

THE APPLICATION OF PRAXIS IN HIGH SCHOOL CLASSROOMS: A QUALITATIVE
CASE STUDY

by

Tonia R. Maher

Liberty University

A Dissertation Presented in Partial Fulfillment

Of the Requirements for the Degree

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ABSTRACT

The purpose of this qualitative case study was to explore the application of educational research-based instructional methods by teachers in public secondary high school classrooms in Colorado. The use of educational research-based instructional methods will be defined as praxis. Bruner's constructivist theory of learning and instruction guided this study. This qualitative case study employed an epistemological perspective that provided the framework for predicting, describing, empowering, and deconstructing worldviews by increasing the knowledge that leads to further understanding of the application of praxis in public secondary high school classrooms. The setting was Colorado public high schools. Data were collected from interviews, observations, and document analysis. Data were organized by employing a single-case analysis utilizing Yin's five-phase cycle of data analysis. Data were triangulated to compose the narrative case study findings. Three themes emerged from the data: pedagogical expertise, factors, and a transforming focus. The implications of this study reveal the possible need for reform in education policy and teacher practices. Findings revealed that the theoretical and empirical implications include proposing a transformation in the purpose of a teacher, effectiveness, and student learning.

Keywords: praxis, practice, instructional methods, pedagogy, professional development, teacher preparation, educational leadership, educational research

Copyright Page

Dedication

This study and the works herein are dedicated to Christ and Christ alone, for being my light, guide, and lamp to my feet.

Acknowledgments

I acknowledge Dr. Kristy Motte and Dr. Jerry Woodbridge. Dr. Kristy Motte modeled grace and fortitude in letting the literature guide this study's direction to completion, and the grit to persevere. Dr. Jerry Woodbridge modeled grace and fortitude by committing to this journey as a committee member,

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List of Abbreviations

Council for the Accreditation of Educator Preparation (CAEP)

Every Student Succeeds Act (ESSA)

Institutional Review Board (IRB)

National Council for Accreditation of Teacher Education (NCATE)

No Child Left Behind (NCLB)

Professional Learning Community (PLC)

Social-Emotional Learning (SEL)

Teacher Education Accreditation Council (TEAC)

CHAPTER ONE: INTRODUCTION

Overview

Numerous studies describe the most effective instructional methods, how students learn most successfully, and the theoretical research-based methodologies that connect the two constructs (Al-Rawi, 2013; Anagun, 2018; Anwar & Wardhono, 2019; Baeten et al., 2016; Baier et al., 2019; Blazar & Kraft, 2017; Byrd, 2020; Deslauriers et al., 2019; Drew et al., 2017; Eddy, 2017; Emaliana, 2017; Entwistle & Peterson, 2005; Etim et al., 2020; Farley-Ripple et al., 2018; Gheysens et al., 2020; Göktepe Yildiz & Göktepe Körpeoğlu, 2019; Gomes-Koban et al., 2019; Haymon & Wilson, 2020; Johnson et al., 2020; Khan et al., 2019; Mahon et al., 2019; Mamba & Putsoa, 2018; Nanquil, 2019; Polit & Beck, 2014; Prendergast & Rickinson, 2018; Rovio-Johansson, 2020; Stains & Vickrey, 2017; Swarts & Ye, 2018; Tilson et al., 2017; Walker et al., 2019). Because there are so many instructional methods available to teachers, understanding the theoretical research-based methodologies that connect to student learning is a daunting challenge (Pressley et al., 1989). The purpose of this qualitative case-study was to explore the application of educational research-based instruction, known as praxis, in high school classrooms. According to Freire (1972), praxis pedagogy is the application of research-based instructional methods that connect theory and practice; it is from context and concrete structures that students are allowed to construct their learning according to theoretically sound pedagogical methods (p. 36). This chapter outlines the background, problem statement, purpose statement, the significance of the study, research questions, definitions, and a summary.

Background

This qualitative case study was conducted to explore the application of educational research-based instructional methods, known as praxis, in high school classrooms. Research-

based instructional methods consist of applying differentiated instruction, cooperative learning, imploring meta-cognition, direct instruction, individualized instruction, and inquiry-based questioning (Al-Rawi, 2013; Anagun, 2018; Anwar & Wardhono, 2019; Baeten et al., 2016; Baier et al., 2019; Byrd, 2020; Deslaurier et al., 2019; Drew et al., 2017; Eddy, 2017; Emaliana, 2017; Entwistle & Peterson, 2005; Etim et al., 2020; Farley-Ripple et al., 2018; Gheysens et al., 2020; Göktepe Yildiz & Göktepe Körpeoğlu, 2019; Gomes-Koban et al., 2019; Haymon & Wilson, 2020; Johnson et al., 2020; Khan et al., 2019; Kraft & Blazar, 2017; Mahon et al., 2019; Mamba & Putsoa, 2018; Nanquil, 2019; Polit & Beck, 2014; Prendergast & Rickinson, 2018; Rovio-Johansson, 2020; Stains & Vickrey, 2017; Swarts & Ye, 2018; Tilson et al., 2017; Walker et al., 2019). Praxis is the mission and purpose of educators in classrooms across the globe (Al-Rawi, 2013; Anwar & Wardhono, 2019; Baier et al., 2019; Byrd, 2020; Eddy, 2017; Emaliana, 2017; Entwistle & Peterson, 2005; Farley-Ripple et al., 2018; Gomes-Koban et al., 2019; Haymon & Wilson, 2020; Ige, 2018; Johnson et al., 2020; Mahon et al., 2019; Roegman & Woulfin, 2019; Suppes, 1974; Walker et al., 2019). The purpose of applying praxis in classrooms is to ensure teachers are using research-based instructional methods in their practice to ensure optimal student learning and achievement are being attained (Byrd, 2020; Farley-Ripple et al., 2018; Gomes-Koban et al., 2019; Johnson et al., 2020; Mamba & Putsoa, 2018; Ozedemir, 2020; Stains & Vickrey, 2017). The literature describes factors that may be increasing the gap between praxis and actual practice (Arnold & Mundy, 2020; Farley-Ripple et al., 2018; Gregson et al., 2019; Holtz & Gnambs, 2017; Suppes, 1974). Some researchers argue the factors that may impact teachers from applying praxis in their classrooms are due to middle leader (i.e., superintendents, principals) support and development, time, lack of resources, and misconceptions of praxis itself (Arnold & Mundy, 2020). Researchers have explored the

historical, social, and theoretical contexts regarding praxis in the classroom to more fully understand the factors that may contribute to inconsistent practice of research-based instructional methods by teachers in schools across the United States.

Historical Context

Educational policy influences teacher preparation programs, guides middle leader professional school development plans, and student learning outcomes (Doğan & Yurtseven, 2018; Hordern, 2019). Currently, much of education policy has been shaped by research on primary and middle-school classrooms (Khan et al. 2019; Swartz, 2018). The findings of primary and middle school research inform policy that applies not only to those contexts but also to high school settings (Doğan & Yurtseven, 2018; Gregson et al. 2019; Hordern, 2019; Mamba & Putsoa, 2018). These findings which have mostly occurred at the K–8 and higher education levels, shape educational policy, provide a guide for middle leaders to develop school and teacher effectiveness, and instruct how teachers entering the field of education are to be prepared. Despite policy and praxis development, there a gap still remains in the application of praxis at the high school level, possibly due in part to the lack of focus on research targeted for high school settings (Mamba & Putsoa, 2018).

Educational practices changed dramatically over the 20th century and into the 21st century. At the end of World War I in 1918, the progressive education movement was the highlight of the educational arena. John Dewey led the progressive education movement by reforming educational practices to transform society through education. The progressive education movement focused on how students learn and how the environment plays an important role in their learning. Curriculum-structured boards of education were formed to gain a greater

boundary around education, teaching, and leaders of education (Tyack & Cuban, 1995; Vadeboncoeur, 1997).

The Great Depression in 1930 ignited a shift in education. Due to the nation's economic hardships, the view of education transformed into a constructivist framework. Piaget and Vygotsky led the reform with their beliefs on students' cognitive development and their environments that allow learning to be constructed on past experiences or knowledge (Vadeboncoeur, 1997). As time passed, segregation became alive in education, motivating federal legislation to get involved in educational standards, policies, and movements, resulting in the Elementary and Secondary Education Act (ESEA) of 1965, Title I program of federal aid (ESEA, 1965), and Title VI of the Civil Rights Act of 1964. By 1980, the U.S. Department of Education (USDOE) was formed. The USDOE leads the nation's school districts in learning, teaching, and standards. Teacher preparation programs, middle leaders, and teachers follow the USDOE guidelines and requirements for education (Tyack & Cuban, 1995; Vadeboncoeur, 1997).

As the 21st century approached, parents of students desired more alternatives for their children's education. This prompted the USDOE to enact the No Child Left Behind Act of 2001 (NCLB) in 2002. It was later surpassed by Every Student Succeeds Act (ESSA) in 2015. ESSA (2015) was enacted into law to ensure that every student learns through the most effective instructional methods, assessments, and procedures for every student. This educational policy then drives school leaders to ensure that their schools and teachers are effective by creating evaluation measures for them to use in their practices (Fuller et al, 2017). Middle leaders in education evaluate their teacher population to provide direction, development, and resources to ensure that every student is learning and achieving (Blazar & Kraft, 2017).

These policy formations, over time, also impact teacher preparation programs. Teachers who are in preparation programs are immersed in theoretical and research-based instructional methods and practices to ensure that students learn when they enter the working field of education (Arnold & Mundy, 2020). The historical context of the application of praxis in educational settings has reformed educational policy, envisioned middle leaders in education to develop school and teacher effectiveness, enforced praxis, and girded in teacher preparatory programs. However, although it is enforced and developed, the literature points out that the actual application of praxis by teachers in high school classrooms is lacking (Gregson et al. 2019; Mamba & Putsoa, 2018).

Social Context

Socially, the use of praxis is important because its use in the classroom closes achievement gaps between learners (Baeten et al., 2016; Byrd, 2020). Strategies for closing the achievement gap can create a pivotal change in policy, teacher development, and school effectiveness that directly increase student learning and achievement (Al-Rawi, 2013; Arnold & Mundy, 2020; Byrd, 2020; Etim, et al. 2020; Farley-Ripple, 2018). When praxis is not present in the classroom, teachers may use instructional strategies that may not work or be most effective for student learning (Baier et al., 2019; Deslauriers et al., 2019; Emaliana, 2017). Such practices can lead to student and teacher frustration (Anagun, 2018; Anwar & Wardhono, 2019; Ige, 2018), low test scores (Al-Rawi, 2013), and even impact a student's readiness for postsecondary education (Mahon et al., 2019). In turn, poor student achievement impacts a school's effectiveness and/or reputation, which may directly affect funding and enrollment (Etim et al., 2020; Hordern, 2019; Slavin, 2020). Furthermore, the student, having never learned vital strategies for learning, may choose not to enroll in postsecondary education or if they do, may

not succeed (Baeten et al., 2016; Entwistle & Peterson, 2005; Etim et al., 2020; Nanquil, 2019). A lack of a postsecondary degree often results in a lower household income that will negatively impact the student, their family, and even society (Fuller et al., 2017; Mahon et al., 2019).

Theoretical Context

Theoretically, the concepts and principles that underpin this research are found in the confines of Bruner's (1966) constructivist theory of learning and instruction, which provides the framework of cognitive processing, functions, and application of instructional methods. Bruner's (1966) constructivist theory of learning and instruction focuses on the implications of the teacher, their method of instruction, and how students construct their learning from the teacher's use of research-based instructional methods to construct new information in their learning. John Freire's (1972) praxis theory was built upon Bruner's constructivist theory of learning and instruction by employing that teachers' praxis in classrooms is the ultimate way for all students to learn and achieve. Other theories of learning propose that learners learn from behavior, or prior experience (Watson, 1913).

Researchers have used constructs of behaviorism, cognitivism, and constructivism to theoretically examine instructional methods in the high school classroom. Scholars base their research on three major learning theorists: Watson (1913), Piaget (1952), and Bruner (1966). Watson's (1913) learning theory based on behaviorism promotes that providing students feedback in a learning environment where the teacher is the direct form of the instruction conditions the students' behavior to learn. Piaget (1952) based his learning theory on cognitivism, suggesting that learning alters as a student grows and their cognitive intelligence develops to construct mental models of learning content. The cognitivism-related instructional methods are crafted to have the student construct learning from prior knowledge by having

students attend to visual aids, study broad inquiry-based concepts, work in collaborative groups, and build their thought processing to solutions (Piaget, 1952). The constructivist theory of learning and instruction (Bruner, 1966) is used to understand how using research-based instructional methods in the classroom increase overall student learning and achievement. The constructivist theory of learning and instruction proposes that learning is constructed from prior knowledge in a learning environment, with feedback and visuals that are cyclical and increase in depth for rich learning and construction of mental processing. Researchers have used Bruner's (1966) constructivist theory of learning and instruction to understand differentiated instruction in elementary, middle school, and higher education classrooms, but the theory has not been applied to understanding praxis in high school classrooms (Adolfsson & Håkansson, 2019; Emaliana, 2017; Entwistle & Peterson, 2005; Farley-Ripple et al. 2018; Gheysens et al., 2020; Göktepe Yildiz & Göktepe Körpeoğlu, 2019).

