith, the principal of East Bay, mentioned that without proper classroom management procedures, the technology caused a potential for more distractions in the classroom. Mr. Smith said that he was worried that in an average classroom, he would see students on ChromeBooks but not for instruction. He would like to see this shift so that teachers were using them for instructional purposes throughout the building (Mr. Smith, interview, August 2, 2019). Eloise and Becky said that ChromeBooks could be a distraction for students, but with proper classroom management, these obstacles could be overcome. Eloise had even set expectations about when students could and could not have the ChromeBooks out (Eloise, interview, April 30, 2019) (Becky, interview, May 3, 2019). Ben specifically said that he thought they were a disservice to students. He was very negative about ChromeBooks being in the classroom. He mentioned that it was hard to monitor them due to the limited space in his classroom (Ben, interview, May 8, 2019). Lori talked about her very strict technology policy that she had in her classroom. She said that she really did not have any issues with technology, but she also talked about discipline issues with ChromeBooks (Lori, interview, May 6, 2019). Eloise and Monica talked about the challenge for students concerning time management. They said that students needed to learn how to prioritize what they need to finish on the ChromeBook (Eloise, interview, April 30, 2019) (Monica, interview, May 6, 2019). Ben talked about the challenge of cheating with the help of

technology and expressed that there is no way to prevent it (Ben, interview, May 8, 2019). Monica also talked about the challenges of student using technology to cheat. She had found ways to limit the cheating, such as differentiating the problems as much as possible, adjusting the seating arrangement, and adjusting her classroom management strategies (Monica, interview, May 6, 2019). As for the challenges mentioned, the teachers in a growth mindset, such as Monica, seemed to strive to overcome the challenges in order to enhance student learning.

Evaluation & Expectations of 1:1

Throughout the course of observations and interviews, the need for an evaluation model and clearly communicated expectations emerged as a common theme. Both Mrs. Jones and Mr. Smith mentioned the usefulness of the SAMR model. Mrs. Jones said that the district has been “really trying to build consistency with curriculum and content” (Mrs. Jones, interview, July 31, 2019). Their plan was to use the SAMR model as they moved forward with the 1:1 instructional initiative. Mrs. Jones and Mr. Smith also agreed that there are not any expectations set at this time concerning how much or how little ChromeBooks should be used in instruction. Mr. Smith said, “I have said that the expectation is for kids to be engaged bell to bell...ChromeBooks are a tool” (Mr. Smith, interview, August 2, 2019). Mrs. Jones said, “We are really trying to get to that point where we are redefining how we use technology in the classroom, to redefine that lesson or instruction to take it to the next level” (Mrs. Jones, interview, July 31, 2019). Mr. Smith said, “I’m always curious to know if the devices are even being used first of all, and then how they’re being used” (Mr. Smith, interview, August 2, 2019).

Tracy spoke of her observations of teachers throughout the building in regards to expectations of ChromeBook usage. She said, “I really think that our staff is hopefully...knowing that like, it’s here, it’s sticking around, let’s embrace it” (Tracy, interview, May 3, 2019). Tracy felt that teachers needed to be able to justify what they were doing and document communication with parents. She said there were no rules or guidelines in place, but everyone needed to do what is best for kids. She said, “So I don’t know that there’s anything formal, but I know that...is the expectation” (Tracy, interview, May 3, 2019). Lori expressed that ChromeBooks are useful in her classroom. She stated that she wished some things were easier when it came to settings or applications. She said, “Just the little things like they don’t trust the teachers enough” (Lori, May 6, 2019). This statement was in reference to her need to have an application added to the ChromeBooks. Lori felt the need and expectation to use them in her classroom, but could not get the tools added that she needed to be able to utilize. Between Tracy and Lori, there was a noticeable theme. The expectation was there to utilize the ChromeBooks as a tool in order to aid instruction and address the student need.

Training

District and site leaders, as well as teachers, recognized that training was needed in order to help the instructional technology initiative to progress. Mrs. Jones said, “I think teachers are at different levels with integrating the technology in their classrooms” (Mrs. Jones, interview, July 31, 2019). Mr. Smith noted that teachers need training on what is new in technology. He said, “I don’t know that I’ve done a good job helping overcome challenges, but I think is just continued training about what’s available” (Mr. Smith, interview, August 2, 2019). Mrs. Jones reported that the leaders of the district

planned to add a new position in technology to aide with instructional technology. Eloise explained the need for training. She was given a new program for math called My Math Lab. She stated, “I never got trained on it” (Eloise, interview, April 30, 2019). Monica noted that she felt confident with the technology she has except Lanschool which was a monitoring program. She said, “I think that will be a great tool” (Monica, interview, May 6, 2019). Tracy noted that there are changes in technology all of the time. She said, “It’s where like you finally accept it, you use it, you understand it, and then here’s something new” (Tracy, interview, May 3, 2019). Being one of the ITSL’s, she provided training to teachers, but stated that the trainings have had very low attendance.

Shifts in Teaching

The shift to using technology in the classroom caused some challenges for teachers but also created some opportunities for growth. Mr. Smith, Tracy, and Monica voiced their observations of challenges for teachers. Monica said, “This was our first transition year to full 1:1...There was a lot of pushback at the beginning” (Monica, interview, May 6, 2019). Tracy talked about a teacher who struggled with the shift. She said, “Now she’s understanding the benefit and so she’s like, okay, if I tackle this up front, it makes my life easier down the road” (Tracy, interview, May 3, 2019). Mr. Smith said, “There were a handful of Geometry teachers that really had a hard time getting on board” (Mr. Smith, interview, August 2, 2019). Tracy spoke about helping teachers be flexible with technology, such as when a storm caused an outage or a virus in the system. She reflected, “It’s not getting discouraged by things that have nothing to do with the kids and nothing to do with your lesson” (Tracy, interview, May 3, 2019).

Lori, Monica, and Becky reflected about the changes that affected students. Lori stated, “It’s changed my way of teaching” (Lori, interview, May 6, 2019). Monica reflected that 1:1 changed how she gave participation credit. With digital assignments, she began to force them to continue trying the problem until the student got to a certain percentage correct in order to gain the participation credit. Before 1:1, if they turned in a paper, they would get the participation credit. She also stated another difference about taking notes before 1:1. “You really had to just pay attention the first time and take really good notes the first time” (Monica, interview, May 6, 2019). With 1:1, she was able to put videos and notes on Google Classroom so that students could look back and review material if needed. Becky was in a classroom with lower achieving students in special education. She reflected the difficulty some students had with technology. She said, “In the past when I have done the 1:1, it’s more chaotic for me” (Becky, interview, May 3, 2019). She also stated, “We tried in the past, but because of the level that my kids are on, it works better if I do hands-on” (Becky, interview, May 3, 2019).

Student Engagement

Mrs. Jones and Mr. Smith both spoke in their interviews about the importance of student engagement. Mrs. Jones said:

At a district level, [the goal] is really to try to get to that point where we are redefining how we use technology in the classroom, to redefine that lesson or instruction to take it to the next level...to keep students engaged in their learning. (Mrs. Jones, interview, July 31, 2019)

Mr. Smith also agreed to this statement and added a reflection on the usage of ChromeBooks. He said, “I don’t feel like we’re at the point of using them to achieve higher levels of learning” (Mr. Smith, interview, August 2, 2019). Mr. Smith voiced that the expectation is to use the ChromeBooks as a tool for engagement. He said the “expectation is for kids to be engaged from bell to bell. The ChromeBooks are a tool” (Mr. Smith, interview, August 2, 2019).

Eloise, Lori, and Ben spoke in their interviews about their thoughts of ChromeBooks and student engagement. Eloise reflected about the importance of building relationships with students. She said, “I feel like just the relationship part of it is probably the most important part. Because, once they know that you believe in them, that builds their confidence, and then they are more willing to take a risk” (Eloise, interview, April 30, 2019). Lori stated that the ChromeBooks have helped students’ attention and engagement. She said, “I feel like it’s helped me because I can get my kids attention, and I can do more things to engage them” (Lori, interview, May 6, 2019). Lori was able to experience the positive side of student engagement with ChromeBooks. Ben stated, “Before ChromeBooks, they were a lot more engaged because they had to be” (Ben, interview, May 8, 2019). He continued, “They were actually writing notes” (Ben, interview, May 8, 2019). These examples demonstrate marked differences in teachers’ opinions about technology integration.

Resources

Mr. Smith and Mrs. Jones spoke about the different avenues available for teachers to access resources for the 1:1 instructional initiative. Mrs. Jones spoke about the use of PLC’s for teachers. She talked about building a foundation of consistency from building

to building and teacher to teacher. She said, “So it’s taken a while to just get that foundation, and now we’re ready to take it to the next level. And that’s where we’re starting PLCs” (Mrs. Jones, interview, July 31, 2019). She said that PLCs worked to answer the four questions of a PLC: What do we want them to know, how will we know they learned it, what will we do when they do, and what will we do when they don’t? Within PLCs, teachers developed pacing guides that help them identify what tools to utilize for instruction. Mr. Smith spoke about having resources readily available for teachers to use to encourage the use of technology in their instruction. He elaborated that with each textbook adoption, they look at adopting a digital component with every new curriculum. He said, “With every passing year there’s more reason for teachers to use ChromeBooks” (Mr. Smith, interview, August 2, 2019).

The teachers each utilized different resources for ChromeBooks in their classrooms. Tracy mentioned the broad spectrum of teacher usage. She said that some have a website, some have a Google Classroom, and some have neither. Tracy spoke about the fact that English teachers share many digital resources. She said, “I would have to say that we would rival for top spot just in collaboration, communication, and helpfulness to one another” (Tracy, interview, May 3, 2019). Another effective way to use the technology was for absences and for transfer students. Monica said, “Kids that come in later in the year, I can give them the classroom and go back and look at that Chapter 4 that we did” (Monica, interview, May 6, 2019). Monica, Eloise, Ben, and Lori all referenced the use of the Google tools, such as Google Classroom, Google Calendar, and Locked Forms. Other resources mentioned by the teachers were Kahoot, Pearson, My Math Lab, YouTube, EdPuzzle, and iCivics.

Lori, Eloise, and Becky spoke of the need for management of the ChromeBooks in the classroom to monitor student usage. Lori and Eloise both used Lanschool in their rooms. Lori said, “And I can monitor what they’re doing, and so a lot of my lessons are on the ChromeBook” (Lori, interview, May 6, 2019). Eloise and Becky said that they would need more training to use Lanschool effectively, a program the school had purchased for every teacher.