Literature about how teachers should instruct and how students learn best suggests that a problem arises in the actual understanding of what instructional methods are being used in classrooms (Al-Rawi, 2013; Anagun, 2018; Doğan & Yurtseven, 2018; Etim et al. 2020; Farley-Ripple et al., 2018; Göktepe Yildiz & Göktepe Körpeoğlu, 2019). Most existing literature has explored this problem in K–8 classrooms and higher education contexts (Al-Rawi, 2013; Anagun, 2018; Anwar & Wardhono, 2019; Baeten et al., 2016; Baier et al., 2019; Blazar & Kraft, 2017; Byrd, 2020; Deslauriers et al., 2019; Drew et al., 2017; Eddy, 2017; Emaliana, 2017; Entwistle & Peterson, 2005; Etim et al., 2020; Farley-Ripple et al., 2018; Gheysens et al., 2020; Göktepe Yildiz & Göktepe Körpeoğlu, 2019; Gomes-Koban et al., 2019; Haymon & Wilson, 2020; Johnson et al., 2020; Khan et al., 2019; Mahon et al., 2019; Mamba & Putsoa, 2018; Nanquil, 2019; Polit & Beck, 2014; Prendergast & Rickinson, 2018; Rovio-Johansson,

2020; Stains & Vickrey, 2017; Swarts & Ye, 2018; Tilson et al., 2017; Walker et al., 2019). The gap in the application of praxis at the high school level promoted the study's focus on high school classrooms to potentially close the gap in education and student learning.

Problem Statement

The problem was that teachers in high school classrooms may not be applying praxis, or research-based instructional methods, in their practice (Anagun, 2018; Farley-Ripple et al., 2018; Gheyssen et al., 2020; Gomes-Koban et al., 2019; Rovio-Johansson, 2020; Stains & Vickrey, 2017). Research shows praxis may be the most effective instructional method to maximize student learning and achievement (Baier et al., 2019; Byrd, 2020; Emaliana, 2017; Johnson et al., 2020; Khan et al., 2019; Mamba & Putsoa, 2018; Walker et al., 2019). However, the application of praxis is mostly evident in K–8 classrooms and higher education settings (Haymon & Wilson, 2020; Mahon et al., 2019; Mamba & Putsoa, 2018; Özdemir, 2020). Theory-driven research also provides a foundation for educational policy, school improvement, teacher development, and student learning (Freire, 1972; Tilson et al., 2017). Despite the importance of praxis, the literature revealed that there is an evident gap in the application of praxis in teachers' practice, particularly in high school classrooms (Roegman & Woulfin, 2019). Despite the benefits of praxis in the classroom, praxis in the high school classroom was not well understood.

Purpose Statement

The purpose of this qualitative intrinsic case study was to explore the application of educational research-based instruction by secondary high school teachers in Colorado. For this study, the use of educational research-based instructional methods is defined as praxis, or the application of theory in classroom instruction (Freire, 1972). The theory that guided this study is Bruner's (1966) constructivist theory of learning and instruction.

Significance of the Study

This researcher employed a qualitative case study to explore the use of educational research-based instruction, known as praxis, in secondary high school classrooms. The significance of this study is that it may impact educational policy, teacher and school effectiveness, teacher preparation programs, and student learning. The study is significant empirically, practically, and theoretically.

Empirical Significance

According to recent literature (Anagun, 2018; Farley-Ripple et al., 2018; Gheysen et al., 2020; Gomes-Koban et al., 2019; Rovio-Johansson, 2020; Stains & Vickrey, 2017), the application of praxis in high school settings is not well understood; therefore, the use of praxis in Grades 9–12 was thoroughly explored in the study. Empirically, praxis is effective when employed through instructional methods and strategies but may be missing from public high school classrooms (Anagun, 2018; Farley-Ripple et al., 2018; Gheysen et al., 2020; Gomes-Koban et al., 2019; Rovio-Johansson, 2020; Stains & Vickrey, 2017). This study closed an empirical gap in the literature by extending research on high school instructional best practices and any research that has advocated for the exploration of praxis in high school instruction. The study contributes to the body of literature that informs educational policy and teacher preparation programs.

Practical Significance

The findings from this qualitative case study provide a rich understanding of the application of praxis and other practices in high school classrooms. According to Creswell and Creswell, (2018), a qualitative case study is designed to inquire on a particular topic to develop an in-depth analysis of a case that is bound by time and activity using detailed information from

various forms of data to understand a particular social event or interaction. The practical significance of this study is that it illustrates the impact of praxis in high school classrooms in a way that is meaningful for educational policy, school and teacher effectiveness, teacher development, teacher preparation programs, and overall student learning and achievement (Fuller et al., 2017; Gregson et al. 2019; Hordern, 2019; Slavin, 2020). In educational policy, the instructional methods employed in classrooms influence student attitudes and behaviors that impact overall learning (Blazar & Kraft, 2017). As noted by Doğan and Yurtseven (2018), an ecosystem of school effectiveness and school improvement is dually noted when praxis is employed. Entwistle and Peterson's (2005) constructivist view supports the need for praxis in classrooms. Further, Farley-Ripple et al.'s (2018) framework clearly illustrates the gap that resides in the actual application of praxis in classrooms. Therefore, this study is significant by understanding how praxis is practically applied in high school settings.

Theoretical Significance

The theoretical significance of this study is that it verifies Bruner's (1966) constructivist theory of learning and instruction. Bruner's constructivist theory of learning and instruction states that teachers should employ research-based instructional methodologies. The goal of the teacher is to scaffold students to be independent learners in their problem solving in a way that is self-sufficient, where the learner constructs knowledge on past experiences in a learning environment filled with visuals, feedback, cooperative group work, and cyclical depth of content (Bruner, 1966). The results of this study uncovered how Bruner's constructivist theory of learning and instruction is currently applied in public high school classrooms in the United States.

Research Questions

This study was conducted to explore the application of educational research-based instruction known as praxis in secondary high school classrooms. The researcher observed, documented, and analyzed the phenomenon across this study's case. The research questions for this study were:

Research Question One: How do secondary high school teachers practice research-based instructional methods (Baeten et al., 2016; Byrd, 2020; Khan et al., 2019; Swartz, 2018)?

Research Question Two: Why do high school teachers choose to use instructional methods that are not research-based (Göktepe Yildiz & Göktepe Körpeoğlu, 2019)?

Research Question Three: How do high school teachers foster self-sufficient learners through their instructional methods (Bruner, 1966; Etim et al., 2020; Freire, 1972)?

Definitions

1. *Case Study* - A case study is an empirical inquiry that investigates a phenomenon in-depth and in its real-world context (Yin, 2009, 2017).
2. *Coding* - Coding is one aspect of data analysis. When researchers code, they are trying to make sense of the data by systematically looking through it, clustering or grouping together similar ideas, phenomena, people, or events, and labeling them. Coding helps researchers find similar patterns and connections across the data. It allows researchers to know the data better and organize their thinking, and it also makes storage and retrieval of data easier (Yin, 2018).
3. *Confirmability* - Confirmability is the concept that researchers should fully explain or disclose the data they are basing their interpretations on, or at least make those data

available. Confirmability can be improved by maintaining precise data records and keeping all data for additional scrutiny (Yin, 2018).

4. *Constructivism* - Constructivism is the belief that there is no universally agreed-upon reality or universal *truth*. Rather, meaning is socially constructed by individuals interacting with their world. Through that interaction, everyone creates their unique understanding of the world. As a result, there are multiple constructions and interpretations of reality, so multiple truths exist. These interpretations change, depending upon time and circumstances, so the reality is not universal but rather person-, context-, and time-bound (Creswell & Creswell, 2018).
5. *Credibility* - Credibility is the concept that drives researchers to maximize the accuracy of how they define concepts and how they characterize the people they are investigating with a particular focus on how the various participants feel about the interpretations the researcher makes. Credibility can be enhanced by using prolonged engagement, careful observation, triangulation, peer debriefing, negative case analysis, and member checks (Yin, 2018).
6. *Praxis* - Praxis is the instructional method of linking theory and practice; it is derived from context and concrete structures (Freire, 1972).
7. *Research Questions* - Research questions are the ideas underlying an investigation (Stake, 1995).
8. *Triangulation* - Triangulation refers to the process of using multiple sources for data gathering, multiple methods, multiple researchers, and/or multiple theoretical perspectives to build richer and deeper analyses and understandings of the topic under inquiry (Yin, 2018).

Summary

The purpose of this qualitative case study was to explore the application of educational research-based instruction by secondary high school teachers in Colorado. The use of educational research-based instructional methods is defined in this study as praxis, or the application of theory in classroom instruction (Freire, 1972). The theory that guided this study was Bruner's (1966) constructivist theory of learning and instruction. The significance of this study is that it provides insight into how to close the gap in praxis application across high school classrooms. It also provides a guide to form educational policy, middle education leaders' school and teacher effectiveness, teacher development, teacher preparatory programs, and overall student learning and achievement. A better understanding and increased application of praxis by teachers in high school classrooms will impact student learning and cause achievement to increase, allow teachers to become more connected with research-based methodologies, help schools become more effective, and allow future teachers to arrive at an even stronger understanding of innovative methodologies for instructing secondary students preparing for higher education. Overall, the results of this study may improve the effective practices of praxis in secondary high school classrooms and assist in more effective decision-making regarding educational policy, school and teacher effectiveness, teacher development, teacher preparation programs, and student learning and achievement.

CHAPTER TWO: LITERATURE REVIEW

Overview

The high demand and intentional outcome of student learning and achievement are driven by policy, girded by educational leaders, and shape teacher development to ensure that student learning and achievement are obtained. It is necessary to evaluate and address what instructional methods result in the highest student learning and achievement as well as to design and develop teacher preparation programs to mold the most effective teachers entering the field of education. However, there appears to be a gap in the instructional methods used, mandated policies, and the training systemically developed by educational leaders as compared to what instructional methods teachers are implementing in their classrooms (Farley-Ripple et al., 2018; Gomes-Koban et al., 2019; Gregson et al., 2019; Ion et al., 2019; LaPointe-McEwan et al., 2017; Rovio-Johansson, 2020; Stains & Vickrey, 2017). Therefore, the instructional methods that teachers use are under the microscope.

Considering there are numerous methods of pedagogy, the use of research-based instructional methods is more effective than the use of non-research-based instructional methods (Al-Rawi, 2013; Baier et al., 2019; Blazar & Kraft, 2017; Byrd, 2020; Deslauriers et al., 2019; Eddy, 2017; Emaliana, 2017; Entwistle & Peterson, 2005; Etim et al., 2020; Gheysens et al., 2020; Göktepe Yildiz & Körpeoğlu, 2019; Haymon & Wilson, 2020; Johnson et al., 2020; Khan et al., 2019; Mamba & Putsoa, 2018; Nanquil, 2019; Stains & Vickrey, 2017; Swartz & Ye, 2018; Walker et al., 2019). the use of research-based instructional methods is known as praxis (Freire, 1972; Tilson et al., 2017). There was a gap in literature exploring the problem of teachers who are trained and know praxis, but who may not be utilizing praxis in their practice. This qualitative case study was designed to explore the application of praxis and practice in the public

secondary high school classroom. This chapter provides a look into this study's theoretical framework, Bruner's (1966) constructivist theory of learning and instruction, which was the lens that shaped the focus of this study. The chapter also explores related literature. Lastly, this chapter concludes with a clear and concise summary.

Theoretical Framework

The purpose of this qualitative intrinsic case study was to explore the application of praxis in public secondary high school classrooms in Colorado. The qualitative case study design was chosen to reduce the participants' experiences into a universal essence (Creswell & Creswell, 2018). The theoretical framework that guided this study was based upon the lens of Bruner's (1966) constructivist theory of learning and instruction. Bruner catapulted off Dewey's (1963) constructivist learning theory by proposing that individuals learn by constructing knowledge built upon previously learned, organized, and categorized knowledge. Bruner's constructivist theory of learning and instruction states that instruction that aligns with learners' bits of intelligence and learning styles may ignite learning and critical thinking. Instruction is an essential component in the learner's process of constructing knowledge and should embrace the learner's abilities to adopt cognitive processes to instigate learning (Bruner, 1966). Therefore, the instructional methods that a teacher uses are vital to student learning. A teacher's use of research-based instructional methods is the key to increasing student learning and achievement (Al-Rawi, 2013; Baier et al., 2019; Blazar & Kraft, 2017; Byrd, 2020; Deslauriers et al., 2019; Eddy, 2017; Emaliana, 2017; Entwistle & Peterson, 2005; Etim et al., 2020; Gheysens et al., 2020; Göktepe Yildiz & Göktepe Körpeoğlu, 2019; Haymon & Wilson, 2020; Johnson et al., 2020; Khan et al., 2019; Mamba & Putsoa, 2018; Nanquil, 2019; Stains & Vickrey, 2017; Swartz & Ye, 2018; Walker et al., 2019).

In Bruner's (1966) constructivist theory of learning and instruction, the teacher aims to motivate their students to discover learning independently. This is achieved through Socratic learning, also known as active learning. The teacher presents the information in a way the learner can build upon according to their preexisting knowledge. The learner then continually spirals their learning up, per what they already know and have learned. This instruction theory has four main aspects: predisposition toward learning, how a body of knowledge can be structured so that it can be learned, the most effective sequences in which to present material, and the nature and pacing of rewards and punishments. Bruner (1966) believed that proficient methods for scaffolding learning result in simplifying, generating new propositions, and increasing the manipulation and processing of information.

Predisposition Toward Learning

The first aspect of Bruner's (1966) constructivist theory of instruction proposes that student learning is ignited when learning experiences are designed to motivate willingness and the ability to learn and solve problems. When teachers design activities that prompt students to inquire, explore, and engage in problem-solving to arrive at viable solutions, learning experiences are crafted with rich meaning and motivation. The curiosity of a student is engaged when some facet of the problem is uncertain or not known. Students' curiosity and motivation to learn are often found in topics of their interest that are meaningful to them. This prompts students to inquire for solutions with more than one mode of problem-solving, testing, and exploring. The predisposition toward learning facilitates experiences in a learner's cognitive abilities to gravitate the learner to a passion for learning (Bruner, 1966).

Structured Knowledge

The second aspect of Bruner's (1966) constructivist theory of learning and instruction gives rise to the structure of knowledge. Knowledge is structured in a very specific way so that each learner can easily grasp the objective. Knowledge is also structured by a set of actions (enactive representation), a set of images (iconic representation), or a set of abstract symbolic or logical statements (symbolic representation; Bruner, 1966).

Enactive representation is the primary stage in which a learner processes information through action or movement (Bruner, 1966). The learners' actions or movements while exploring a concept allow them to learn. The consequential acts of their movement enrich and develop their understanding that directly increases their learning. The second stage in structured knowledge is iconic representation. In this stage, the learner learns beyond actions to more perceived experiences or images. The perceived experiences or images represent a visual icon to a process, concept, or thing. The last stage of structured knowledge, which is more advanced, is symbolic representation. Symbolic representation is when a learner processes and constructs new learning by more abstract symbols. The learner conveys ideas through the application of words, sounds, and thought (Bruner, 1966).

For example, a child begins their learning of literacy by playing with books (enactive representation). As the child develops and gains cognitive processes, the child then begins to attend to the pictures and forms of words in a book (iconic representation). Toward full maturation, development, and cognitive processing, the adolescent constructs the ability to read, research, and comprehend further meaning from literacy (symbolic representation). This can also be viewed in mathematics. A child engages in enactive representation by playing with manipulatives to represent a quantity of an item. As the child develops, they engage in icons or

pictures to represent several items. When the adolescent matures, numbers and equations represent quantity.

Sequence of Material

The third aspect of Bruner's (1966) constructivist theory of instruction is the sequencing of material. The sequencing of material is the intentional design of instructional methods considering a learning objective. Structured knowledge and the predisposition toward learning are embedded in the instructional methods. The intentionally designed instructional methods are sequenced to navigate the learner through a learning objective with increasing ability and skill levels. Bruner's (1966) spiral curriculum sequences material by revisiting basic concepts and skills repetitively to allow the learner to continually construct and enrich their learning. This ensures that the learner truly has a rich and meaningful depth of knowledge about the content, objective, or concept. The sequence and design of the instructional methods put the structure of knowledge into motion by navigating through the stages of structured knowledge (enactive, iconic, symbolic). Knowledge flows from and through enactive, iconic, and symbolic knowledge (Bruner, 1966). It is designed to promote extrapolation and construct learning by arriving at a conclusion based on known facts, sequencing material, and learning toward an objective (Bruner, 1966).

Nature and Pacing of Rewards

The fourth and final aspect of Bruner's (1966) constructivist theory of learning and instruction supports that the nature and pacing of rewards across the structure and sequencing of instruction should be specific. The flow from extrinsic to intrinsic rewards are viable paces that ignite students' predisposition to knowledge and solving problems while the knowledge is sequenced and structured. Extrinsic rewards may be praise, symbols, badges, leveling of groups,

or other external means. The intrinsic rewards are more abstract. The student is internally rewarded by achieving the desired goal in their learning, a sense of accomplishment, and ease. Goal attainment motivates the learner to master the content. The nature and pacing of rewards are not only extrinsic and intrinsic but navigate from teacher-provided to student-created. Rewards should be selected and placed according to a type of learner. Bruner (1966) supported that student interest and attention are the greatest extrinsic rewards, whereas grades and status are of lesser value to learner achievement. The nature and pacing of rewards are directly proportional to those punishments that are more naturalistic (Bruner, 1966, 1973, 1986).

Bruner's (1966) constructivist theory of learning and instruction has been used to develop teacher preparation programs, policies, and continual teacher development across the globe (Koedel et al., 2015; Shah, 2019). Bruner's (1966) constructivist theory of learning and instruction inspired Freire's (1972) definition of praxis. Freire proposed that learning is constructed when it is based on research-based methodologies and processes to enforce, support, and facilitate optimal student learning. To foster the constant search for how to ensure that optimal student learning and achievement are obtained, it is suggested that implementing Bruner's (1966) constructivist instructional theory based on Freire's praxis theory may help identify the efficient and effective ways to ensure that student learning is optimized (Al-Rawi, 2013; Byrd, 2020; Farley-Ripple et al., 2018; Koedel et al., 2015; Mamba & Putsoa, 2018; Shah, 2019). Thus, Bruner's (1966) constructivist theory of learning and instruction provided a strong framework for a study exploring praxis in instructional settings.

Related Literature

The purpose of this qualitative case study, built upon the theoretical framework of Bruner's (1966) constructivist theory of learning and instruction, was to explore the application

of praxis in public secondary school classrooms. Literature relevant to the proposed study was explored, including topics such as educational policy and reform, teacher preparation programs, middle leader development, and instructional methods and praxis. A thorough review of recent literature links directly to the problem of missing or limited application of praxis in public secondary school classrooms.

Educational Policy and Reform

To have a clear understanding of what the expectations of instructional methods and outcomes are across the United States, it was necessary to review recent literature considering educational policy and reform. The current educational policy and reform in the United States is the national education law, the Every Student Succeeds Act of 2015 (ESSA). ESSA was passed in 2015 to equally provide an opportunity for all students. This act pledges to ensure by law that all educational settings, teachers, and classrooms are focused on the goal of increasing student learning and achievement to prepare students for future success in college and the workforce beyond high school (Blazar & Kraft, 2017; Fuller et al., 2017).

ESSA (2015) impacts classrooms across the United States by providing resources and voice to teachers. Teacher evaluations are used to further develop the effectiveness of the teacher and school. Assessments are used to increase the effectiveness of the school and inform the development of greater instructional methods. The resources, teacher voice, teacher development, intentional data-based instructional methods, and assessments are all geared to focus on each student's increase of learning (Blazar & Kraft, 2017; Fuller et al., 2017). ESSA impacts policy by banning the federal government from mandating academic standards, assessments, and curricula. Each state decides and mandates its educational parameters for its success (Blazar & Kraft, 2017; Fuller et al., 2017).

Although ESSA (2015) is a federal law, only a small portion of federal funding is provided to schools for implementing it. Most of the funding, policy, and reform happen at each state's level (U.S. Department of Education, 2021). Each U.S. state manages the operations of its public schools. The state directs the public schools in curriculum, instructional methods, resources, and policy. Each state, therefore, may be different in what policy and reform they offer, support, and require (U.S. Department of Education, 2021).

The school districts in each state have a governing body known as a board of education. The board of education, which is concerned with their state's education policy and requirements, makes decisions and requirements for their districts' schools to uphold, conduct, and conclude. Therefore, the power of educational policy and reform is most executed at the state level with state legislatures enforcing instruction, curriculum, and policy in their state school districts (U.S. Department of Education, 2021). Often, schools in a particular school district may also provide further programming and options for their students as an additional service above and beyond the state requirements to create a diverse selection of education so patrons can choose where their learner completes their educational career.

The educational policy and reform that are managed and conducted at each state level in the United States of America impact instructional methods. State legislation requires educational policy and reform in the school districts to ensure that the educational standards are being taught to every student equally. The specific instructional methods that are executed and required are provided by each school board, school district, and educational leaders within their walls (Bellibaş et al., 2020; U.S. Department of Education, 2021). Therefore, the constant change in educational policy, reform, and needs may impact instructional methods at the classroom level.

The gap in the literature indicated that there is a disconnect between the application of praxis and practice in education (Blazar & Kraft, 2017; Farley-Ripple et al., 2018; Fuller et al., 2017; Göktepe Yildiz & Göktepe Körpeoğlu, 2019; Gomes-Koban et al., 2019; Gregson et al., 2019; Hordern, 2019; Ion et al., 2018; Mahon et al., 2019; Rovio-Johansson, 2020; Slavin, 2020). Researchers (Al-Rawi, 2013; Arnold & Mundy, 2020; Baier et al., 2019; Blazar & Kraft, 2017; Emaliana, 2017; Hordern, 2019; Slavin, 2020) indicated that the need for praxis in educational classrooms may impact or reform current educational policies such as ESSA, teachers, and students (. However, the whole system of education should be looked upon as an educational reform within the ecosystem of education (Doğan & Yurtseven, 2018; Farley-Ripple et al., 2018; Gomes-Koban et al., 2019; Greggson et al., 2019; Hordern, 2019; Slavin, 2020). In a 1974 article, Suppes stated that educational policy shifts away from research-based methods and theoretical findings; educational policy bases its governance on merely good advice from lesser theoretical scholars in the field of education. Therefore, reforming educational policy with sound theoretical and research-based evidence will mold the arena of education as a singular ecosystem that reforms teacher preparation programs, improves middle leader development, and encourages the use of praxis in all instructional methods to ensure that the optimal level of student learning and achievement is obtained in each classroom across the United States (Tilson et al., 2017).

Teacher Preparation Programs

Teacher preparation programs have transformed over the years to equally meet the ever-changing educational requirements for research-based teaching. The National Council for Accreditation of Teacher Education (NCATE) was created in 1954 to assess and provide accountability in teacher preparation programs. By 1997, the Teacher Education Accreditation Council (TEAC) was formed to improve academic degree programs for professional educators.

In 2013, the Council for the Accreditation of Educator Preparation (CAEP) was employed to advance equity and excellence in teacher preparation programs through evidenced-based accreditation. The CAEP accreditation standards for teacher preparation programs were fully implemented by 2016 and the NCATE and TEAC standards are no longer used (Darling-Hammond & Lieberman, 2013).

Teacher preparation programs are designed to embed a theoretical and research-based mindset into the minds and practices of new teachers entering the field of education (Arnold & Mundy, 2020; Blazar & Kraft, 2017; Nguyen, 2018; Tilson et al., 2017; Ünver, 2014). They are run by higher education institutions and are designed for adults to become legitimate and legal teachers. Higher education students in teacher preparation programs obtain knowledge about pedagogy, subject matter, educational theory, and exposure to classroom experiences (Feuer et al., 2013; Hood et al., 2021). Teacher preparation programs craft teachers to be successful in educating students in classrooms with the goal of optimal student learning and achievement. Therefore, teacher preparation programs are evaluated continually in their effectiveness (Feuer et al., 2013; Hood et al., 2021; Ünver, 2014).

Teacher preparation programs install performance-based teacher assessment strategies to enable teacher education to firmly connect theory and practice in powerful ways (Darling-Hammond, 2020; Nguyen, 2018; Ünver, 2014). Therefore, teacher preparation programs are created, evaluated, and accredited to ensure that effective teachers enter classrooms with scholarly knowledge, praxis, and viable student learning and achievement outcomes. However, when reviewing studies that followed recent teacher preparation program graduates in their classrooms, their application of praxis was not observed (Arnold & Mundy, 2020; Baeten et al., 2016; Holtz & Gnambs, 2017).

Baeten et al.(2016) showed that 760 preservice teachers from 10 different institutions were more apt to be found applying their preferences instead of the theoretical and research-based methodologies they were girded with in their studies. Holtz and Gnambs (2017) illustrated that teachers know how to implement praxis in their classrooms, but they might not be implementing praxis in their instructional methods. Holtz and Gnambs set out to understand educational research and evaluated changes in the instructional quality of student teachers across different rating sources. They completed a study of 102 preservice teachers and found instructional methods did not match the learning from their students or mentors. Holtz and Gnambs' study led to further explorations to examine if teachers were supported and mentored to apply praxis in classrooms (Blazar & Kraft, 2017; Gomes-Koban et al., 2019).