Differentiated Instruction

“Differentiated instruction is really what we’re supposed to be doing,” Mrs. Jones (interview, July 31, 2019) said. She elaborated on this point by saying, “We take students where they are and figure out, ‘Okay, well, how can I grow them?’” (Mrs. Jones, interview, July 31, 2019). She said that technology could be a tool to help in that process. Monica and Tracy express challenges with differentiating at the secondary level. Tracy said, “So there’s just so many different kids and so many different personalities and I would think it’s a little bit easier at elementary” (Tracy, interview, May 3, 2019). Monica explained, “It’s almost even harder at the high school level for the sake of I don’t know how much of it is that they truly need the differentiated learning versus they just didn’t pay attention the first time” (Monica, interview, May 6, 2019). Eloise said, “I feel like in teaching, it just comes naturally to differentiate for each kid” (Eloise, interview, April 30, 2019). In reference to differentiation, Ben stated, “it’s pretty straightforward” (Ben, interview, May 8, 2019). When unfolding differentiation into the three areas of content, process, and product, it was important to note observations and statements pertaining to each area. The following sections discuss each area.

Content. Mr. Smith talked about teachers being able to differentiate content more due to “purchasing more and more resources for use on the ChromeBooks” (Mr. Smith, interview, August 2, 2019). Teachers also have more reason to differentiate content, since with each book adoption, a digital component is being purchased (Mr. Smith, interview, August 2, 2019). Tracy, Ben, and Lori spoke of students needing to have choice when utilizing ChromeBooks. Tracy talked about note taking and reading and said, “I just try to have a lot of choices for them so that they can learn best for themselves and not the way that I think they should” (Tracy, interview, May 3, 2019). Ben let them have choices as well and said, “There’s a lot of kids that don’t like reading on the ChromeBook” (Ben, interview, May 8, 2019). Lori said, “Um, technology is a catch-22. You have kids who like it, you have kids who hate it” (Lori, interview, May 6, 2019). She talked about having to differentiate the content based on background, performance, and needs. Ben noted that structure is important. He was very scheduled, plans by the minute, and does at least three things per hour. He said, “The only thing we use the ChromeBook for is for notes” (Ben, interview, May 8, 2019). He said he does put the video content on Google Classroom ahead of time. Ben stated his opinion that, “they get spoon fed so much...they won’t do it on their own” (Ben, interview, May 8, 2019). Eloise talked about liking the ability to “mix it up” (Eloise, interview, April 30, 2019) in reference to content delivery in the classroom. She was proud of being able to “teach things in multiple ways and give them time to digest things” (Eloise, interview, April 30, 2019). Similarly, Monica spoke about having students take paper notes in math, but they have the option to go home and watch the videos again. She spoke of students with anxiety. She said:

They can go home in the privacy of their own home, put their headphones in, watch the video, and still take the notes...And I know these kids are doing that and coming back and being just as successful, so it's giving those kids a chance.

(Monica, interview, May 6, 2019)

She put the videos of class and a digital copy of the notes on Google Classroom to make the content available to every student online. Becky also noted some details about content delivery in her classroom, "We don't go into a lot of detail and then find some hands-on activity to make it relatable to them that's going to keep their interest for at least thirty minutes" (Becky, interview, May 3, 2019).

Process. Mr. Smith spoke of differentiating process in the classroom. He stated, "I think that process would be more limited...I don't feel like we're at the point of using ChromeBooks to achieve higher levels of learning" (Mr. Smith, interview, August 2, 2019). He reflected on his observations that, "there's less use of worksheets and study packets which is a positive thing" (Mr. Smith, interview, August 2, 2019). Mrs. Jones stated, "We've got work to do in those areas. Teachers, when they're trying to differentiate, that we're not so rigid" (Mrs. Jones, interview, July 31, 2019). She explained that teachers sometimes only see one outcome and only one process to get to that outcome.

The teachers interviewed mentioned a few tools they use to differentiate process. Eloise said that she used Kahoot quizzes so that "we can see what they struggle with" (Eloise, interview, April 30, 2019). She mentioned using the digital quiz as a review before a test so that students know what they need to study. Eloise said she likes the digital component because students get prompt feedback. "They have an idea of what

they messed up on” (Eloise, interview, April 30, 2019). With the digital textbooks in math, both Monica and Eloise mentioned the positive aspects of this option. Eloise said, “The nice thing about the online books is that if I have it set up, they can always redo the problem, but its different numbers” (Eloise, interview, April 30, 2019). Monica said, “So if they see they got it wrong, it makes them try three times technically” (Monica, interview, May 6, 2019). Becky, Eloise, and Tracy mentioned positive aspects of blending digital and nondigital activities into the classroom. Becky said, “Some teachers think it’s great and use it every day. In an ideal world for me, I would like to incorporate both” (Becky, interview, May 3, 2019). Eloise said, “I don’t use it every single day. I feel like it gets monotonous. I feel like good teaching, you don’t do the same thing every single day” (Eloise, interview, April 30, 2019). Becky said that she would like to have them research something that interests them on the ChromeBooks. Tracy said, “I have just seen the freedom that [1:1] gives me to use all different modes” (Tracy, interview, May 3, 2019). Monica mentioned benefits for students in process differentiation. Between posting notes, video, online assignments, and extra resources, Monica said, “They have literally everything on my computer” (Monica, interview, May 6, 2019).

Product. Mr. Smith noted the importance of using ChromeBooks as a tool in the classroom to have “students using the device to create things” (Mr. Smith, interview, August 2, 2019). He explained that teachers would deliver the vision to the students about the content and then they would create a product about that topic. Tracy said something similar. “And now it’s almost like you guys are so smart...They were smart all along, but it’s just sort of letting them branch out and have the freedom” (Tracy, interview, May 3, 2019). When she reflected about differentiating product, she also said,

“Maybe it’s a little bit harder to differentiate content of instruction or the process” (Tracy, interview, May 3, 2019). Lori explained that she differentiated a poetry assignment for her students in her classroom by having them write about a song they picked and answer, “How does this song relate to you?” (Lori, interview, May 6, 2019). When asked about differentiation, Lori reflected on her special education classroom by saying, “I try to plan just like the general education teachers...just cut it down, and I give my kids more days” (Lori, interview, May 6, 2019). Monica talked about the differentiation in product in relation to the homework she assigns. Students were given the ability to try problems multiple times until they got them correct. “And the benefit is you know you got a 100 versus you know I’m just checking off on a paper” (Monica, interview, May 6, 2019). Becky said that her study skills students work on ChromeBooks to accomplish some work for their classes (Becky, interview, May 3, 2019). Ben, on the other hand, was not a supporter of differentiating product in his classroom. When asked about differentiating product, he said, “Well, no... it’s too difficult with the number of kids that I got and the level that they’re on...The on-level kids, they can’t. Now, with the advanced kids, they could do that” (Ben, interview, May 8, 2019).

Summary

Chapter IV presented a narrative portrait of the collected data. A historical explanation of national support for instructional technology and technology standards set the stage for the collected data. Descriptions of East Bay High School and the participants were included in order to paint a picture of the district and site chosen for this study. The descriptions included details about district demographics and statistics, East

Bay mission, 1:1 instructional initiative, the high school setting, and the professional learning community structure. East Bay is a large, suburban, affluent, and academically successful district. The descriptions of the participants helped to anchor the data presentation. The six participants chosen have different mindsets. Three had a growth mindset, and three had a more fixed mindset. Themes that emerged were described in chapter IV as well: leadership for the 1:1 instructional initiative, teacher frustrations and challenges, evaluations/expectations of 1:1, training, shifts in teaching, student engagement, resources, and differentiated instruction. Chapter V analyzes the use of 1:1 technology in the classroom through the lens of Mindset Theory and using the Concept Map of Differentiated Instruction.

CHAPTER V

DATA ANALYSIS

The study collected data through a variety of sources including the Mindset Quiz, observations, interviews, artifacts, and school website information. The presentation of data from chapter IV aided to analyze the data in this chapter. The purpose of this qualitative study was to explore the role of mindset regarding differentiated instruction in a 1:1 environment in a northeastern Oklahoma school district. The theoretical framework selected for this study was Mindset Theory, which describes two different mindsets: fixed and growth (Dweck, 2006). The Concept Map for Differentiated Instruction presents a method of visualizing and describing differentiated instruction through concept, process, and product (Tomlinson & Allan, 2000). Differentiation of instruction is a teacher's response to learners' needs guided by general principles, such as respectful tasks, flexible grouping, and ongoing assessment and adjustment. Differentiation is broken down into three areas: content, process, and product. Chapter V analyzes data through the lens of mindset theory by looking at how teachers with a fixed or a growth mindset differentiate content, process, and product in a 1:1 instructional initiative.

Content

One area of differentiated instruction is content provided to students. “Content consists of facts, concepts, generalizations or principles, attitudes, and skills related to the subject, as well as materials that represent those elements” (Tomlinson & Allan, 2000, p. 7). In the area of content, there were some similar ideas amongst teachers. The section describes similarities and differences, as well as differences between teachers having a growth mindset versus a fixed mindset. The leadership also spoke to content differentiation. The principal, Mr. Smith, shared that the district is continually purchasing additional resources for teachers to use to differentiate content in their classrooms. “With every passing year there is more reason for teachers to use them” (Mr. Smith, interview, August 2, 2019). With each textbook adoption, “we get curriculum that is oriented around technology” (Mr. Smith, interview, August 2, 2019). He reflected that teachers have a multitude of resources to use in order to differentiate the content (Mr. Smith, interview, August 2, 2019).