The application of praxis suggests that teachers need to be mentored and supported. These supports may come in the form of online, peer, and group mentoring (Blazar & Kraft, 2017; Gomes-Koban et al., 2019; Holtz & Gnambs, 2017). High quality of praxis in preservice teachers occurs when mentors have a critical stance on praxis and their roles as preservice mentors (Kelly et al., 2018; Mahon et al., 2019; Tilson et al., 2017). These findings in the literature propose that reform of the entire ecosystem of teacher preparation programs is needed (Mahon et al., 2019; Tilson et al., 2017). Teacher development continues beyond the preparation program with the guidance of middle leaders. The transformation of the ecosystem must include improved middle leader development to help middle leaders understand their role in bringing praxis application to the classroom.

Middle Leader Development

Middle leaders in education consist of principals, vice principals, and the administrators of school buildings. In larger schools, middle leaders may also pertain to those senior teachers in

the building who both teach and assist the principal with administrative duties (De Nobile, 2017). Middle leaders lead, manage, and influence their designated school building, teachers, student population, and policy. The school building is a part of a school district that is led and managed by a superintendent. Middle leaders work with the school district superintendent to plan and execute educational policy, accountability, and effectiveness in their designated school (Bush, 2018; De Nobile, 2017).

Most middle leaders in education are veteran teachers pursuing a larger role in their field of education (Hancock et al., 2006). Middle leaders obtain their position as educational leaders by furthering their bachelor's degree in education to a master's degree in educational leadership, which develops them to manage and lead a school. Upon completion of a master's degree program in educational leadership, most states require candidates to receive a passing score on a professional educational leadership assessment to obtain state principal licensure.

In their administrative role in education, middle leaders are to be experts and professional leaders in curriculum, pedagogy, and assessment. They establish routines and procedures, budgeting and resourcing, record-keeping, influence the school's vision and direction, motivate teachers in the areas of school improvement and school effectiveness, and ensure students are learning according to their school district's mission (De Nobile, 2017). Middle leaders in education employ scholarly and effective teachers and ensure that all members of the school building are leading their students to achieve optimal learning as they employ and model research-based instructional methods (De Nobile, 2017).

Middle leaders may address the problem of missing praxis in the classroom (Farley-Ripple et al., 2018; Fuller et al., 2017). Middle leaders can create a culture of praxis in their schools (Farley-Ripple et al., 2018; Fuller et al., 2017; Rickman, 2014). Intentional professional

learning designed with praxis may further student learning gains (Doğan & Yurtseve, 2018; Fuller et al., 2017; Rickman, 2014). When middle leaders infuse the application of praxis in their school through mentorship and accountability, the school's students experience greater learning and achievement outcomes (Adolfsson & Håkansson, 2019; Doğan & Yurtseve, 2018; Farley-Ripple et al., 2018; Gregson et al., 2019; Rickman, 2014). These findings also suggest that the evaluation of teachers by middle leaders reforms the application of praxis to ensure it is adhered to in classrooms (Blazar & Kraft, 2017; Göktepe Yildiz & Göktepe Körpeoğlu, 2019; Gomes-Koban et al., 2019; Greggson et al., 2019; Lang, 2019; LaPointe-McEwan et al., 2017; Loyce & Victor, 2017; Mahone et al., 2019; Omemu, 2017; Özdemir, 2020; Roegman & Woulfin, 2019). It is essential, therefore, to examine current scholarship on the topic of instructional methods and praxis, to understand how middle leaders and teacher preparation programs can be part of the solution to the praxis gap currently present in high school classrooms.

Instructional Methods and Praxis

Scholars who study instructional methods and praxis have identified the primary instructional methods that promote optimal student learning and achievement. These findings relate to and are built upon the theoretical framework of Bruner's (1966) constructivist theory of learning and instruction that framed the design of this study. Researchers have identified the most effective ways students learn and teachers apply instructional methods and strategies. For example, students learn best when taught through theoretical and research-based instructional methods and strategies (Al-Rawi, 2013; Anwar & Wardhono, 2019; Baier et al., 2019; Blazar & Kraft, 2017; Byrd, 2020; Deslauriers et al., 2019; Drew et al., 2017; Eddy, 2017; Emaliana, 2017; Entwistle et al., 2005; Haymon & Wilson, 2020; Khan et al., 2019; Swarts & Ye, 2018). To further narrow the scope of the topic, the gap in the literature regarding the application of

praxis at a particular level of education was identified. A review of recent scholarship revealed that the application of praxis and practice in classrooms has been explored in elementary and middle schools (Drew et al., 2017; Haymon & Wilson, 2020; Swarts & Ye, 2018), as well as higher education systems (Entwistle et al., 2005; Mahone et al., 2019), whereas very little literature is focused on high school classrooms (Blazar & Kraft, 2017; Byrd, 2020; Eddy, 2017; Etim et al., 2020; Johnson et al., 2020; Mamba & Pustoa, 2018).

To effectively explore the application of praxis in high school classrooms, it was necessary to convey the meaning, differences, and effectiveness of instructional methods and strategies. Instructional methods refer to the principles, pedagogy, and management of instruction (Bruner, 1966). Instructional methods are techniques, strategies, and methodologies used by teachers to convey the subject matter to the students, the procedure employed, and the ways in which the plan is implemented. Instructional methodology is a narrower topic in comparison to instructional strategies; it is founded on theories and educational psychology (Bulger et al., 2002; Petrina, 2006). Instructional strategies are the tools used by teachers to increase the comprehensibility of learning. Instructional strategies include goals, methods, and techniques (Bulger et al., 2002; Petrina, 2006). The four main instructional methods used today in classrooms are teacher-centered, student-centered, high-tech-centered, and low-tech-centered (Petrina, 2006).

Teacher-Centered Instructional Methodology

The teacher-centered instructional methodology refers to environments where the teachers are the main authority in instruction and learning (Bulger et al., 2002; Petrina, 2006; Yalçin & Eres, 2018). Students passively receive knowledge from teachers who guide the students through the learning process. Learning is accomplished by observation and by imitating

the teacher's process to a solution or outcome. This instructional strategy is seen in elementary, middle school, and high school classrooms. Classroom management in these settings is traditional in that it focuses on rules and expectations. Instruction and assessment are viewed as two separate entities (Bulger et al., 2002). The student's learning is measured through objectively scored tests and assessments that result in a grade, point, or status (Bulger et al., 2002; Petrina, 2006). The instructional strategies in teacher-centered instructional models include direct instruction, kinesthetic, and flipped classrooms. Learning is observed by students presenting, demonstrating, performing drills, and practicing while listening to a lecture filled with information (Bulger et al., 2002; Petrina, 2006).

Direct Instruction. Direct instruction is a research-based instructional strategy using low-tech and teacher-centered instructional methods (Koziuff et al., 2000; Stockard et al., 2018; Yalçin & Eres, 2018). It is a progressive form of instruction where explicit teaching techniques are directed at a specific skill. The teacher, often in the form of a lecture, presents students with the desired information to be learned (Koziuff et al., 2000; Stockard et al., 2018). This instructional strategy is most prevalent in middle and high school classrooms. Students enter the classroom and listen to the teacher provide instruction as a large group class activity. The instruction from the teacher is given as a presentation of information that the student is to know and apply.

During the teacher's presentation, students take notes as they listen to the teacher's information. Presentations may include visual aids, PowerPoint presentations, videos, or direct lectures by the teacher. Students are assigned an activity after the lecture or presented information. Assigned activities to the students may include homework, which students are expected to complete outside of classroom time. Formal assessments provide students with a

score concerning their learning of the presented information during the lecture or throughout a unit of lectures (Koziuff et al., 2000; Stockard et al., 2018).

In Stockard et al.'s (2018) mixed-methods study, 328 teacher participants reported that direct instruction made a positive impact in student content areas. Direct instruction in reading provides students with processes and strategies to increase their reading fluency, comprehension, and written language. Direct math instruction is where the teacher presents a process on how to solve a mathematical problem or formula, then the students engage in the assigned activities to perform that exact process to solve mathematical problems on their own. Direct instruction in language presents information to students on strategies, vocabulary words, grammatical concepts, and written language. The students then apply the learned material from the teacher to their assigned activities and homework. Direct instruction provided in the content area of spelling presents a teacher-directed process of spelling using a teacher-created list of words. Students are given a formal assessment of a spelling test that concludes in a point or grade representing the students' learning gains. Teacher views, ability measures, and affective outcomes are strong factors in direct instruction (Stockard et al., 2018).

Explicit Instruction. Explicit instruction is a research-based instructional strategy using low-tech, teacher-centered instructional methods (Hughes et al., 2017, 2019; Yalçın & Eres, 2018). Explicit instruction focuses on the art of instructing. It is a group of research-supported instructional elements that are orchestrated in the design of a lesson to provide support as students engage and learn (Hughes et al., 2017, 2019). Explicit instruction in general education was birthed from the use of this type of instructor methodology in special education. Teachers in regular education classrooms found its impact on student learning was beneficial (Hughes et al., 2017). This instructional strategy is common in elementary classrooms.

According to Hughes et al. (2019), explicit instruction is an effective instructional practice that prompts successful learning through clarity of language, purpose, reduction of cognitive load, and involves student engagement. Explicit instruction ensures that learned topics and concepts are engraved in the students' long-term memory for rich learning. Explicit instruction is designed using four staples for successful engagement. A teacher who uses explicit instruction intentionally plans the content of the lesson, designs the lesson, delivers the lesson, and engages students' practice of the lesson (Hughes et al., 2019). Explicit instruction focuses primarily on how to teach a particular topic, content area, or process. The teacher gains the students' attention, models the process of what the students are to do, reviews the critical content in the process, then has the students engage in the process (Hughes et al., 2017, 2019). As a follow-up and form of assessment, students are often assessed on the process or provided homework to establish the long-term memory of the learned process (Hughes et al., 2017, 2019).

Student-Centered Instructional Methodology

In a student-centered instructional methodology the teacher and students play an equal and active role in the learning (Bulger et al., 2002; Petrina, 2006). The teacher is primarily a facilitator in the students' learning. Student learning is measured by formal and informal assessments. Instruction and assessment are connected because student learning is continuously measured during instruction. The instructional strategies seen in student-centered instructional methods include cooperative learning instruction, differentiated instruction, expeditionary learning instruction, inquiry-based learning instruction, and personalized learning instruction (Bulger et al., 2002; Liu et al., 2020; Petrina, 2006).

Cooperative Learning. Cooperative learning instructional strategies are a student-centered instructional method that is research-based. Gillies' (2016) comparative analysis of cooperative learning claimed significant growth, learning, and achievement can be gleaned from cooperative learning. In cooperative learning, students are grouped to accomplish a particular task, exploration, or answer a rich question (Gillies, 2016). This instructional strategy is common in elementary classrooms and consists of five key components.

The first key component of applying cooperative learning successfully in the classroom involves structuring positive interdependence with the learning situation so all group members understand they are cooperatively together in a manner that one cannot succeed unless their entire group succeeds (Gillies, 2016; Johnson & Johnson, 2002). The second component of applying cooperative learning successfully in the classroom is promoting interaction or the willingness of group members to encourage and facilitate each other's efforts to complete tasks for the group to achieve its objective. The third component of applying cooperative learning successfully in the classroom is creating individuals' accountability and responsibility to complete their parts of the task of the group. This allows the fourth component to be viable, which is to explicitly negotiate or teach interpersonal skills. This component infuses social problem-solving skills and communicative social conventions to allow a viable group to work together. The fifth component of applying cooperative learning is group processing. Group processing allows the students to reflect individually and as a group on their progress, strategies, processes, and learning (Gillies, 2016; Johnson & Johnson, 2002).

Cooperative learning in a classroom that employs the five components provides students in a group with a particular task that is open and discovery-based (Johnson & Johnson, 2002; Johnson et al., 1981; Slavin, 1989). The students may not have the correct findings from their

task. However, the rich conversations, thinking, and attending to skills in finding a solution, create a significant learning experience that is different than other instructional strategies (Johnson & Johnson, 2002; Johnson et al., 1981; Slavin, 1989).

Differentiated Instruction. Differentiated instruction is a research-based instructional strategy that encompasses low-tech, student-centered teaching methods (Pozas et al., 2019; Subban, 2006). It is a constructivist approach to instruction where the students have the same learning objective, but the instruction is tailored to each student's needs. Differentiated instruction is prevalent in elementary classrooms where the instruction is based on student preferences, interests, and weaknesses (Pozas et al., 2019; Subban, 2006). The content, process, projects, and learning environment are the key components to addressing and crafting a viable differentiated instruction activity (Pozas et al., 2019; Subban, 2006).

Teachers who incorporate differentiated instruction often use various forms of practice to present a single topic, concept, or learning objective. The diverse forms of differentiated instruction can be learning through a project, art, music, hands-on, direct instruction, research, or inquiry (Pozas et al., 2019; Subban, 2006). The teacher provides the students with a topic or question. The students can be instructed in a large group, small groups, or a paired partner group. The students explore and navigate different ways of learning about the topic or question. Classrooms can be designed where students navigate to different centers in the room that use different modes of learning on the topic.

Expeditionary Learning. Expeditionary learning is a research-based instructional strategy using low-tech, high-tech, student-centered, and teacher-centered instructional methods (Ikpeze, 2013). It is based on the educational ideas of Kurt Hahn, a German educator, and the founder of Outward Bound (Ikpeze, 2013; Solley, 2013). Expeditionary learning is prevalent in

middle school classrooms and is an instructional method and strategy that incorporates 10 principles in its structure: self-discovery, having rich ideas, the responsibility for learning, character, success and failure, collaboration and competition, diversity and inclusion, the natural world, reflection, and compassionate service (Ikpeze, 2013). With the 10 principles in mind, students are engaged in a project-based curriculum where the teacher can either be a facilitator or a guide. Students engage hands-on with a particular topic to learn multicontent skills in exploring and investigating the topic in their real-life situations.

Expeditionary learning proposes the interaction of students in the world in which they live. Students discover their solutions and findings by engaging in an expedition on the topic (Ikpeze, 2013). Students practice critical thinking to generate crucial questions. Evaluation is used for the student to reflect upon themselves according to four characters (i.e., courage, empathy, responsibility, and discipline), behavior, and things learned.. Learning is not dictated by a particular score or grade but defined according to the level of learning gained by each student. Learning is an expedition and journey to a richer self that is intrinsic and deeply structured in students' cognitive processes (Ikpeze, 2013).

Inquiry-based Learning. Inquiry-based learning is a research-based instructional strategy using high-tech, student-centered instructional methods (Cairns, 2019). This instructional strategy is prevalent in elementary classrooms. It focuses on what students want to know on a particular topic, concept, or process. Students seek to find answers as they engage in critical thinking, experiments, and problem-solving (Abdi, 2014; Cairns, 2019). Inquiry-based learning is a back-and-forth flow of knowledge between the student and teacher. The teacher suggests an idea by asking questions. Ideas are shared and more questions are asked to further the dialogue between the teacher and students. Students are encouraged to investigate on their

own and analyze their findings. Students build on their knowledge and provide proof of their understanding of what they learned. Students arrive at answers, solutions, and new questions through their explorations. The teacher is a facilitator in the students' learning. A clear expectation and accountability of the students' behavior are presented before the inquiry. Students then have a general feel and acquisition of ownership as they navigate to find answers to their inquiries. Inquiry-based learning can be executed on a sole individual student basis or as a cooperative learning activity (Abdi, 2014; Cairns, 2019).

Through inquiry-based learning, the upper levels of Bloom's Taxonomy (Bloom, 1956) are engaged as students synthesize their learning. Critical thinking, planning investigations, and using an experimental design are all facets of students engaged in inquiry-based learning. Students present their learning in various forms, including oral presentations, PowerPoint presentations, visuals, or written findings. Inquiry-based learning demonstrates significant gains in science achievement (Cairn, 2019).

Personalized Learning. Personalized learning is a research-based instructional strategy using low-tech, high-tech, and student-centered instructional methods (Kallick & Zmuda, 2017; Kallio & Halverson, 2020). This instructional strategy is prevalent in elementary classrooms. Personalized learning in a classroom refers to a collection of practices that are designed to place each student's interest at the focus of each learning moment. Personalized learning creates an environment where students' voices and choices dictate the direction and conclusion of a topic or process (Kallio & Halverson, 2020). Instruction is prioritized for each student (Kallick & Zmuda, 2017).

In personalized learning, the teacher crafts the instruction of each student's learning with goals, inquiry, and idea generation so that the student can cognitively process and decide the path

of learning they desire (Kallick & Zmuda, 2017). Teachers ask very broad questions so that the student can dive into rich thinking and inquiry. The student navigates through the learning standards according to their learning pace. Therefore, the teacher is seen as a guide in the instruction of the students' learning. Students, instructed in new habits of mind, craft their learning according to their aspirations, desires, and goals that they set forth for themselves. Students in classrooms of personalized learning master standards and the competencies embedded in them (Kallick & Zmuda, 2017; Kallio & Halverson, 2020).

High-Tech-Centered Instructional Methodology

The high-tech-centered instructional methodology is observed in classrooms where technology propels the learning (Bulgar et al., 2002; Petrina, 2006). Various forms of technology, such as tablets, laptops, gamification software, education-focused social media platforms, and apps are used by students in their learning. The technology is used equally by teachers and students who connect their experiences to a plethora of sources across the world (Bulgar et al., 2002; Petrina, 2006). Most often, instruction and learning are handled through a technological platform or device. Some instructional strategies in high-tech-centered instructional methods include flipped classrooms, personalized learning, game-based learning, and inquiry-based learning instruction (Bulgar et al., 2002; Liu et al., 2020; Petrina, 2006).

Flipped Classroom. A flipped classroom is a research-based instructional strategy using high-tech, student-centered, and teacher-centered instructional methods (Anand, 2019; Mori, 2017). The flipped classroom is the exact opposite of a traditional classroom. The flipped classroom provides technology-based instruction in the hands of students to explore, apply, and learn at home before arriving in the classroom. After learning independently at home, students arrive at the classroom to engage in collaboratively performing what they learned.

The flipped classroom is designed to maximize classroom time so that no time is wasted on instruction, but time is spent only on application (Anand, 2019; Mori, 2017). This instructional strategy is prevalent in middle school and high school classrooms. It is designed to be flexible, effective, active, and student-centered where the student oversees their depth of learning on their own at home through a technology-based program, assignment, and learning. Studies on flipped classrooms suggest that it increases student motivation and desire to learn (Anand, 2019; Mori, 2017). Students go home to work on a set of problems, topics, or concepts instead of just listening to a lecture from the teacher. Course literature and assimilated lecture are delivered through technological means, such as videos, podcasts, websites, and apps (Anand, 2019; Mori, 2017).

The flipped classroom model implores students to learn at their own pace and in their own way as classroom time is freed up for students to only engage in what they learned and not spend time receiving instruction on a particular topic. The free time in class allows teachers to expand learning opportunities for students to interact and assess learning more effectively (Mori, 2017). Flipped classrooms improve student performance and learning experience in secondary classrooms (Mori, 2017).

The flipped classroom provides multiple resources for students to learn from at home so that their in-class time is fully immersed with the application and engagement of the learning they did on their own at home the night before class. Problem solving, collaboration, critical thinking, and large meta-cognitive processes are developed in students who are engaged in the flipped classroom (Anand, 2019). Although the flipped classroom seems to maximize teachers' time and put learning in the hands of the students, only a few teachers are in favor of the flipped classroom and its increase in overall student learning and achievement (Låg & Sæle, 2019).

Game-based Learning. Game-based learning is a research-based instructional strategy using high-tech, low-tech, student-centered, and teacher-centered instructional methods. Game-based learning integrates learning content, concepts, and topics in the form of a game (Låg & Sæle, 2019; Liu et al., 2020). The game-based instructional strategy is to inspire student engagement and motivation to learn. This form of instruction is prevalent in elementary and middle school classrooms.

The aspects of game-based instruction are based on the pacing of rewards to the student to increase learning, problem-solving, critical thinking, and skill development (Stiller & Schworm, 2019). The teacher provides a game to the students. The students play the game that embeds specific learning topics, processes, or strategies within the design of the game. The game may provide the students with points or badges, or it might level them up to a higher level to increase their learning. The impact of game-based instruction suggests that game-based learning reduces the cognitive load on students and enables learners to focus on learning in a meaningful way that increases student motivation and attraction to learning (Stiller & Schworm, 2019). Game-based instruction uses games to effectively engage students in learning and impart knowledge and has proven to reduce cognitive load in students so that they can apply focus and meaning to richer learning (Låg & Sæle, 2019; Liu et al., 2020; Stiller & Schworm, 2019).

Low-Tech-Centered Instructional Methodology

The low-tech-centered instructional methodology is where teachers do not use technology and are more traditional in their instruction (Bulgar et al., 2002; Petrina, 2006). The teacher and student may interact in the learning. The classroom is managed with schedules, routines, and structures according to the students' needs. The instruction and assessment may be both formal and informal (Bulgar et al., 2002; Petrina, 2006). Learning is measured continuously. Some of

the instructional strategies observed in low-tech-centered instructional methods include kinesthetic learning instruction, expeditionary learning instruction, direct instruction, and differentiated instruction. Students' learning is observed by hands-on experiences, movement, and inquiry (Bulgar et al., 2002; Lana et al., 2016; Petrina, 2006).

Kinesthetic Learning. Kinesthetic learning is a research-based instructional strategy using low-tech, student-centered instructional methods. Kinesthetic learning is when a teacher presents the desired learning material in such a way so the student engages in learning the material with hands-on and body movement experiences (Lana et al., 2016; McGlynn & Kozlowski, 2017). This instructional strategy is prevalent in elementary classrooms. It applies a multi-sensory learning environment that allows the student to deeply learn about a particular topic. Kinesthetic instruction provides multiple opportunities for students to create, build, and actively explore (Lana et al., 2016; McGlynn & Kozlowski, 2017; Royan & Fazal, 2016).

When kinesthetic learning is employed, the teacher provides instruction so that the student can learn by doing. Many students find kinesthetic learning fun, engaging, and beneficial to deepening conceptual understanding of a topic (Royan & Fazal, 2016). McGlynn and Kozlowski (2017) discussed kinesthetic as the brain-body connection and that learning happens from the feet up. Kinesthetic classrooms are designed for whole-body experiences that create a culture of brain-body connectivity in learning. Kinesthetic learning is suggested to improve on-task behavior, increase collaboration, increase self-confidence, and improve risk-taking in students (Lana et al., 2016; McGlynn & Kozlowski, 2017).

Meta-cognition Learning. Meta-cognition learning is a research-based instructional strategy using low-tech, student-centered, and teacher-centered instructional methods. In meta-cognition instruction, the teacher intentionally instructs the students to think about what they are

thinking, guides them to self-awareness, and helps them process why or how they do a particular thing (Perry et al., 2018; Zepeda et al., 2019). Meta-cognition skills are a tool for monitoring and controlling behavior, beliefs, and perspective. It is a higher-order level of thinking (Fleming, 2014). This instructional strategy is prevalent in elementary, middle school, and high school classrooms. Students are instructed on how to reflect about their thinking, and on the process of thinking about a topic in a particular way. Reflective thinking and instructing students on how to navigate through their thinking processes are essential in meta-cognition learning.

Teachers who apply meta-cognition strategies in their classrooms have a very positive effect on student outcomes (Lundie & Golder, 2018; Perry et al., 2018). Teacher-facilitated metacognition uses self-talk as a tool to assist students go deeper into their self-awareness and their ability to process how they concluded their learning (Zepeda et al., 2019). Teachers incorporate metacognitive strategies in their classrooms by instructing students on metacognition by prompting students on how to process their thinking in steps, self-talk, and the use of abstract structures to remember their thinking for future use on other topics.

Students' metacognition skills are developed as they are taught self-talk and thought-processing strategies to make decisions, construct deeper questions, and design plans of inquiry. Students are taught specific strategies for how to think, reflect on what they are thinking, how they arrived at conclusions, and how their thinking impacts results. This process creates rich questions that take the thinking to deeper levels of processing. When solutions are created, students then reflect on their thinking to analyze how they created a solution so the student can further strengthen their metacognitive processes for future learning. Students are able to choose the resources, literature, and tools they cognitively processed to inquire about the topic or content that is to be learned. Often, a teacher will facilitate rich discussions and talk through problems so

that students can acquire avid skills in applying their metacognitive process individually. Students employ metacognition when they are asked to reflect on their work, compose a working journal, or demonstrate their proficiency in learning through an essay instead of an exam (Fleming, 2014; Lundie & Golder, 2018; Perry et al., 2018). Students who engage in rich conversation, discussions, reflection, and self-awareness related to meaningful topics authentic to the students' world learn to think about their thinking and challenge themselves for deeper critical thinking and learning (Zepeda et al., 2019).

Different grade level teachers employ different categories of instructional methods. Elementary grade teachers apply the instructional strategies of all four categories of instructional methods, but low-tech and student-centered are the most prevalent (Drew et al., 2017; Göktepe Yildiz & Göktepe Körpeoğlu, 2019; Haymon & Wilson, 2020; Lang, 2019; Swartz & Ye, 2018). Middle school grade teachers apply all four categories of instructional methods, with strong application of high-tech and teacher-centered strategies (Drew et al., 2017; Göktepe Yildiz & Göktepe Körpeoğlu, 2019; Haymon & Wilson, 2020; Lang, 2019; Swartz & Ye, 2018). High school grade teachers apply all four categories of instructional methods, most often using high-tech and teacher-centered instruction (Göktepe Yildiz & Göktepe Körpeoğlu, 2019). Instructors in higher education institutions apply the categories of instructional methods utilizing teacher-centered, student-centered, and low-tech instruction most often (Entwistle & Peterson, 2005; Mahon et al., 2019). Higher education instructors utilize in-person, virtual distance learning, and hybrid learning models in their programs, incorporating many instructional methods.