Fixed Mindset

Participants Lori and Tracy have a fixed mindset with some growth mindset ideas, while Ben has a growth mindset with some fixed ideas, according to the Mindset Quiz results. Their scores on the Mindset Quiz were well below the other three teachers that all have a strong growth mindset. Lori, Tracy, and Ben each noted that students have different preferences regarding the ChromeBooks. Some students like the devices and some do not. Tracy mentioned, “Students have different preferences for note taking and reading...some students do well with those on the ChromeBooks and some would rather have those on paper” (Tracy, interview, May 3, 2019). Ben stated, “Students have

different preferences when reading” (Ben, interview, May 8, 2019). He requires them to read the material in the classroom to ensure the reading happens, but it can be done on the ChromeBook or from the book (Ben, interview, May 8, 2019). Tracy also gives students choices in regards to how they can learn best for themselves. When Tracy talked about what she tells her students, she said the following:

If you like to type, you can type on your ChromeBook. If you want to handwrite, you can handwrite. If you do not want to do anything at all, good luck. I just do not know that I can tell them, you have to take notes or read this way. (Tracy, interview, May 3, 2019)

Lori summarized these ideas when she noted differentiating based on the student’s background, performance, and needs. She said, “Here’s how I approach this situation...Some of it is case by case” (Lori, interview, May 6, 2019). These ideas relate to ensuring the student is comfortable in the style or method they are using to learn. Ben talked about his planning process for each class. He stated that structure is important. He plans every minute of the class period and plans for at least three different learning activities each class period. Everyone in his classroom only uses the ChromeBook for notes, so that he can say he is utilizing them. Ben commented that he supposes he could try to put videos on Google Classroom ahead of time for students to watch, but he is not sure “if they would do it” (Ben, interview, May 8, 2019). In Ben’s classroom, I observed students listening to what Ben has to say and only attempting what he asked. Ben stated, “They get spoon-fed so much” (Ben, interview, May 8, 2019), yet he appeared to do the same thing in his classroom. Students acted as if the activities of the classroom were the same day in and day out. In Tracy’s classroom, I observed students working

independently on the task with very little interaction between Tracy and the students. In Lori's classroom, I observed conversations between her and her students that were not on topic or questions from students to clarify what Lori expected from them. There was very little instruction happening in regards to the goals and objectives in Lori's classroom.

In all three of these teacher's classrooms, there appeared to be a connection between their content differentiation and Dweck's assertions about fixed mindsets. "The fixed mindset limits achievement" (Dweck, 2006, p. 67). Through content, Ben, Lori, and Tracy gave their students choice in note taking and reading, which is beneficial for students. However, due to strict scheduling in the classroom and the disconnect between teacher and student in the classroom, students were not pushed to higher achievement levels. Dweck stated, "Lowering standards just leads to poorly educated students who feel entitled to easy work and lavish praise" (Dweck, 2006, p. 193).

Growth Mindset

Becky, Monica, and Eloise all have a strong growth mindset. On a 30-point Mindset Quiz they are all at least eight points above the three teachers not in a strong growth mindset. Becky stated in the interview that she tries to plan content that is engaging, interesting, and relatable to her students. She said, "I find some hands on activity, some what I can make it relatable to them, something that's going to keep their interest for at least 30 minutes" (Becky, interview, May 3, 2019). She differentiates content on the ChromeBooks for the students in her class that are achieving at higher levels. Being a special education teacher, she teaches students on a variety of levels. She has some very low scoring students, but expects them to push themselves to higher levels

(Becky, interview, May 3, 2019). Monica requires her students to take paper notes in her math classes. Additionally, she makes those notes available on Google Classroom in case they need to look back at them later. Monica also records each lesson each hour and posts that video on Google Classroom, sometimes even including an additional instructional video. This provides an extra tool for her students to push themselves in the learning process. She spends time on YouTube looking for the best video, comparing videos, recording the classroom videos, and linking all of that on Google Classroom. Monica said, “I tell my kids theoretically, it is not a flipped classroom setup, but they could almost view my whole class from home” (Monica, interview, May 6, 2019). Monica said that she utilizes all of these methods to benefit all of her students with varying personalities and learning styles. She explained how this setup benefits her students with anxiety. She said, “They can even email me, and I have had more conversations with some of those kids that way. I will communicate back to them that way too because I know that is what they feel more comfortable with” (Monica, interview, May 6, 2019). Eloise enjoys being able to mix up the learning and utilize a blended environment. Eloise said, “I try to teach things in multiple ways and give them time to digest things” (Eloise, interview, April 30, 2019). When observing these three teachers’ classrooms, I noted student and teacher interaction, student and teacher relationships, and students asking questions interactively with teachers. In their classrooms, students want to extend their thinking. In Eloise’s remedial math class, I observed students in groups working through a math review together to prepare for a test and asking for help when they get stuck. In Monica’s class, I observed her interacting with her students to explain the content thoroughly to prepare them for the assignment

that needed to be completed. In Becky's class, I observed students intently listening and processing the information.

All three of these teachers encourage their students in a variety of ways to push themselves to new heights. These teachers spoke about the different strategies they use to present material to assist their students in being successful. Eloise said, "I feel like just the relationship part of it is probably the most important part. Because, once they know that you believe in them, that builds their confidence, and then they are more willing to take a risk" (Eloise, interview, April 30, 2019). This all connects to Dweck's statement "great teachers set high standards for all their students, not just the ones who are already achieving" (Dweck, 2006, p. 196).

Process

Teachers use a variety of processes in their classrooms. "Process is how the learner comes to make sense of, understand, and own the key facts, concepts, generalizations, and skills of the subject" (Tomlinson & Allan, 2000, p. 8). Some of the processes are designed for higher levels of achievement based on readiness, interests, and learning profiles. School leadership at East Bay hopes that teachers will differentiate utilizing technology as a resource instead of using worksheet packets. The principal, Mr. Smith, said, "The differentiation of processes is more limited than the other areas of differentiation" (Mr. Smith, interview, August 2, 2019). The assistant superintendent, Mrs. Jones, said, "There is work to be done with teachers to encourage them to use different processes to get to the same outcome" (Mrs. Jones, interview, July 31, 2019).

At East Bay High School, there is a website for every teacher to add resources and information about their classes. Some teachers at East Bay High School utilize the website to post information and some utilize Google Classroom. Tracy explained that there are not stated requirements for either. It is just teacher preference. Mr. Smith's vision is that teachers would utilize the Open Educational Resource (OER) commons and would take time together to build a toolbox of resources for each department. He said, "OER Commons is such a vast resource" (Mr. Smith, interview, August 2, 2019). Mrs. Jones, the assistant superintendent, spoke about the digital resources teachers have access to, such as pacing guides to utilize in their PLCs (Mrs. Jones, interview, July 31, 2019). Other resources mentioned by teachers were Smartboards, Chrome Add-ons, Kahoot, YouTube, Pearson Digital curriculum, EdPuzzle, iCivics, Desmos, PowerSchool, My Math Lab, Google Classroom, Google Calendar, Google Forms, and Google Forms Locked Mode. All of these resources are readily available for all teachers to use at their discretion. As discussed previously, the teacher's outlook on ChromeBooks causes differences in how much these resources are utilized.

In a differentiated instruction classroom, "a teacher's goal is that each child feels challenged...finds his or her work appealing...and grapples squarely with the information, principles, and skills" (Tomlinson & Allan, 2000, p. 7). The goal is for this to happen most of the time. One way to observe this aspect is through student engagement in the classroom. One method to achieve this is through flexible grouping. Tomlinson and Allan (2006) stated, "In a flexibly grouped classroom, a teacher plans student working arrangements that vary widely and purposefully over a relatively short period of time" (p. 5). Mrs. Jones spoke about teachers needing to utilize the

ChromeBooks to improve student engagement (Mrs. Jones, interview, July 31, 2019).

Mr. Smith mentioned that the expectation is that students are engaged bell to bell and the 1:1 technology is another tool to help that. He does not know for sure if all teachers are using ChromeBooks to achieve higher levels of learning (Mr. Smith, interview, August 2, 2019).

Fixed Mindset

Teacher participants who do not have a strong growth mindset could not articulate how they differentiate process. Lori, Tracy, and Ben have the same processes each days for each student. One exception is that Tracy utilizes different both digital and non-digital modes in the classroom in order to create a more blended environment. Tracy also talked about teachers sharing digital resources in order to save time and collaborate. In reference to the English department, Tracy said, “I would have to say that we would rival for top spot just in collaboration, communication, and helpfulness to one another” (Tracy, interview, May 3, 2019). Lori spoke about student engagement. Lori said that 1:1 helped students’ attention and engagement, but she did not describe why or how. “It has changed my way of teaching. I feel like it has helped me because I can get my kids’ attention, and I can do more things to engage them” (Lori, interview, May 6, 2019). Ben expressed a more negative opinion. He said, “Students were more engaged before ChromeBooks” (Ben, interview, May 3, 2019), yet he does not attempt or desire to use technology in the classroom. In the fixed mindset teachers’ classrooms, students worked independently most of the time. In Ben’s class, students were sitting in groups around tables. However, no group work happened. Ben said, “I have to put them in these groups due to limited space” (Ben, interview, May 8, 2019).

Growth Mindset

Those teachers with a strong growth mindset do have differentiation in their processes. For example, Eloise has a growth mindset and she noted that having relationships with your students is most important. She said, “I feel like just the relationship part of it is probably the most important part. Because, once they know that you believe in them, that builds their confidence, and then they’re more willing to take a risk” (Eloise, interview, April 30, 2019). When students have a relationship with their teacher and feel like their teachers believe in them, they will be more engaged in the process of their learning.

One method of differentiating process is providing a variety of resources. Monica provided a variety of resources for her students. She also planned a weekly workday for students in order to provide time in class to ask questions and get feedback on the material. She said this is helpful “to make sure they understood the material before we went on” (Monica, interview, May 6, 2019). Becky and Eloise spoke similarly about incorporating both digital and non-digital in a more blended environment. Eloise explained that she likes to mix it up and not do the same thing every day in her processes. Eloise said, “I feel like you have to find the right blend of stuff” (Eloise, interview, April 30, 2019). Math teachers Eloise and Monica described different processes that allow their students to get prompt feedback. In the digital math textbooks, they could retry math problems. With Kahoot quizzes, students received immediate feedback to see their struggling areas. Monica specified that in order to differentiate and push each student to their highest potential, she wants them to keep trying until they get it. She reflected on the digital program and said, “At least this gives you immediate feedback and you can see

and do something about it” (Monica, interview, May 6, 2019). Becky, a special education teacher, differentiated in different ways for students who struggle with technology. She had different levels of worksheet packets that she used for differentiating. Becky also stated that she would like to incorporate having students research something that interests them on the ChromeBooks when they are learning about a certain topic. “If they have questions, have students explore topics that they are interested in” (Becky, interview, May 3, 2019).

Another way to differentiate process is through flexible grouping. In Monica’s classroom, students were seated in rows. Therefore, it did not seem to be evident of grouping at first. However, when students began working independently, they began to form groups themselves to work together. Monica encouraged the students to help one another learn the material. In Eloise’s class, students were seated in groups. The students were instructed to work together to accomplish a task as well as help one another learn the material. In Becky’s class, students were seated in rows in the classroom, but when they were working on a task, they were grouped with students of similar ability levels. All three of these teachers worked to ensure students had the option to work together with others to ensure they were learning the material.

When Dweck spoke to a teacher with a growth mindset, the teacher reflected back and said, “I have always been fascinated with learning, with the *process* of discovering something new, and it was exciting to share in the discoveries made by my...students” (Dweck, 2006, p. 195). This statement was what I observed the three growth mindset teachers doing. They were overjoyed with the learning process of their students. They wanted to provide the resources needed for their students to reach their highest potential and be

successful. I am not implying the fixed mindset teachers did not want similar outcomes for their students, but they did not show the same planning for the learning process that the growth mindset teachers did. However, Tracy did plan for process differentiation by providing a blended learning environment, which may be related to her mindset score demonstrating more of a growth mindset than Ben or Lori.

Product

Differentiating product is the third component of classroom differentiation. For product differentiation, the methods students use to demonstrate their learning are varied. Technology is one way for teachers to differentiate product. This requires teachers to be comfortable with a variety of products to assess learning. “In a differentiated classroom, a teacher sees everything a student says or creates as useful information both in understanding that particular learner and in crafting instruction to be effective for that learner” (Tomlinson & Allan, 2006, p. 5). Ongoing assessment and adjustment are important pieces of the differentiated classroom in order to respond to a student’s needs. The principal, Mr. Smith, described that he wants teachers to utilize whatever they need in order to get students making their own product. He stated that he envisions teachers delivering a vision where teachers use “whatever activities get us to where kids are making their own product” (Mr. Smith, interview, August 2, 2019).

Fixed Mindset

Lori and Tracy both spoke about the fact that the 1:1 technology puts more responsibility on the students. For example, when Lori talked about her electronics policy in her classroom, she said, “I tell them how it’s going to be and I told them if you

want ChromeBook access in my classroom, don't ruin it" (Lori, interview, May 6, 2019). When asked about the differences before 1:1 technology and now, Tracy said, "I think it absolutely puts more responsibility on the kids" (Tracy, interview, May 3, 2019). Neither of them spoke of that being a negative thing, but they also did not tie that aspect to student learning (Lori, interview, May 6, 2019) (Tracy, interview, May 3, 2019). Lori did mention that 1:1 technology changed her teaching, so she has been able to implement it in her classroom. She said, "It's helped me, because I can get my kids' attention, and I can do more things to engage them" (Lori, interview, May 6, 2019). Ben's response to the 1:1 technology was very negative during the interview. Ben said, "I teach using auditory, kinesthetic...well, it used to be kinesthetic. Now, it is typing" (Ben, interview, May 8, 2019). He mentioned that the technology could possibly be a good tool and maybe students could pace themselves better. However, when asked what a great 1:1 environment would look like, he replied, "I don't even know" (Ben, interview, May 8, 2019). Ben made it clear that he does not like the 1:1 technology (Ben, interview, May 8, 2019).

Ben, Tracy, and Lori spoke to differentiating product in their classrooms. Ben stated that the only way he differentiates product is the format the students write their definitions, either on paper or digitally. When asked about differentiating, Ben said, "The on-level kids can't...Now, with the advanced kids, they could do that" (Ben, interview, May 8, 2019). This statement is related to the point Dweck made about teachers having a fixed mindset: "Teachers with a fixed mindset know which students to give up on before they've even met them" (2006, p. 197). Teachers set their expectations too low and do not push their students to their highest potential. Two other fixed mindset

teachers showed more characteristics of growth mindset in this area. Tracy made a statement that teachers should let kids branch out: “They’re smart!” (Tracy, interview, May 3, 2019). Lori talked about differentiated assignments, specifically a poetry assignment that her students were to create according to their interests (Lori, interview, May 6, 2019). Tracy commented that differentiating product is easier than content or process (Tracy, interview, May 3, 2019). This statement shows that Tracy is willing to do what is easy, but not necessarily challenge herself to do what is hard, which is typical of individuals with fixed mindsets.

Growth Mindset

For the teachers with a strong growth mindset, differentiating product appeared to come naturally to them. Becky, Monica, and Eloise all mentioned that the assignments and assessments are differentiated according to student needs. Becky mentioned that she differentiates the paper assignments based on need and student ability. She also had her higher-level students in her classroom work on accelerated activities on the ChromeBook (Becky, interview, May 3, 2019). Becky said, “They don’t require a lot of help from me” (Becky, interview, May 3, 2019). Monica talked significantly about her differentiation of product. She assigned homework problems online, and even though they were the same problems as before the ChromeBooks, students were able to retry the problems and get immediate feedback. She said, “So if they see they got it wrong, as soon as they try, and it makes them try three times” (Monica, interview, May 6, 2019). Monica assigned some online assessments. However, all of her tests were on paper with no electronics allowed in order to prevent cheating (Monica, interview, May 6, 2019).

Becky mentioned that 1:1 instructional technology aids in teacher and student interaction by allowing different students to research their own interests, which allows teacher to have rich conversations with each individual student. Becky stated, “The ChromeBooks are good for some things...you have to have the right population of students to do 1:1 and to trust them using the ChromeBooks wisely” (Becky, interview, May 3, 2019). She was referencing some of her very low-achieving students and that the technology could be very confusing and difficult for some of them, while it was not difficult for higher achieving students (Becky, interview, May 3, 2019). Eloise spoke about the fact that 1:1 technology is a great tool for varying different methods of learning. With the way that Eloise used differentiation in her classroom, technology provides another way for her to create different learning opportunities. Eloise stated, “I feel like good teaching, you don’t do the same thing every single day” (Eloise, interview, April 30, 2019). Monica stated, “There are so many more ways [for students] to be successful” (Monica, interview, May 6, 2019). Monica mentioned that with the 1:1 technology, she has been able to change how she views participation credit. Instead of students just finishing the problems, she wants students to try problems repeatedly until they get them correct. This is possible through the digital textbook. Monica stated, “Students used to have to take really good notes in class, but now they have plenty of resources right there to look at for help if they need it during their homework” (Monica, interview, May 6, 2019). She is more available for her students with the online platform (Monica, interview, May 6, 2019). Giving students more opportunities to try the problems, being more available to assist, and providing various learning opportunities are all ways that differentiation was used in the classroom.

Summary

Based on observations and interviews with participants, it is clear that the participants with a growth mindset were open to the experience and viewed technology as a valuable tool to aid in student learning. Their statements demonstrated that they appreciated having technology to differentiate learning opportunities and that they were excited to learn new strategies that benefit their students. Dweck (2006) quoted a teacher having a growth mindset in her book: “I have always been fascinated with learning, with the process of discovering something new” (p. 195). With this in mind, one can see that the participants with a growth mindset were willing to learn to implement the technology in order to provide new learning experiences. In contrast, the fixed mindset participants were not as willing, especially Ben. He seemed to feel that he was already providing excellent teaching and did not need to learn new things. Dweck addressed this in her book as well. “Fixed-minded teachers often think of themselves as finished products. Their role is simply to impart their knowledge” (Dweck, 2006, p. 201).

The table below gives a summary of the characteristics of teachers having a fixed or a growth mindset concerning differentiation in a 1:1 environment.

Table 4

Characteristics of Teachers With a Fixed or Growth Mindset in a 1:1 Environment

Differentiation in a 1:1 Environment	Teachers With a Fixed Mindset	Teachers With a Growth Mindset
Overall	More responsibility on the students - not tied to student learning.	Positive opinions about differentiation focused on student learning.
	Has changed some of the teaching in the classroom through 1:1 implementation.	Aids in teacher and student interaction.
	Not sure what a great 1:1 classroom environment would look like.	1:1 is appropriate depending on the students' ability level.
	Kinesthetic learning has changed to typing.	Teacher availability improved.
	1:1 technology could possibly be a good tool, but not sure.	1:1 technology is a great tool to aid in student learning.
	Already a good teacher and does need to improve.	Excited to learn something and implement it in their classrooms.
	Training may or may not be needed.	Training is needed and appreciated.
Content	Student preference with note taking and reading.	1:1 technology is a great tool to add variety in the learning opportunities to the classroom.

	Student needs to be comfortable.	A multitude of resources available for teachers and students on Google Classroom. (i.e. notes and videos.)
	Structure is important.	
	Comment about students being spoon-fed, but doing the same thing.	Content differentiated on ability level using ChromeBook.
		Blended learning environment.
	Students unclear of expectations.	
		Students working in groups.
	Limiting student achievement by low standards.	
Process	Same processes day in and day out.	Rich conversations in the classroom.
	All students doing the same things.	Students will keep trying the math problems until they get them correct.
	Occasionally, a blended learning environment.	Variety of resources.
	More engaged before ChromeBooks.	Incorporate students' interests.
		Student engagement is important. If you believe in them, they will take a risk.
Product	Would not differentiate in an on-level class.	Students researching their own interests.
	Let kids branch out - "They're smart!"	Change in the process and value of

Differentiating product is easier than content or process.

participation credit.

Differentiating based on student needs.

Retrying homework until they get it.

Information presented and analyzed in this chapter was collected through the Mindset Quiz, observations, interviews, artifacts, and school website information. This information was analyzed through the lens of mindset theory from Dweck (2006) by looking at how teachers differentiate content, process, and product in the school setting with 1:1 instructional technology. Differences emerged in the concept of differentiation through content, process, and product between those having a growth mindset and those having more of a fixed mindset. Chapter VI presents answers to the study's research questions. Implications for research, theory, and practice are addressed and recommendations for future research are suggested.

CHAPTER VI

FINDINGS, CONCLUSIONS, IMPLICATIONS, AND RECOMMENDATIONS

Findings

The purpose of this qualitative study is to explore the role of mindset regarding differentiated instruction in a 1:1 environment in a northeastern Oklahoma school district.

The following research questions guided the study:

1. How is differentiated instruction manifested in a 1:1 environment?
 - a. How is content differentiation manifested in a 1:1 environment?
 - b. How is process differentiation manifested in a 1:1 environment?
 - c. How is product differentiation manifested in a 1:1 environment?
2. How do teachers with a growth mindset differentiate instruction in a 1:1 environment?
3. How do teachers with a fixed mindset differentiate instruction in a 1:1 environment?

Based on the case presented in Chapter IV and the data analyzed in Chapter V, these research questions are answered below.