Discussion of Instructional Methods

Some instructional methods and strategies are not research-based. Instruction that is designed to enhance students' learning styles, lavishing praise, leveled group work, rereading

with highlighting, and enhancing student motivation are noted non-research-based methods (Higgins & Coe, 2014). In short, non-research-based instructional methods and strategies are those practices utilized by a teacher that may not prove to be effective, have not been researched for effectiveness, are not connected to theory, and may not improve student learning and achievement (Higgins & Coe, 2014). Some instructional methods are applied because the teacher is comfortable using a set of instructional strategies even though the strategies are not research-based (Higgins & Coe, 2014).

Instructional methods and strategies based on Bruner's (1966) constructivist theory of learning and instruction may be the most effective. In Bruner's (1966) constructivist theory of learning instruction, student-centered instructional methods that employ inquiry-based and discovery-based learning are effective. The knowledge that is scaffolded results in simplifying and creating new constructed forms of learning where the learner inquires about a problem and engages in problem-solving strategies (Bruner, 1961, 1966). Bruner's (1966) constructivist theory of learning and instruction embraces all four categories of instructional methods (teacher-centered, student-centered, high-tech centered, low-tech centered).

When teachers use and embed all the instructional strategies and methods they design the classroom environment, instruction, and assessment to promote optimal learning for each student. The environment is filled with a diverse array of materials, resources, and opportunities for each student to dive into a particular topic or investigation (Abdi, 2014; Cairns, 2019). The teacher is a facilitator who crafts the instruction to support and promote each student to solve problems, challenges, and inquiries (Bruner, 1966). The assessments can be formal, informal, summative, or observations. Students may receive points, rewards, badges, levels, or other means

to symbolize their level of learning. Students know the learning objective, and they are aware of the goal they are to learn.

The instructional methods and strategies that relate to Bruner's (1966) constructivist theory of learning and instruction are found in student-centered teaching strategies and discovery-based learning (Bruner, 1966). In practice, teachers are reflective in their instructional approaches. The learning is student-centered using discovery-based learning. Discovery-based learning, which is very similar to inquiry-based learning, is where students are actively involved in their learning (Abdi, 2014; Bruner, 1966; Cairns, 2019). Learners are managed according to their levels of knowledge acquisition, and the challenges they face in their discovery-based learning guide them to deeper learning. It is in the process of understanding something that skill is learned (Bruner, 1966). Understanding can be enhanced by employing games, visual aids, and other attention-grabbing techniques that motivate the student to connect and construct known knowledge to new information as they inquire, investigate, and discover new meaning, learned skills, and rich knowledge.

The instructional methods of inquiry and discovery-based learning are designed so that the student embraces a problem or question and explores modes of how to answer or solve that problem (Abdi, 2014; Bruner, 1961, 1966; Cairns, 2019). Therefore, rich questions with scientific investigations backed by data support arguments toward solutions. This embraces the instructional methods of Bruner's (1966) constructivist theory of learning and instruction. The rich questions allow the students to utilize their meta-cognition strategies to explore a topic or problem. Bruner's (1966) constructivist theory of learning and instruction suggests that when students are provided and given a particular process and a constructed answer is desired by the teacher, students do not inquire about the process or topic and therefore do not learn. Learning is

a well-balanced challenge for the student between what they know and what they want to learn through inquiry Rubrics, design templates, and direct instruction pose a minimal level of learning (Bruner, 1961, 1966). Bruner (1966) believed that teacher instructional methods should be used only to ignite thinking, not provide answers, strategies, or solutions.

Considering the topics relative to the study, this review of recent literature provided justification for the great significance of this study. The significance of this study narrows and focuses on the gap in the literature pointing to the important need to explore the application of praxis in public secondary high school classrooms. The gap in the literature illustrated that further study is needed to explore the application of praxis in high school classrooms. In recent studies, teachers claimed to apply praxis in their classrooms, but after evaluation and observation, findings revealed that teachers may not be applying what they intend (Anagun, 2018; Drew et al., 2017). This problem can be addressed by middle leaders who examine and evaluate teachers more closely and ensure the application of praxis is being implemented in their high school classrooms to ensure optimal student learning. Middle leaders using the implications of this study may be able to facilitate rich and meaningful professional development (Gregson et al., 2019; LaPointe-McEwan et al., 2017; Özdemir, 2020). Educational policy and reform can be built upon a solid theoretical framework to uphold educational settings and accountability across the United States (Ion et al., 2018; Slavin, 2020). Teacher preparation programs may be able to utilize this study's implications to develop praxis-based programs for those entering the field of education (Holtz & Gnombs, 2017).

Summary

The review of literature provided scholarly insight into what is known and not known regarding the application of praxis in public high school classrooms. This study was conducted

to thoroughly examine the gap revealed in the review of the literature to support the implications found in this study. By connecting Bruner's (1966) constructivist theory of instruction to what is known about how educational policy is formed, the role of middle leaders, developing teachers' practices, and how teachers are prepared to enter classrooms, the gap was enlarged and became even more important to explore and understand. This study guided by Bruner's (1966) constructivist theory of learning and instruction provides an understanding of the barriers that arise in praxis in high school classrooms, what facilitation may be needed for praxis to exist, and the influences praxis has in modern high school classrooms.

CHAPTER THREE: METHODS

Overview

The purpose of this qualitative case study was to explore the application of educational research-based instruction by public high school teachers in the state of Colorado. The use of educational research-based instructional methods is defined in this study as praxis or the application of theory in classroom instruction (Freire, 1972). Bruner's (1966) constructivist theory of learning and instruction guided the study. This chapter includes the study design, research questions, setting, participants, procedures, researcher's role, data collection and analysis, the study's validity, ethical practices, and transferability.

Research Design

This study utilized a qualitative methodology with a single-case research design that applied a case study to explore the application of praxis in public high school classrooms. This qualitative study allowed the researcher to focus in-depth on a particular case and retain a perspective on the phenomenon in the study from multiple sources of data (Choy, 2014; Stake, 1995; Yin, 2013). The phenomenon in this study was the application of praxis in high school classrooms, and why teachers may or may not be applying praxis in their instructional methods. This study was designed with a qualitative method to explore a phenomenon to gain an understanding of underlying reasons, motivations, and opinions for the phenomenon (Creswell & Creswell, 2018). The data gleaned in this study were nonnumerical and explained the phenomenon in a narrative way (Creswell & Poth, 2016).

This study's design is a qualitative case study. According to Creswell and Creswell (2018), a qualitative case study is used to conduct an in-depth analysis of a case, activity, or process of one or more individuals who are bound by time and activity. Researchers collect

detailed information using a variety of data collection procedures over a sustained period (Choy, 2014; Stake, 1995; Yin, 2009, 2014). A case study examines a situation where many variables may be present that develop a proposition to guide the design, data, and results from multiple sources of evidence in the act of triangulation (Casey & Murphy, 2009; Yin, 2013). Consistent with the case study design, the research questions in this study were formed as how and why questions, there was no control over the event, and the focus was on a contemporary event (Yin, 2018). The design was developed to explore the phenomenon from the views of the participants and gain an understanding of the phenomenon, and it was bound by time (Creswell & Creswell, 2018).

The use of a qualitative case study was chosen to explore the application of praxis among public secondary high school teachers to glean their perceptions, feelings, and thoughts. The phenomenon of the application of praxis in high school classrooms was explored through the views of the teachers to gain a rich understanding of why teachers may or may not be applying praxis in their classrooms. The components of this case study consisted of (a) the research question, (b) propositions, (c) the process of analysis, (d) the analysis and connection of the data to the propositions, and (e) the interpretation of the results (Yin, 2009, 2014, 2018).

Triangulation was accomplished through observations, interviews, and document analysis to generate a composed case study that explored the application of praxis by teachers in public secondary high school classrooms.

This single-case case study utilized an intrinsic approach due to the interest in the case and to better understand the case itself (Stake, 1995). Stake (1995) used the term intrinsic and suggested that researchers who have a genuine interest in the case should use this approach when the intent is to better understand the case. A case study is not undertaken primarily because the

case represents other cases or because it illustrates a particular trait or problem, but because in all its particularity and ordinariness, the case itself is of interest. The purpose is not to come to understand some abstract construct or generic phenomenon (Stake, 1995).

This qualitative intrinsic case study was conducted to understand the application of praxis in secondary classrooms by public high school teachers. According to Yin (2014), a unit of analysis defines what case the study is truly exploring. Therefore, the state of Colorado's public high schools that house the public secondary high school teachers was the unit of analysis, also known as the single case in this intrinsic case study.

Research Questions

Research Question One: How do secondary high school teachers practice research-based instructional methods (Baeten et al., 2016; Byrd, 2020; Khan et al., 2019; Swartz, 2018)?

Research Question Two: Why do high school teachers choose to use instructional methods that are not research-based (Göktepe Yildiz & Göktepe Körpeoğlu, 2019)?

Research Question Three: How do high school teachers foster self-sufficient learners in their instructional methods (Bruner, 1966; Etim et al., 2020; Freire, 1972)?

Setting and Participants

This qualitative case study took place in the classrooms of public high schools within the state of Colorado. The study's participants were public high school teachers in Colorado. The study's setting and participants are described, designed, and clearly articulated in the following sections.

Setting

The setting of this qualitative case study was public high schools in the state of Colorado. The setting of Colorado public high schools was chosen due to the central location of the state

within the United States. The Colorado State Board of Education guides public high school teachers to commit to research-based methodologies and advance their students' learning and achievement.

The Colorado public high schools are structured with standards-based learning. Standards-based learning is the application of standards-based instruction, curriculum, and assessments for students to demonstrate the learning and skills they are expected to learn through their education. The middle leaders of Colorado public high schools are structured to lead their high school settings to achieve optimal student learning considering their schools' mission and vision. They provide resources, training, and development for their high school teachers so that they are utilizing standards-based teaching and learning. The middle leaders receive guidance and expectations from the Colorado State Board of Education to implement policies, requirements, and goals for each academic year to which each school must adhere.

The study's setting consists of 321 public high schools. This setting has 55,823 public school teachers from PK–12. The state has a diverse population of students. The demographics of the participants in this setting were collected. The setting was a wise choice to conduct this qualitative case study as the participants were experienced educators in a setting of rich diverse students located across the state of Colorado that promotes research-based methodologies.

Participants

The participants in this study consisted of both male and female public high school teachers who have taught for at least 3 years in a Colorado public secondary high school setting. The participants were informed of the purpose and scope of the research study and the intrinsic phenomenon that was the focus of the study (Creswell & Poth, 2016). The study used a purposive sample pool with maximum variation sampling in mind. Purposive sample pools begin

with specific perspectives of the study in mind and utilize participants relevant to those perspectives (Creswell & Poth, 2016). A purposive sample pool of 10 participants was gleaned to intentionally determine which participants could best complete the purpose of the study (Creswell & Poth, 2016; Gall et al., 2006; Yin, 2013). Middle school leaders were not a part of the participant pool; this study's case consisted of veteran high school teachers only in the state of Colorado. The data gleaned from the case study's participants determined if middle leaders should be included in a future study. Maximum variation sampling is a purposive sampling technique that permits the researcher to understand how a phenomenon is seen and understood among different people, settings, and times, which maximizes the diversity of participants to capture a wide range of perspectives (Creswell & Poth, 2016; Yin, 2013). The participants were high school teachers in Colorado public high schools who were at or beyond Year 3 in their teaching profession and who provided a rich variety of perspectives regarding their application of praxis in their classrooms. The participant demographics, reported in Table 1, are those 10 veteran secondary high school teachers in Colorado public high schools who were either male or female and have been employed for at least 3 years in a public secondary high school classroom and teach a core content area.

Researcher Positionality

The motivation for conducting this study was to understand the intersection of the most effective ways students learn and the instructional methods teachers apply. This motivation was girded in the passionate pursuit of identifying the substance to fill the gap between praxis and what teachers may be applying in their practice to ensure that optimal student learning and achievement are obtained. As an experienced educator, I value the quality and outcome of effective instructional methods to ensure student learning is achieved. As a lifelong educator and

researcher, I desired to arrive at a scholarly finding to close the gap that exists in literature, guide educational policy in sound theoretical findings, develop teachers and schools to be truly effective, and prepare future teachers entering the field to be of the greatest impact they can be regarding student learning and achievement.

Interpretive Framework

The motivation that drove this study was best reflected in a constructivist lens. According to Creswell and Creswell, (2018), constructivism holds that students construct knowledge and learning by building connections of new information on their preexisting knowledge. Bruner's (1966) constructivist theory of learning and instruction parallels constructivist learning by proposing that learning is a process of discovery using an active dialogue with teachers, which builds and constructs on existing knowledge. As a constructivist, this paradigm guided my approach to this research.