Research Question One Part A: How is differentiated instruction manifested in a 1:1 environment? a. How is content differentiation manifested in a 1:1 environment?

Differentiating instruction through content is manifested in a 1:1 environment in a variety of ways. The teacher participants spoke about content being differentiated in their classrooms. Some teachers give a choice to students about how to take notes or read the material whether on paper or in a book or on the ChromeBook. Ben stated, “Students have different preferences when reading” (Ben, interview, May 8, 2019). Some teachers utilize videos for their students to watch either ahead of time or as a resource when they are working through the material or studying. Some teachers offer extra material on the ChromeBooks for students who are achieving at higher levels. Some teachers put their notes on Google Classroom and extra resources to give students access to a multitude of resources. Many different resources and tools are utilized by teachers in order to create a blended learning environment.

Teachers having different mindsets utilize the resources in different ways in their classrooms. Teachers having a growth mindset utilize a multitude of resources in their classrooms to help students achieve at higher levels. These three teachers talk about ensuring the resources are available to students to meet their needs. Monica specifically videos each lesson in her classroom and posts that video, the notes, and other helpful videos on her Google Classroom for her students. Monica stated, “I tell my kids theoretically, it is not a flipped classroom setup, but they could almost view my whole class from home” (Monica, interview, May 6, 2019). Eloise enjoys being able to mix up the teaching styles to keep it exciting for her students. She strives to teach things in a

multitude of ways. Eloise said, “I try to teach things in multiple ways and give them time to digest things” (Eloise, interview, April 20, 2019). She utilizes Kahoot, Pearson digital curriculum, and a variety of other resources on the ChromeBook to create a blended learning environment. Teachers having more of a fixed mindset each utilize the ChromeBook as well, but it looks different in their classrooms. The learning is more prescribed by the teachers. In Ben’s classroom, he only utilizes the ChromeBook for notes, because he feels like he has to use them for something. He feels like the ChromeBooks are a disservice to students and a distraction in the classroom. Ben differentiates the content when it is convenient, not necessarily when it is needed. Ben said he would consider putting videos on Google Classroom for them to watch ahead of time “if they would do it” (Ben, interview, May 8, 2019). His class periods look very similar each day, with each student doing the same thing. Lori and Tracy do let their students choose the method that works best for them in their learning. The content delivery is not differentiated much in their classrooms day to day. Lori and Tracy do utilize the resources, but not as many as the teachers in a growth mindset. Content differentiation happens in different ways in each classroom. In addition, content differentiation is manifested differently depending on the mindset the teacher has.

Research Question One Part A: How is differentiated instruction manifested in a 1:1 environment? b. How is process differentiation manifested in a 1:1 environment?

Differentiated instruction through process is manifested in a 1:1 environment in a variety of ways. Teacher participants spoke about how they differentiate process in their classrooms. Some teachers utilize a similar process day in and day out. Some teachers utilize different resources throughout their instruction to help differentiate the process for

students with different ability levels. Some provide a workday for students in order to allow time for questions and feedback through the process of learning. For the math teachers, they utilize the math textbook for students to receive immediate feedback throughout the learning process. Students can retry math problems until they get it correct. With Kahoot quizzes, students can receive immediate feedback during the process. Some differentiate in different ways for students who struggle with technology. Some look forward to incorporating more ways for students to research things that interest them which would differentiate the process for those students. Becky said, “I find some hands on activity, some what I can make it relatable to them, something that’s going to keep their interest for at least thirty minutes” (Becky, interview, May 3, 2019). Student engagement is an important piece of process differentiation to mention as well. The relationships that teachers build with students is important to note. Some teachers build relationships with their students and it shows in the learning process. Students know that their teachers care about them and want them to achieve their highest potential. In these classrooms, one will see a connection between teacher and student that is unlike other classrooms. The student engagement is better in the classrooms with a strong teacher and student relationship. When student engagement is better, the learning process yields better results. Eloise said, “I feel like just the relationship part of it is probably the most important part. Because, once they know that you believe in them, that builds their confidence, and then they’re more willing to take a risk” (Eloise, interview, April 30, 2019). Teachers are attempting to meet student needs and students are trying hard knowing that teachers care about their success.

Teachers having different mindsets show a difference in their planning for differentiating the process of learning. The teachers with a growth mindset plan for their students to make discoveries in the learning process. They plan for blended learning to allow for students to make discoveries in the classroom. Monica said, “Make sure they understood the material before we went on” (Monica, interview, May 6, 2019). Teachers having more of a fixed mindset have a more regimented schedule in their classrooms. Ben said, “Students were more engaged before ChromeBooks” (Ben, interview, May 3, 2019). These teachers do not plan time for discovery by their students. It is not that these teachers do not want to see this happen. Instead, they want to have full control of what is happening in all aspects of the classroom. Tracy, Lori, and Ben spoke about student engagement, but not how they will specifically make it happen. Whereas, Monica, Becky, and Eloise all use multiple resources for the process to ensure their students have the opportunity to discover something new.

Research Question One Part A: How is differentiated instruction manifested in a 1:1 environment? c. How is product differentiation manifested in a 1:1 environment?

Differentiated instruction through product can be manifested through a variety of ways in a 1:1 environment. The product can be differentiated in a multitude of ways with ChromeBooks available as a tool. When teachers will allow students the opportunity to demonstrate their learning, the products can be amazing. Students have the ability if they are allowed to be creative in their products. Mr. Smith said that he envisions teachers delivering a vision where teachers use “whatever activities get us to where kids are making their own product” (Mr. Smith, interview, August 2, 2019). Teacher participants talked about differentiation methods used in their classrooms. The math teachers utilize

the digital assignments in order for students to retry problems as much as needed in order to understand the material. One teacher talked about differentiating how they do the vocabulary in the classroom. Another teacher talked about differentiating a poetry assignment according to student interest. Tracy made a statement that teachers should let kids branch out – “They’re smart!” (Tracy, interview, May 3, 2019).

Teachers having different mindsets differentiate the product differently. Ben has a fixed mindset and talks about how students would not be able to handle product differentiation. He is worried about letting students branch out. When I asked Ben about differentiating, he said, “The on-level kids can’t...Now, with the advanced kids, they could do that” (Ben, interview, May 8, 2019). The three participants having a growth mindset talk about differentiating product being beneficial to student learning. These teachers talk similarly about challenging their students to reach their highest potential by pushing them to try their hardest and show what they have learned. Monica said, “There are so many more ways for students to be successful” (Monica, interview, May 6, 2019).

Research Question Two: How do teachers with a growth mindset differentiate instruction in a 1:1 environment?

Teachers having a growth mindset are “fascinated with learning, with the process of discovering something new, and it was exciting to share in the discoveries made by my...students” (Dweck, 2006, p. 195). The three teacher participants having a growth mindset differentiate content, process, and product in different ways in their classrooms. Even though they use different methods of differentiation in all three areas, it shows that they are differentiating in respect to their students’ readiness, interests, and learning profiles. Monica, Becky, and Eloise all have a growth mindset. Through observations

and interviews, one can tell that they genuinely desire to see the discoveries their students make and have a love for learning. They all three differentiate content, process, and product in order to see their students achieve their highest potential. Monica differentiates for her students by making a multitude of resources available for her students on Google Classroom. She has her students take notes in class but also uploads the notes, a video of the lesson, and extra resource videos to Google Classroom. Students are assigned math problems to practice on the digital component of the Pearson curriculum. With this resource, students have the opportunity to try and retry practice problems as many times as needed in order to understand the material. Monica likes this, because it gives her students immediate feedback and allows the participation grade on homework to reflect what they have actually done to learn the material. Monica said, “So if they see they got it wrong, as soon as they try, and it makes them try three times” (Monica, interview, May 6, 2019). Becky works to offer different levels of work to her special education students in her room. She pushes each of them individually to reach their highest potential by challenging them with classwork at various levels. Eloise strives to achieve a great relationship with her students in order for them to trust her and take a risk. She values that relationship and believes that it helps her students be more engaged in her classroom. Eloise uses a variety of resources in her classroom to keep her students interested, engaged, and putting forth maximum effort. She values resources that give her students immediate feedback as well. These three teachers all have a growth mindset and strive to create the best learning environment every day for their students. These characteristics and efforts of these teachers reflect an important point made by

Dweck. “The great teachers believe in the growth of the intellect and talent, and they are fascinated with the process of learning” (Dweck, 2006, p. 194).

Research Question Three: How do teachers with a fixed mindset differentiate instruction in a 1:1 environment?

The three teachers with a fixed mindset seemed to have a variety of ways they viewed differentiation in the 1:1 environment. Dweck (2006) states, “Teachers with the fixed mindset create an atmosphere of judging...They give up on the ‘dumb’ ones” (p. 197). This statement by Dweck seems very harsh when thinking about teachers in the classroom. However, when listening to these three teachers and observing them in their classrooms, the statement seems to hold some value with them in certain aspects. However, these three teachers did not always seem to fall in fixed mindset category. They all seem to care for their students and want the best for them. With that said, it seems as though these three teachers wanted to teach using the methods with which they are comfortable. They all three allow student preference with notetaking and reading. With this aspect, they do differentiate based on student needs or preferences. The content is the same, but the students get to choose the method that works best for them. With that aspect, they also want the students to be comfortable. They do not push their students outside their comfort zones to challenge them. All three of these teachers stated that students were more engaged prior to having ChromeBooks in the classroom. Ben specifically states that structure is important. The way he organizes and plans his daily lessons is the same for all students in every class regardless of ability level. He stated that he does not feel like on-level students could handle being able to choose the product to demonstrate their learning. This statement is precisely what Dweck was referencing

about judging students and giving up on the dumb ones. Ben commented about students being spoon-fed but seems to be doing the same thing in his classroom with this strict structure. In Lori's classroom, students are unclear of her expectations. This is due to her not being descriptive enough about what her expectations are. These three teachers seem to limit student achievement by having low standards in their classrooms. Not everything about these three classrooms is aligned with having a fixed mindset. Tracy talks about occasionally utilizing a blended learning environment and desiring to incorporate more of the technology. Tracy also makes the comment about differentiation that we should let students branch out - "They're smart!" She sees the benefits that differentiation could provide. Tracy also states that differentiating product is easier than content or process. For the teacher participants with a fixed mindset, the interviews and observations do not show that they are completely opposed to differentiation in a 1:1 environment. When I asked Ben what a great 1:1 environment might look like, he said, "I don't even know" (Ben, interview, May 8, 2019). Through this analysis, one can see that these teachers are more leery of differentiation and are not completely on board with incorporating technology in the classroom for a variety of reasons. Some are more opposed than others in this category are.

Conclusions

The conclusions below pertain to the participants and contexts in this study and are not intended for broad, categorical generalizations to other contexts. Any transferability judgments by the reader should be based on the comparability or likeness of contextual features to which applications are made. Erlandson and his colleagues (1993) advised that in qualitative research, the researcher's responsibility is to provide a

rich, thick description of the contextual data that makes transferability judgements possible on the part of potential appliers.

The findings in this study show that there are many differences in the role of growth and fixed mindset about differentiated instruction in a 1:1 environment in a northeastern Oklahoma school district. As noted in Chapters I and II, people operate either having a fixed or a growth mindset. This affects the outcomes of a person's work concerning what outcomes can be expected. Dweck shows through many examples of people working hard to achieve their goals regardless of talents they possess. She explains, "the passion for stretching yourself and sticking to it, even (or especially) when it's not going well, is the hallmark of the growth mindset...[which] allows people to thrive during some of the most challenging times in their lives" (Dweck, 2006, p. 7). Also seen in Chapters I and II was the description of differentiation. Differentiated instruction is a method utilized to adapt to student differences, assist collaboration amongst teachers, and meeting student needs using varying strategies (Cobb, 2010). Similarly, in this study, growth and fixed mindset were seen as a reason for differences in the classrooms of six different teachers utilizing differentiated instruction in a 1:1 environment. For the three teachers with a growth mindset, it was found that their passion for stretching themselves and sticking to the 1:1 technology integration helped them achieve great things in their classrooms. These three teachers utilize differentiated instruction in their classrooms in order to help their students reach their highest potential.

Administration views differentiated instruction as a need for teachers to utilize in the classroom whether they are utilizing technology or not. The assistant superintendent, Mrs. Jones and the principal, Mr. Smith, both have the expectation that teachers are

engaging students in the learning process during all instructional time in the classroom. Technology is available as a tool for teachers to create a blended learning environment. The district has made a multitude of resources available for teachers to utilize in the classroom and has plans to purchase and acquire additional resources in the future. The district and site administration supports teachers in the classroom as they implement the technology. They have provided and will continue to provide training opportunities to teachers. The SAMR model will be used to evaluate how the 1:1 technology integration is progressing. The principal, Mr. Smith, is fully aware that not every teacher is using the technology in the best ways possible in their classrooms. He hopes that by incorporating the use of the SAMR model, teachers will be able to advance their integration to the next level. Mr. Smith sees the difference in the technology integration amongst teachers, but does not understand what is contributing to those differences. He mentions that effort, effectiveness of instruction, and classroom management styles could be contributors to the differences in integration.

Due to the nature and parameters of this study, other important information could have emerged. An unforeseen conclusion emerged from the data regarding the attitude of a teacher toward technology.

The findings indicate that teachers in this study with a growth mindset desire to implement the technology to the best of their ability. They strive to learn more about how to implement it effectively and want additional training. They want to provide a multitude of resources to their students in order to provide opportunities for success. These teachers set high expectations for their students to reach. These teachers feel that differentiation is a must for them to meet each student's needs. Eloise states, "it comes

naturally, to differentiate for each kid” (Eloise, interview, April 30, 2019). This statement summarizes the feeling of these three teachers. They feel that it is their responsibility to provide the best opportunities that are differentiated for each student in their classrooms.

The findings in this study indicate differences in the teachers with a more fixed mindset. It is important to note that these participants were not in the strong fixed mindset category. Eight points or more on a thirty-point scale separated them from the participants in the strong growth mindset category. These three teachers showed differences in enthusiasm for the 1:1 instructional technology than the teachers with a growth mindset. Ben was very negative about the implementation. He felt that it is a disservice and a distraction to student learning. His attitude towards the technology integration was that he would use it if he had to. He felt that his students were better off without it and that he was doing just fine in the classroom with the methods he had always used. He was not interested in additional training unless it was required. Lori was indifferent to the technology. She did a little bit of differentiation of product, but not much differentiation with content or process. She was not negative toward the technology, but was indifferent to it. Tracy likes the technology so much that she volunteered to be one of the ITSLs. Therefore, she sees the place for the technology in her classroom. However, she did not utilize much differentiation in each of the three areas. Her students all had the same requirements in the classroom. She is open to learning more about how to effectively implement the technology. Although Tracy appears to be in the substitution stage of the SAMR model, she could probably be pushed to advance in this model with her integration.

The findings lead to the conclusion that there is a difference in how teachers in this study with a growth mindset versus a fixed mindset incorporate differentiated instruction in the 1:1 environment. Those teachers with a growth mindset are completely on board with the technology integration. They are ready and willing to learn more in order to implement the technology as effectively as possible. The teachers with more of a fixed mindset did not always have that same outlook. It was a mixed response concerning implementing differentiated instruction in a 1:1 environment. For this study, the conclusion is that for teachers with a growth mindset, they utilize differentiated instruction through content, process, and product in different ways in the 1:1 instructional technology environment. This study does not conclude the opposite of this statement to always be the case concerning teachers with more of a fixed mindset.

Implications

The findings from this study have implications for research, theory, and practice. Examples of these implications are outlined below.

Implications for Research

Determining the best integration of technology in the classroom has been a topic of research for many years. Differentiated instruction has been shown through various studies as an effective strategy in the classroom (Tomlinson & Allan, 2000). 1:1 instructional technology is a great tool to use for student learning when utilizing differentiated instruction. With 1:1 instructional technology being relatively new, it takes extensive effort and a shift in teaching in order to utilize the technology effectively in the classroom. One's mindset affects the outcomes of a person's work concerning what

outcomes can be expected (Dweck, 2006). Findings from this study show that teachers with a growth mindset do well when utilizing differentiated instruction in the 1:1 instructional technology environment. Findings of this study confirmed findings from previous research regarding the effect of mindset on one's work and the outcomes expected (Dweck, 2006). This study did not find a strong relationship between having more of a fixed mindset and struggling with the 1:1 instructional technology environment. Findings of this study did not contribute additional information to other studies in relation to fixed mindset. This was mainly due to the participants not being in a strong fixed mindset.

Implications for Theory

Mindset theory espoused by Dweck (2006) was used to describe the manifestations of differentiated instruction in the 1:1 instructional technology environment. The two mindsets have been used in the past to describe the effect teachers have on the students in their classrooms and the effect that all people have in general on their work. This study contributed to mindset theory by looking at what effects different mindsets have on the utilization of differentiated instruction on the 1:1 instructional technology environment.

Implications for Practice

The findings of this study provide significant information to educational leaders. If leaders can understand the role that mindset plays in the effectiveness of teaching in the 1:1 environment, they will be able to provide better training and preparation for implementing an increase in technology. This statement also applies to the additional

conclusion that emerged regarding attitudes of teachers towards technology. In order to implement more technology effectively at the fingertips of our students, teachers will need to be well prepared in how to differentiate instruction effectively. By understanding how mindset and differentiating instruction work together, leaders can make the 1:1 classroom environment successful for teachers and students. Leaders will need to help boost the morale surrounding technology in order to help positively affect teachers' attitudes towards technology. Leaders need to make the expectations clear to staff concerning the use of technology in the classroom. These expectations need to be aligned between district and site leadership in order to provide a clear vision to staff.

Recommendations for Future Research

When analyzing the data of this study, some recommendations for future research became known. One idea would be to find the effects training has on the 1:1 environment with teachers having both a fixed and growth mindset. Another recommendation is to look at the connection between mindset of district and site leadership and the design and implementation of a 1:1 instructional initiative. Another interesting area would be to research how district and site leadership work together to support teachers' work through the challenges of a 1:1 environment. Another study would be to research the effectiveness of teachers with different mindsets, specifically student success in a 1:1 environment. The conclusion that emerged regarding teachers' attitudes leads to some new possible studies as well. Research to learn the connection between mindset, attitude, and effectiveness with technology could lead to important information.

Summary

East Bay Public Schools has shown commitment to implementing technology in the classroom. Leadership has provided the resources that teachers need to utilize technology through the 1:1 Instructional Initiative. Every student in ninth through twelfth grade have a ChromeBook assigned to them to use both in and out of the classroom. East Bay prepared the Blended Learning Guide to help with the implementation. The guide contained a goal about utilizing differentiated instruction with the technology as a tool for instruction. “An important strategy for differentiating instruction in the twenty-first century that will likely benefit students greatly involves the effective implementation of technology” (Morgan, 2014, p. 37). This statement from Morgan has been embraced through the implementation of the initiative. Morgan (2014) also states, “Although differentiated instruction is designed to benefit all students, it requires extremely hard work by knowledgeable and well-prepared teachers” (p. 37). Mindset of a teacher was looked in the study as a possible explanation of differences in the use of differentiated instruction in the 1:1 environment. The 1:1 environment presented new challenges to teachers on a daily basis. The growth mindset “allows people to thrive during some of the most challenging times in their lives” (Dweck, 2006, p. 7).

Chapter II reviewed the literature about technology in the classroom, differentiated instruction, and mindset. Technology has been implemented for the past two decades in a variety of ways throughout the United States. Technology integration has been supported nationally through funding and national technology standards creation. Differentiated instruction has been a technique teachers have used to provide

support for the needs of all learners. Technology has been used as a tool to accomplish this. Mindset theory explains that people have either a fixed or a growth mindset. People in a growth mindset have a desire for learning and getting better. They have a desire to be challenged and thrive through the challenge. This literature review reveals the need and purpose of this study: to explore the role of mindset regarding differentiated instruction in a 1:1 environment in a northeastern Oklahoma school district.

Chapter III described the qualitative case study methodology selected for this study. East Bay High School was chosen due to being in the third year of the 1:1 Instructional Initiative. Data collection occurred during the second semester of the 2018-2019 school year. The data collection included distribution of the mindset quiz, observations, interviews, document reviews, and artifacts. I selected six teachers and two administrators to be interviewed. I observed each teacher twice, once before the interview and once after. The six teachers were chosen based on the mindset quiz results. I chose three teachers in a growth mindset and three teachers in more of a fixed mindset. I collected information from the school website and artifacts from the teachers. Collected data were analyzed using the methods of data triangulation (Lincoln & Guba, 1985). I selected the mindset theory and the concept map for differentiated instruction prior to conducting the study to provide a lens through which to analyze the data.