Philosophical Assumptions

Philosophical assumptions are the researcher's beliefs about ontology, epistemology, and axiological issues that are consistent in the life of the researcher (Creswell & Creswell, 2018). They center on the values and beliefs of the researcher. This section articulates my positionality as the researcher on three philosophical assumptions to assist readers in understanding the lens through which I view the world and approached my research.

Ontological Assumption

Ontological assumptions are the issues that relate to the nature of reality and its characteristics (Creswell & Creswell, 2018). This qualitative research embraced multiple realities from the participants to construct my view of reality as it pertained to this study. My personal view of reality is that it is singular, useful, practical, and works. However, since this study

explored the views of participants, multiple realities were embraced through this study with the use of multiple forms of evidence. The multiple forms of evidence were used to construct themes that have been derived from codes using the actual words from the participants to present their different perspectives.

Epistemological Assumption

Epistemological assumptions address what counts as knowledge, how knowledge is justified, and the relationship between what is being researched and the actual researcher (Creswell & Poth, 2016). I, as the researcher, strived to get as close as possible to the participants to build rapport. This study was conducted in the area in which the participants live and work to understand what the participants were saying. Therefore, knowledge was derived from the subjective experiences of a diverse array of participants in this study. Knowledge was gained by using many tools that collect both deductive and inductive evidence (Creswell & Creswell, 2018).

Axiological Assumption

Axiological assumptions are the values that the researcher brings to the study (Creswell & Creswell, 2018). Values are positioned to reflect the researcher's and participants' views (Creswell & Creswell, 2018). I declare my positionality that the research was value-laden and that although biases were present, I attempted to withhold my bias from influencing the findings of the study. The participants in the study are veteran teachers. I, too, am a veteran teacher and valued the perspectives and factors that teachers experience to increase student learning and achievement.

Researcher's Role

In this study, as the researcher, I was an outside source and/or individual that did not know the participants. The personal and intrinsic nature of the sites were unknown to me. As the human instrument in this study, I am well educated and experienced in education as a professional licensed educator with knowledge of current teacher preparation programs, praxis, and instructional methodologies. I am also well experienced in creating, collecting, and analyzing qualitative data to ensure that the study and its findings are accurate, valid, and reliable. I uniquely impact this study as the researcher due to my experience, skill set, and passion for the topic of praxis being applied in classrooms. Furthermore, I do not hold any biases regarding the participants or settings of the study. The researcher's perception and opinions were noted in reflexive journaling. Reflexive journaling is journaling conducted by the researcher throughout the study that includes the details of what was done, thought, and felt in the collecting and analysis of the data (Creswell & Poth, 2016). It is a trail that audits the researcher's reasoning regarding the study as the research is completed and strengthens the trustworthiness of the study. The reflexive writing within the audit trail allowed the process of understanding the study's data and findings to be transparent (Creswell & Poth, 2016). My position was to explore the application of praxis in high school classrooms.

Procedures

The procedures for obtaining relevant approvals and completing the study are covered in this section. The steps begin with Institutional Review Board (IRB) approval and site permissions. Next, the procedures for soliciting participants, the data collection, data analysis, and the use of triangulation are covered in detail.

Permissions

The first course of action was to obtain approval from the IRB (see Appendix A). Using the public-provided map of all the school districts in Colorado, each school district's name was placed in a hat. Ten school district names were drawn from the hat. The 10 school districts drawn from the hat provided their public high school information by public access on the internet using their websites. The recruited participant pool contact information was collected from the public access of each public high school's website. Participants were recruited to participate by email contact using the same recruitment email for each prospective participant (see Appendix B). The participant contact information is public information on each public high school's website. A follow-up email was scripted if no communication was received from the original recruitment email (see Appendix C). The participants who were interested in participating in the study completed an application for participation (see Appendix D). The application for participation was linked in the recruitment email for them to access and complete. The application for participation linked in the recruitment email was a Google form. The participants who applied to participate were then identified and recruited. The second approval letter received before conducting the research was from the participants, who completed and signed informed consent to participate (see Appendix E). Of the 10 school districts drawn from the hat, 30 high schools provided over 2,000 email addresses for potential participants. Over 2,000 recruitment emails were sent to glean 10 participants for this study over 2.5 months. Participants were gifted \$100 to conclude their participation in the study after they completed their participation.

Recruitment Plan

The study used a purposive sample pool and the sampling procedures of maximum variation sampling. Purposive sample pools begin with specific perspectives of the study that are

desired to be examined and those participants relevant to those perspectives, in this case, praxis user participants (Creswell & Poth, 2016). A purposive sample pool of 10 participants was gleaned to intentionally allocate which participants were the best candidates for the study (Creswell & Poth, 2016; Gall et al., 2006; Yin 2014). The participants recruited for this study were 10 Colorado public high school teachers who were currently teaching a core content area such as language arts, science, math, or history, and who were at or beyond Year Three in their teaching career. Middle school leaders were not a part of the participant pool; this study's case consisted of the high school teachers only. The participants in the study completed permission and consent to participate in the study.

After obtaining all approvals in the mentioned chronological order, the data were collected from three different sources. The three sources of data that were collected in this study were gleaned from open-ended individual interviews with the participants, observations of the participants, and analysis of documents. The interviews and observations were documented and recorded to ensure that the transcription and analysis of the data were valid and accurate. The participants' member checked their responses to the interview questions. Member checking is when the participants of the study review and confirm the representation of their responses (Stake, 1995). After the interview, each participant received the transcribed document of their interview question responses. Each participant member checked their transcribed interview with no corrections to be made.

After the interview, the observation took place. After the observation, the researcher conducted an analysis of the Colorado State Board of Education documents. This order of collecting data was chosen to glean insight into what the participants perceived before viewing what they were practicing during observations. The observations were before the document

analysis to glean actual teaching methodologies before investigating the constructs of the documents. The order was to glean data from what they said, then what they did, and finally what the Colorado State Board of Education documents informed, in that order. This order was in reverse of their actual intended instruction where the state directs their instruction, teachers construct their documents, teach the instruction, and then think about how their methods went and what factors impacted those methods.

The interviews were composed of a consistent set of open-ended questions (see Appendix F). The observations were collected using the observation template with field notes (see Appendix G). The observations were conducted in the natural setting in the classroom of the participants. Pseudonyms were assigned to each participant. A template, like the observation template, was used in the analysis of the Colorado State Board of Education documents. The Colorado State Board of Education documents included the state's teacher quality standards. The standards were analyzed to see if Colorado public high school teachers are required to apply praxis in their instructional methods. The collected data were stored securely and kept confidential. The gathered data, using the pseudonyms of the participants to be studied, included the location and contact information, the calendar period for the site and participant visits, amount of time used for each visit, effort, and expectations to complete each case study, preparations for the site and participant visits such as records, reported behavior, attitudes, and perceptions (Yin, 2013).

After all the data were gathered, the researcher compiled it using inductive coding. The data were then disassembled by open coding to break the data down into smaller codes. The use of axial coding reassembled the code data into arrays and visual illustrations to be interpreted with a new narrative. The final step was to triangulate the data by gleaning relevant and pertinent

information that was raised throughout the analysis of all the data (Yin, 2018). This technique and design were appropriate for a within-case analysis. The within-case analysis was conducted by collecting themes and relations from within the data regarding the phenomenon of the application of praxis by organizing the collected data into codes and then placing common patterns and topics into those codes to have meaning emerge from the data (Creswell & Creswell, 2018). The themes then emerged as similarities and differences between the participants in the case (Creswell & Creswell, 2018; Yin, 2018). Using naturalistic generalizations, the data were organized from single case analysis, considering literature and professional expertise in the field. The data were linked in interpretation and generalization to the larger research literature to provide an account of the findings (Creswell & Creswell, 2018, Yin, 2018). The three sets of analyzed data were triangulated to arrive at the findings of the exploration of the application of praxis in high school classrooms that may or may not have been found. To summarize, the analysis consisted of Yin's (2011) five-phase cycle of compiling, disassembling, reassembling, interpreting, and concluding the data. Upon the completion of analyzing the data, a case study was composed to provide implicit implications that the study concluded.

Data Collection Plan

Data were collected through interviews, observations, and document analysis, which were qualitative sources of data (Creswell & Creswell, 2018) that work well for case study research (Yin, 2018). After participants responded to the invitation to participate and provided their informed consent, I scheduled an interview virtually according to their schedule. After the interview was complete, I provided each participant with a transcription of the interview. Using member checking, each participant ensured that their transcribed responses were accurate. After

members checked the interview, each participant was observed virtually for 20 minutes to collect the necessary observation data. Finally, after the observation, I collected the Colorado State Board of Education documentation for document analysis. This sequence of data collection allowed the interviews to be used to glean participant perceptions of their application of instructional methods in their classrooms. Then, observation data gleaned perspective into what instructional methods the participants were applying in their classrooms. Finally, the data analyzed from the Colorado State Board of Education documents gleaned perspective on what the state of Colorado intends to apply in their instructional methods in their public high school classrooms.

Interviews

This qualitative study used semistructured interview questions (Table 2). A standardized open-ended interview, approximately 30 minutes in length, was conducted to minimize variation in the questions that were posed because of the use of structured questions (Patton, 1990). Unstructured questions were also used because they allow for more data to be gleaned from the participants during the interview that would typically not be gleaned during an interview that only uses structured questions. The unstructured questions may use informal questions (Merriam, 2009).

Therefore, a semistructured open-ended interview was completed with each participant virtually. Two separate pilot interviews were conducted before engaging in the scheduled participant interviews to ensure that the questions, wording, and interviewee behaviors would be consistent and desired. The participants were allowed to review the questions before the interview upon receipt of their consent. Creswell and Creswell, (2018) suggested the use of a

recording device so that the interview can be transcribed accurately. Therefore, I used the computer program Otter.ai to transcribe the interview data.

Questions 1 through 5 were background and knowledge questions (Patton, 1990) and were designed to provide information on each participant's background of teacher preparation, knowledge, and skill sets in comparison to each other to further understand if there are any factors here proposing or impacting the use of praxis or practice in their professional teaching experiences (Adolfsson & Håkansson, 2019; Byrd, 2020). These questions, noted with GTQ, were intended to build rapport with the participants. Questions 6 through 11 were behavior and experience questions (Patton, 1990). They were designed to provide information from each participant's behavior, use, and experiences of praxis and practice in their classroom. These questions were essential to understanding the perceptions, thoughts, and behaviors of teachers in comparison to the other forms of data being collected in this study (Baeten et al., 2016; Göktepe Yildiz & Göktepe Körpeoğlu, 2019; Khan et al., 2019).

Question 12 was sensory (Patton, 1990). Sensory questions aim to understand and determine if there are factors beyond the individual participants that influence the use of praxis as compared to practice in their classrooms (Arnold & Mundy, 2020; Etim et al., 2020; Gregson et al., 2019). Questions 13 and 14 were feeling and emotion questions (Patton, 1990). These questions allowed for any additional thoughts, feelings, and perceptions to be drawn out of the participant considering the questions in the interview thus far (Bruner, 1966; Dewey, 1963; Freire, 1972; Piaget, 1972).

Questions 15 and 16 were opinion and values questions (Patton, 1990). These questions allowed each participant to provide further insight into their thoughts, feelings, and perspectives that are projected upon others. In a leadership or advisement role, the participant is tapping into a

different level of their meta-cognition to process and answer the question (Farley-Ripple et al., 2018; Gomes-Koban et al., 2019). Question 17 was a feeling and emotion question (Patton, 1990). This question allowed for any additional thoughts, feelings, and perceptions the participant wanted to share (Prendergast & Rickinson, 2018).

Interview Data Analysis

Each participant's interview questions were recorded and then transcribed using Otter.ai before being member checked for accuracy to ensure that the answers to the questions from the participants reflect their intended response. The transcribed interview questions were uploaded into a computer program, MAXQDA Plus. MAXQDA Plus was used to input the data from the participants' interview question responses allowing the data to be themed, arrayed, and categorized. This analysis utilized an inductive coding where the data created the themes as they naturally emerged. The themes from the inductive coding were then placed on a data analysis spreadsheet (see Appendices G) where open coding and axial coding were conducted. The data were open coded to disassemble the data into smaller codes. The significant codes were determined by the number of times the code rose from the data. Those smaller codes were then reassembled using axial coding to connect the data into final themes. This allowed for similarities and differences in the data to emerge. This process of analysis of the interview questions was used to record the participant's responses to the research questions (Yin, 2018).