Constructivism is the epistemological perspective, which guided this case study. This perspective helped to describe how people in the setting have constructed their reality and what the consequences are of what is perceived as real (Patton, 2015). Constructivism is described as “the meaning-making activity of the individual mind” (Patton, 2015, p. 122). I observed teachers in their classroom settings as their reality

unfolded in the 1:1 classroom environment as they worked to differentiate instruction. Chapter IV presented the story of East Bay High School by describing the data using thick, rich description. Chapter V analyzed the data through the lens of mindset theory from Carol Dweck (2006) and the Concept Map for Differentiated Instruction from Tomlinson and Allan (2000). This analysis included content, process, and product through fixed and growth mindsets.

Findings led to the conclusion that there is a difference in how teachers with a growth mindset versus a fixed mindset incorporated differentiated instruction in the 1:1 environment. Those teachers with a growth mindset were completely on board with the technology integration. They were ready and willing to learn more in order to implement the technology as effectively as possible. The teachers with more of a fixed mindset did not always have that same attitude. There was a mixed response concerning implementing differentiated instruction in a 1:1 environment. For this study, the conclusion is that for teachers with a growth mindset, they utilized differentiated instruction through content, process, and product in a multitude of ways in the 1:1 instructional technology environment. This study does not conclude the opposite of this statement to always be the case in regards to teachers with more of a fixed mindset. Chapter VI concluded with implications for research, theory, and practice and recommendations for future research.

Researcher Comments

I was not surprised to find out how strong the connection was between teachers having a growth mindset and successfully implementing differentiated instruction in a 1:1 environment. However, I was surprised not to find a distinct connection between

teachers having more of a fixed mindset and struggling to implement differentiated instruction in a 1:1 environment. For teachers in more of a fixed mindset, I was curious to learn more about their story. All teachers care about their students, but what drives the teachers in more of a fixed mindset? Through initiatives, challenges, and changes, there must be something that gets them through their day. My thought is that it has to be the students. Teachers work hard every day in their classrooms. District and site leadership work to communicate expectations. The district offers training. Some changes last and some do not. As far as technology, the 1:1 instructional initiative has been morphing throughout the country for a long time. Technology is only going to grow more prevalent in education as time goes by. It is vital to the success of technology integration for educators to learn constantly from one another. Educators are one another's best coaches. My hope is that educators will continue to embrace technology to prepare learners for the technologically advanced society we live in today.

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APPENDICES

Appendix A

Request to Conduct Research

2/12/2019

Request Complete

Michelle Baker <mbaker@>

Request Complete

1 message

Form Approvals

Reply-To: mbaker@

To: mbaker@

Mon, Nov 26, 2018 at 11:54 AM

REQUEST #7 | STATUS: COMPLETE | NOV 26, 2018

Request to Conduct Research

The request has been **approved**.

Requestor: mbaker@
Primary Researcher's Name(s) plus contact information (address, phone, email): Michelle Baker
Secondary Researcher's Name(s) if applicable plus contact information (address, phone, email): N/A
Reason for request?: Doctoral Dissertation
State the topic of your research: The Role of Mindset in Differentiated Instruction in a 1:1 Classroom Environment

<https://mail.google.com/mail/u/0/?ik=ee5d2f9b44&view=pt&search=all&permthid=thread-f%3A1618220006703160559&siml=msg-f%3A1618220006703160559>

1/5

State the purpose of your research:
 The purpose of this qualitative study is to explore the role of mindset regarding differentiated instruction in a 1:1 environment in a northeastern Oklahoma school district.

Provide a brief description of your proposed research methods and methodologies:
 This study is a naturalistic inquiry study. For the purpose of this study, I will do my research in one suburban high school with a 1:1 classroom environment in the whole high school, grades 9-12. I will gather artifacts the school is using for the program, distribute the mindset quiz to all teachers, observe about 8 teachers in classroom, and interview those teachers from the classrooms I observed. I will also interview one to two administrators. By analyzing all of these data elements together, I will be able to draw connections to begin to answer the research questions.

Please upload a digital copy of your research proposal and all corresponding documents.:
[Ch. 1, 2, & 3 - Revised from Proposal Meeting - Baker \(1\) - Michelle Baker.docx](#)

What is the projected start date of your research?:
 Jan 01, 2019

What is the projected end date of your research?:
 May 31, 2019

Have you submitted your research proposal if required?:
 Yes

If your research requires Institutional Review Board approval, have you submitted a copy of the IRB approval letter?:
 Not Applicable

Active research participants will include:.
 Teachers, School Administrators, Other School District Personnel

If student participants are
 High School

State the purpose of your research:
 The purpose of this qualitative study is to explore the role of mindset regarding differentiated instruction in a 1:1 environment in a northeastern Oklahoma school district.

Provide a brief description of your proposed research methods and methodologies:
 This study is a naturalistic inquiry study. For the purpose of this study, I will do my research in one suburban high school with a 1:1 classroom environment in the whole high school, grades 9-12. I will gather artifacts the school is using for the program, distribute the mindset quiz to all teachers, observe about 8 teachers in classroom, and interview those teachers from the classrooms I observed. I will also interview one to two administrators. By analyzing all of these data elements together, I will be able to draw connections to begin to answer the research questions.

Please upload a digital copy of your research proposal and all corresponding documents:
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What is the projected end date of your research?:
 May 31, 2019

Have you submitted your research proposal if required?:
 Yes

If your research requires Institutional Review Board approval, have you submitted a copy of the IRB approval letter?:
 Not Applicable

Active research participants will include:.
 Teachers, School Administrators, Other School District Personnel

If student participants are
 High School

2/12/2019

Request Complete

included, what grade level(s) are involved?:

Please describe projected student participant time commitment::
N/A

If faculty participants are included, what grade level(s) are involved::
High School

Please describe projected faculty participant time commitment::
I will send the mindset quiz to all staff that will take about 5 minutes to complete. I will observe approximately 8 teachers in the classroom and also interview the same teachers. I estimate 2 class periods for observations and about 30 minutes to an hour for the interview.

Please list any school sites and/or other district facilities involved in the conduct of your research::

School Site #1: Please select the school below of the Principal from whom you wish to obtain permission to conduct research at their site. Upon submission of this form, it will be routed to each principal for their approval and consent::

Have you submitted Notification and Informed Consent Letters along with the research proposal?:
Yes

Please describe the use of
N/A

<https://mail.google.com/mail/u/0?ik=ee5d2f8b44&view=nl&search=all&permthid=thread-f%3A1618220006703160559&siml=msg-f%3A1618220006703160559>

3/5

2/12/2019

[REDACTED] - Request Complete

equipment and materials.:
Have you submitted copies of all data-gathering instruments including surveys along with the research proposal?: Yes
Have you completed a Student Data Request Form if applicable?: No
What are your preferred days and times for data collection?: My preferred days will depend on my school schedule, as well as [REDACTED] schedule. The times and exact days will be determined as we get closer in order to work with the principal's schedule for the building.
If this research request is granted, I agree to abide by all OPS District Policies and Procedures and all District Research Request Policies and Procedures.: Yes
I understand and agree that any changes or deviations to the original research proposal must be approved by the Board of Review in advance and that failure to do so will result in the termination of the study.: Yes
I understand and agree that the Owasso Public School District reserves the right to withdraw consent to the

2/12/2019

Request Complete

research study at any time without cause.:

Signature of Researcher: Michelle Baker

Submission Date: Nov 25, 2018

School Site #2: Please select Not Applicable

the school below of the

Principal from whom you wish to obtain permission to

conduct research at their site.

Upon submission of this form,

it will be routed to each

principal for their approval and

consent.:

School Site #3: Please select Not Applicable

the school below of the

Principal from whom you wish

to obtain permission to

conduct research at their site.

Upon submission of this form,

it will be routed to each

principal for their approval and

consent.:

This is an automated email sent by formapprovals.com. You are receiving this email because the application has been enabled on the form you completed or approved by [REDACTED]

<https://mail.google.com/mail/u/0?ik=ee5c29b44&view=pt&search=all&permthid=thread-f%3A1618220006703160558&siml=msg-f%3A1618220006703160559>

5/5

Appendix B

Recruitment Email for Survey

Recruitment Emails

Recruitment Email for Survey:

From: michelle.a.baker@okstate.edu

Subject: Mindset Quiz Survey

Body:

Hello all,

My name is Michelle Baker, and I am a researcher at Oklahoma State University and an administrator in a nearby district. My dissertation research study is entitled "The Role of Mindset in Differentiated Instruction in a 1:1 Classroom Environment". I will be completing my research at [REDACTED], including both the [REDACTED] [REDACTED] which is why you are receiving this email.

To begin this study, all teachers will take the Mindset Quiz on Survey Monkey. The link is here in the email. This survey will provide the information needed to begin the next step of the study with observations and interviews.

The estimated completion time of the survey is 10 minutes. Participation in this survey is voluntary, you may refuse to take part in the research or exit the survey at any time without penalty. There are no foreseeable risks associated with your participation in this study.

Data are collected via an online survey system that has its own privacy and security policies for keeping your information secure.

If you have questions about the study before completing the survey, please contact me directly, michelle.a.baker@okstate.edu.

Follow this link to the Survey:

[Take the Survey](#)

Or copy and paste the URL below into your internet browser:

<https://www.surveymonkey.com/r/5VTP579>

Thank you for your time,
Michelle Baker

IRB NUMBER: TBD

IRB APPROVAL DATE: TBD

Follow the link to opt out of future emails:

[Click here to unsubscribe](#)



Approved: 03/18/2019
Protocol #: ED-19-25

Appendix C

Mindset Quiz Link to Survey

Survey Monkey Link <https://www.surveymonkey.com/r/KJ963GZ>

Click this link to preview the survey that was sent. I used the email invitation as my survey collector in order to track responses when sent out to participants.

Appendix D

Mindset Quiz

	Strongly Agree	Agree	Disagree	Strongly Disagree
1. Your intelligence is something very basic about you that you can't change very much.				
2. No matter how much intelligence you have, you can always change it quite a bit.				
3. Only a few people will be truly good at sports, you have to be born with the ability.				
4. The harder you work at something, the better you will be.				
5. I often get angry when I get feedback about my performance.				
6. I appreciate when people, parents, coaches or teachers give me feedback about my performance.				
7. Truly smart people do not need to try hard.				
8. You can always change how intelligent you are.				
9. You are a certain kind of person and there is not much that can be done to really change that.				
10. An important reason why I do my school work is that I enjoy learning new things.				

Mindset Quiz - Answer Values

	Strongly Agree	Agree	Disagree	Strongly Disagree
1. Your intelligence is something very basic about you that you can't change very much.	0	1	2	3
2. No matter how much intelligence you have, you can always change it quite a bit.	3	2	1	0
3. Only a few people will be truly good at sports, you have to be born with the ability.	0	1	2	3
4. The harder you work at something, the better you will be.	3	2	1	0
5. I often get angry when I get feedback about my performance.	0	1	2	3
6. I appreciate when people, parents, coaches or teachers give me feedback about my performance.	3	2	1	0
7. Truly smart people do not need to try hard.	0	1	2	3
8. You can always change how intelligent you are.	3	2	1	0
9. You are a certain kind of person and there is not much that can be done to really change that.	0	1	2	3
10. An important reason why I do my school work is that I enjoy learning new things.	3	2	1	0

Mindset Quiz - Score Chart

Total All Scores

22-30 = Strong growth mindset

17-21 = Growth with some fixed ideas

11-16 = Fixed with some growth ideas

0-10 = Strong fixed mindset

Appendix E

Recruitment Email for Observations and Interviews

Recruitment Email for Observations and Interviews:

From: michelle.a.baker@okstate.edu

Subject: Mindset Study Observation and Interview Scheduling

Body:

Hello all,

I would like to thank you for taking the time to participate in the Mindset Quiz Survey. You are being requested as a participant for the observation and interview portion of my research study.

I will be coming to [REDACTED] on April 10, 2019 to observe 6 teachers in their classrooms. On April 17th, 2019, I will be at [REDACTED] to interview all 6 teachers throughout the afternoon. I will coordinate a time with you that works for your schedule. Finally, I will be coming to [REDACTED] on April 26, 2019 to observe all 6 teachers one more time.

The estimated completion time of each observation is one class period and each interview is 45 minutes. Participation in this study is voluntary. You may refuse to take part in the research at any time without penalty. There are no foreseeable risks associated with your participation in this study.

Data collected will be kept confidential and only used for purposes of this study.

If you have questions about the study before completing the survey, please contact me directly, michelle.a.baker@okstate.edu.

Thank you for your time,
Michelle Baker

IRB NUMBER: TBD

IRB APPROVAL DATE: TBD

Follow the link to opt out of future emails:

[Click here to unsubscribe](#)



Approved: 03/18/2019
Protocol #: ED-19-25

Appendix F

INFORMED CONSENT DOCUMENT

CONSENT FORM

The Role of Mindset in Differentiated Instruction in a 1:1 Classroom Environment

Background Information:

You are invited to be in a research study entitled The Role of Mindset in Differentiated Instruction in a 1:1 Classroom Environment. You were selected as a possible participant because you teach at [REDACTED] and utilize the 1:1 technology. We ask that you read this form and ask any questions you may have before agreeing to be in the study.

Your participation is entirely voluntary.

This study is being conducted by: Michelle Baker, College of Education, Health, and Aviation, Oklahoma State University, under the direction of Dr. Ed Harris, College of Education, Health, and Aviation, Oklahoma State University.

Procedures:

If you agree to be in this study, we would ask you to do the following things: Participants will be asked to fill out the mindset questionnaire. After the survey, some will be observed in their classroom twice with 1:1 classroom technology and participate in a one-on-one audio-recorded interview with the investigator.

Participation in the study involves the following time commitment: No more than 3 hours.

Risks and Benefits of being in the Study:

The study involves the following foreseeable risks: No known risks will be associated with participation in the survey. There may just be an inconvenience when planning the interview time and location. Interview will be planned at the convenience of the participant.

The benefits to participation are: There are no expected benefits to participating in this study.

Compensation:

You will receive a \$5 giftcard to Chick-Fil-A as compensation for your participation. You will receive the gift card at the conclusion of the last observation.

Confidentiality:

The records of this study will be kept private. Any written results will discuss group findings and will not include information that will identify you. Research records will be stored securely and only researchers and individuals responsible for research oversight will have access to the records. It is possible that the consent process and data collection will be observed by research oversight staff responsible for safeguarding the rights and well-being of people who participate



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in research.

The data collected, including survey data, observation notes, and interview notes will be destroyed at the end of the study no later than December 2019. When the study is completed and the data have been analyzed, any code lists linking names to pseudonyms will be destroyed. This is expected to occur no later than December 2019. The audio recordings will be transcribed. The recording will be deleted after the transcription is complete and verified. This process should take approximately 2 weeks after the completion of the interview. This informed consent form will be kept for 3 years after the study is complete, and then it will be destroyed.

It is unlikely, but possible, that others responsible for research oversight may require us to share the information you give us from the study to ensure that the research was conducted safely and appropriately. We will only share your information if law or policy requires us to do so.

Voluntary Nature of the Study:

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. The alternative is to not participate. You can skip any questions that make you uncomfortable and can leave the study at any time.

Contacts and Questions:

The Institutional Review Board (IRB) for the protection of human research participants at Oklahoma State University has reviewed and approved this study. If you have questions about the research study itself, please contact the Principal Investigator at [REDACTED] michelle.a.baker@okstate.edu. If you have questions about your rights as a research volunteer or would simply like to speak with someone other than the research team about concerns regarding this study, please contact the IRB at (405) 744-3377 or irb@okstate.edu. All reports or correspondence will be kept confidential.

You will be given a copy of this information to keep for your records.

Statement of Consent:

I have read the above information. I have had the opportunity to ask questions and have my questions answered. I consent to participate in the study.

Indicate Yes or No:

I give consent to be audiotaped during this study.

___ Yes ___ No



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Signature: _____ Date: _____

Signature of Investigator: _____ Date: _____



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Appendix G

OBSERVATION TOOL

Draw a descriptive map of the space:

The Setting: The Set or Stage and Props

What is the physical environment like? (What are the “props” -- e.g., work displays, posters, technology? What is the desk arrangement? Architecture?)

What is the context? (What is the backdrop? Community? Demographics?)

What kinds of behavior does the setting promote or prevent?

How is the physical environment decorated and maintained?

What values are conveyed through the organization and décor?

The Participants: The Actors and Their Roles

Who is in the scene? Describe them.

How many?

What are their roles?

Who is allowed and not allowed to participate in the scene?

Activities and interactions: The Script, the Plot, the Rules

What is going on?

What are they saying?

How do they interact?

How are people and activities connected and interrelated?

Frequency and Duration: Viewing Time

When did the situation or scene occur?

How long does it last?

Is it a recurring type of situation or is it unique?

Subtle Factors: Miscues & Out-Takes

Unplanned Activities?

Nonverbal Communication?

What is not happening that is supposed to?

What is happening that is not supposed to?

Appendix H

Interview Questions

1. Describe a typical day in the 1:1 classroom.
2. Describe your planning process and things you consider with planning your daily lessons and activities.
3. How do you feel about differentiated instruction? What do you do to differentiate content, process, and product in the classroom?
4. What do you see as the primary differences from instruction in the classroom prior to 1:1 and in the 1:1 environment?
5. What are some challenges you see in the 1:1 environment and how have you overcome those challenges?
6. Describe what a great 1:1 classroom environment would look like? And how will you get there?
7. What are the most important strategies for a teacher to utilize that you feel are necessary for a student to be successful in a 1:1 environment?

Research Questions	Interview Questions
<ol style="list-style-type: none"> 1. How is differentiated instruction manifested in a 1:1 environment? <ol style="list-style-type: none"> a. How is content differentiation manifested in a 1:1 environment? b. How is process differentiation manifested in a 1:1 environment? c. How is product differentiation manifested in a 1:1 environment? 	2, 3, 6, 7
<ol style="list-style-type: none"> 2. How do teachers with a growth mindset differentiate instruction in a 1:1 environment? 	1, 2, 3, 4, 5, 6, 7
<ol style="list-style-type: none"> 3. How do teachers with a fixed mindset differentiate instruction in a 1:1 environment? 	1, 2, 3, 4, 5, 6, 7

APPENDIX I

INSTITUTIONAL REVIEW BOARD APPROVAL



Oklahoma State University Institutional Review Board

Date: 03/18/2019
Application Number: ED-19-25
Proposal Title: The Role of Mindset in Differentiated Instruction in a 1:1 Classroom Environment

Principal Investigator: Michelle Baker
Co-Investigator(s):
Faculty Adviser: Ed Harris
Project Coordinator:
Research Assistant(s):

Processed as: Exempt
Exempt Category:

Status Recommended by Reviewer(s): Approved

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 45CFR46.

This study meets criteria in the Revised Common Rule, as well as, one or more of the circumstances for which continuing review is not required. As Principal Investigator of this research, you will be required to submit a status report to the IRB triennially.

The final versions of any recruitment, consent and assent documents bearing the IRB approval stamp are available for download from IRBManager. 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 approved by the IRB. Protocol modifications requiring approval may include changes to the title, PI, adviser, other research personnel, 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 unanticipated and/or adverse events to the IRB Office promptly.
4. Notify the IRB office when your research project is complete or when you are no longer affiliated with Oklahoma State University.

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 the IRB Office at 405-744-3377 or irb@okstate.edu.

Sincerely,
Oklahoma State University IRB

VITA

Michelle Baker

Candidate for the Degree of

Doctor of Education

Thesis: THE ROLE OF MINDSET IN DIFFERENTIATED INSTRUCTION IN A 1:1
CLASSROOM ENVIRONMENT

Major Field: School Administration

Biographical:

Education:

Completed the requirements for the Doctor of Education in School Administration at Oklahoma State University, Stillwater, Oklahoma in May 2020.

Complete the requirements for the Master of Science in Teaching, Learning, and Leadership at Oklahoma State University, Stillwater, Oklahoma in May 2013.

Completed the requirements for Bachelor of Science in Secondary Mathematics Education at The University of Tulsa in Tulsa, Oklahoma in May of 2003.

Experience:

Assistant Principal, Owasso High School – July 2019 - Present

Assistant Principal, Skiatook High School – July 2016 – 2019

Assistant Principal, Broken Arrow Freshman Academy – July 2015 – 2016

High School Math Teacher, Skiatook High School – August 2003 – 2015

Professional Memberships:

Cooperative Council for Oklahoma School Administration
Oklahoma Association of Secondary School Principals