Table 1

Standardized Open-Ended Interview Questions

-
1. Please introduce yourself to me, as if we just met one another. GTQ
 2. Of the teacher preparation experiences and professional teacher experience, which would you say incorporated the most research-based instructional methods? GTQ
 3. Please walk me through your teacher preparation experiences, and professional teacher experiences. GTQ
 4. What professional development, graduate work, etc., are you currently engaged in and why? GTQ
 5. What professional development does your school promote the most for teachers to engage in? GTQ
 6. How would you define or compare research-based instructional methods to non-research-based instructional methods? (Praxis vs. Practice) RQ1

7. What research-based instructional methods do you use in your classroom? RQ1
 8. Of the research-based instructional methods that you use, why do you use them? RQ1
 9. Other than research-based instructional methods, what non-research-based instructional methods do you use in your classroom? RQ2
 10. Of the non-research-based instructional methods that you use, why do you use them? RQ2
 11. When you compare the use of praxis and practice, which has greater outcomes in student learning and why? RQ3
 12. What factors do you face when choosing to employ praxis or practice in your instructional methods? RQ3
 13. What are the goals your school is aiming to achieve? RQ3
 14. Of the goals your school is aiming to achieve, what is your role in obtaining those goals for the school? RQ3
 15. I'd like to ask you a question that will prompt you to put everything together, so to speak. Reflecting on your preparation, experience, and use of instructional methodologies, what advice would you give to new teachers coming into the secondary school setting? RQ1, RQ2, RQ3
 16. This next question is unique in that it will invite you to look ahead. How do you expect your instructional methods to change or develop over the next several years? RQ1, RQ2, RQ3
 17. We've covered a lot of ground in our conversation, and I so appreciate the time you've given to this. One final question ... What else do you think would be important for me to know about the use of praxis and practice in your instructional methods in your classroom? RQ1, RQ2, RQ3
-

Observations

I maintained an observation protocol for this study (see Appendix H). Descriptive and reflective field notes were included in the observations using the observation protocol. The observations were designed to capture the actual application of what teaching methodologies are being applied in the classroom considering the study's research questions. Participants were observed in their natural setting, or their classroom, through a live virtual feed. As the researcher, I was a nonparticipant observer. Each participant was observed one time for approximately 20 minutes (Creswell & Creswell, 2018; Hordern, 2019; Patton, 1990).

Observation Data Analysis

Each participant was observed one time in their natural setting virtually, at an agreed-upon date and time (Yin, 2018). The observations were not recorded. The observation protocol was used to record and analyze the observation of each participant to each research question. The data from the observation template were analyzed by utilizing inductive coding where the data create the themes as they naturally emerge. The themes from the inductive coding were then placed on a data analysis spreadsheet (see Appendix I) where open coding and axial coding were

conducted. The data were open coded to disassemble the data into smaller codes. The significant codes were determined by the number of times the code rose from the data. Those smaller codes were then reassembled using axial coding to connect the data into final themes. This allowed for similarities and differences in the data to emerge. This process of analysis of the observations was used to record the participant's instructional methods applied in the classroom in answer to the research questions (Yin, 2018).

Document Analysis

The documents analyzed in this study included the Colorado State Board of Education Teacher Quality Standards (see Appendix J). The Colorado Teacher Quality Standards provide essential information regarding the required knowledge and skills that a Colorado teacher must have to be an effective teacher. The quality standards are the structure by which teachers are evaluated each year, using the enumerated Colorado Teacher Evaluation Rubric. This information is publicly accessible on the Colorado State Board of Education website. This document was essential for analyzing if Colorado high school teachers are required to apply praxis in their instructional methods.

Document Data Analysis

The documents themselves were analyzed based on the research questions. The information on the documents underwent inductive coding so that the data naturally emerged into themes. The inductive coded data were then placed on the data analysis spreadsheet (see Appendix K) where open coding and axial coding were conducted. The data were open coded to disassemble the data into smaller code. The significant codes were determined by the number of times the code emerged from the data. Those smaller codes were then reassembled using axial coding to connect the data into final themes. This allowed for similarities and differences in the

data to emerge. This process of analysis of the document was used to analyze if Colorado high school teachers are required to apply praxis in their instructional methods in answer to the research questions (Yin, 2018).

Data Synthesis

The analysis of this qualitative case study used the five-phase cycle proposed by Yin (2011), which includes compiling, disassembling, reassembling, interpreting, and concluding the data (p. 177). Data were collected, compiled, and put into order. This study used the application of inductive coding. Inductive coding is a ground-up approach where the themes and codes naturally emerge from the data (Yin, 2013). There were no preconceived notions of what the themes or codes were to be. This allowed the data to be disassembled (Creswell & Creswell, 2018). Keywords and phrases that continued to arise from the themes were then categorized into codes. This process is called open coding (Creswell & Creswell, 2018). The codes were then reassembled according to their connections, which is also known as axial coding (Creswell & Creswell, 2018). The data were then interpreted with a new narrative. The final step was to triangulate the data by gleaning relevant and pertinent information that was raised across the analysis of all the data (Yin, 2018). A Triangulation Data Analysis spreadsheet (see Appendix L) was used to assist with triangulation and compiling the data from the interviews, observations, and document analysis. The Triangulation Data Analysis spreadsheet was used in this study to employ a within-case analysis, using the codes generated from the individual steps of data analysis and to synthesize the meanings that emerged from the data (Creswell & Creswell, 2018). The synthesized data revealed similarities and differences between the participants in the case (Creswell & Poth, 2016). Lastly, the data were organized using naturalistic generalizations (Stake, 1995). Data were linked in interpretation and generalization to the larger research

literature to present implications by providing an account of the findings (Creswell & Poth, 2016). The data from the Triangulated Data visual illustration was then used in the composition of the narrative format of the findings for the case study. Appendix M provides a visual of how the data were synthesized. A data analysis spreadsheet (see Appendix N) provided a place to house and synthesize the codes (see Appendix O).

Trustworthiness

According to Lincoln & Guba (1985), four factors are needed to establish the trustworthiness of a study. The four factors include credibility, transferability, dependability, and confirmability. The trustworthiness practices of the study are explained in detail in the following sections.

Credibility

Credibility refers to an accurate description of reality (Lincoln & Guba, 1985). Credibility depends on the richness of the information gathered and on the analytical abilities of the researcher. To ensure that the data from the study are credible, the interpretation and representation of the data went through member checking and triangulation. Member checking is when the participants of the study review and confirm the representation of their responses (Stake, 1995). Member checking ensures that the research, data collection, and outcomes are checked by another neutral individual, including the participants. The participants were allowed to check their interview transcriptions to ensure the transcript reflected what they truly perceive and believe (see Appendix P; Creswell & Creswell, 2018). According to Casey and Murphy (2009), triangulation is the process of using multiple sources to conclude the data's reliability. Triangulation was accomplished in this study using three separate sources of data, namely,

individual interviews, observations, and document analysis. I provided evidence of credible data and code reduction in Appendices Q and R.

Transferability

Transferability is when the study results in outcomes relevant to other individuals not within the study (Polit & Beck, 2014). It provides meaning and importance to others outside the study's associations. Thick, rich descriptions of the participants, analysis steps, and findings were used to ensure that the outcomes within the study are transferable and verifiable. The research, method of study, data collection, analysis, and outcomes were well articulated and structured to allow further research on this topic in other areas of importance to education and its stakeholders. The use of reflexive journaling provides a trail that audits the researcher's reasoning regarding the study as the study undergoes. The reflexive writing within the audit trail (see Appendix S) allowed the study's data and findings to be transparent in the process (Creswell & Poth, 2016). This strengthened the trustworthiness of the study.

Dependability

According to Polit and Beck (2014), dependability is when the data within a study are consistent over similar conditions. The data and outcomes from this study are dependable and utilize quotes pertinent to information from the three sources of data. To further ensure that the data were consistent and the outcomes from the study are applicable, a peer review was conducted. The review of the study by a peer allows and minimizes errors to ensure that the study is valid, reliable, and applicable to the larger arena of education and its stakeholders (Yin, 2009).

Confirmability

Confirmability is defined as when the outcomes from the study can be applied to other scenarios, groups, or settings (Polit & Beck, 2014). To ensure the confirmability of this study, I completed an audit trail. The audit trail detailed when each step of the study was completed, where it was completed, and with whom it was done.

Ethical Considerations

The ethical considerations of this research included confidentiality and informed consent (Yin, 2018). Before the collection of data, IRB approval was obtained. The confidentiality of the participants, settings, and the data raised from this study were identified with pseudonyms. The data collected were protected through password-protected files and storing hard copies in a locked drawer. The participants were informed of the voluntary nature of the study, provided a signed consent to participate, and were well informed of their right to withdraw from the study at any time. The participants were well respected as individuals, and thanked for sharing their time, documents, and information. The data collected will be destroyed 3 years after the study's conclusion.

Summary

This qualitative case study explored the application of research-based instructional methods in public secondary high school classrooms, or praxis (Freire, 1972).. This study was developed and designed to provide an in-depth analysis of the application of praxis in high school classrooms by employing multiple data collection procedures, analysis, and validity measures. The data from the participant observations, interviews, and document analysis were triangulated to conclude the findings as a case study using Yin's (2017) methods.

CHAPTER FOUR: FINDINGS

Overview

This intrinsic qualitative case study examined the application of praxis in public high school classrooms in Colorado. The purpose of this chapter is to present the results of the data analysis and the specific findings from this study. This chapter begins with a discussion of the participants in this study. The results of the data are discussed further in this chapter. The results are presented through themes, codes, and visual illustrations associated with the research questions. A summary concludes this chapter.

Participants

Participants were selected using a purposive sample pool and the sampling procedures of maximum variation sampling. After inviting over 2,000 potential participants, 10 high school teachers from 10 different Colorado public school districts participated. Pseudonyms were used for all participant identifiers to ensure their confidentiality. Table 3 shows the participants' demographic information.

Table 2

Participant Demographics

Teacher Participant	Gender	Teacher Preparation	Years of Experience	Content Area
P1	Female	Alternative	8	Science
P2	Female	4 year	4	Science
P3	Female	Alternative	9	History
P4	Female	4 year	6	Math
P5	Male	4 year	8	Math
P6	Male	Alternative	7	Science
P7	Male	Alternative	15	English
P8	Female	4 year	30	English
P9	Male	Alternative	7	History
P10	Female	Alternative	23	History

Results

The analysis of the interviews, observations, and documents provided the results for this study. The use of a data analysis spreadsheet template for coding allowed the data to naturally fall into themes, smaller codes, and reassembling of the codes. The themes created from the data are included in this study as well as the answers to each of the research questions that will guide the reader through this portion of this chapter. Participant quotes are included verbatim to allow accurate participant data to be a voice in the results of this study.

After several cycles of coding the data from the interviews, observations, and Colorado State Board of Education documents, triangulation of the data was conducted. The data from the triangulation were organized using naturalistic generalizations (Stake, 1995). Data were linked in interpretation and generalization to the larger research literature to present implications by providing an account of the findings (Creswell & Poth, 2016). Three themes were identified: pedagogical expertise, factors, and transforming focus.

Pedagogical Expertise

The actual word or words concerning pedagogical expertise were found in the data 339 times across the interviews, observations, and document analysis. Having expertise in pedagogy encompasses many topics. An expert teacher in teaching knows and applies praxis in their classroom, uses assessments and data to inform them of their instruction, and engages all students in proficiency in learning content. This expertise is provided during teacher preparation programs. Middle leaders in their building ensure that their teachers are experts in their career, continually developed, and annually evaluated to be held accountable as experts in pedagogy. The Colorado State Board of Education has standards to which all teachers must adhere in their teaching profession. The documents that were analyzed from the Colorado State Board of

Education communicated the standards that are required, and teachers are evaluated annually on each standard. The word or term that encompasses the desired teacher as mentioned herein is that a teacher is a professional or has professionalism in their conduct. However, the word professional or professionalism was rarely seen in the data; it emerged five times in the data when analyzing the document. It did not emerge from the interviews or the observations. Surprisingly, a common statement from most of the participants concerning pedagogical expertise was spoken from the point of Participant P1: "I'm really not sure which are research-based, and which aren't..

The teacher participants could define praxis as it compared to other non-research-based practices. However, they were not commonly aware of which instructional methods are praxis methods. Therefore, most teacher participants believed that the combined use of both praxis and practice was the most effective way to instruct their students, as spoken from the point of Participant 10:

I definitely think you got to do a combination of both. I think if you just stick with the research base, things aren't going to go well. I think you need to realize; you know, these are high school kids.

Most teacher participants received their teacher licensure using an alternative teacher preparation program that was a fast-track credential added on to their bachelor's degree in a particular content area. Therefore, most teacher participants were experts in their content areas, not pedagogy. Most teacher participants claimed that the use of differentiation, inquiry, and cooperative learning were the most effective ways their students learned. However, out of all the observations, differentiation, inquiry, and cooperative learning were rarely observed. The prevalent form of instruction observed was direct instruction where the teacher lectured the

students based on either learning target goals or essential questions. After the lecture, the students would then be allowed to work in groups to complete a homework assignment or practice modules. Participant P4 stated,

Where to draw the line with that like the balance between teaching too much content or not enough content and giving too many too much practice time. And not enough practice time. It's really easy to get bogged down with oh, I need to keep practicing until all my students show mastery but there's definitely a population of students who won't show mastery even if you do it for 4 weeks.

Many of the teacher participants expressed that their instructional methods were continually changing due to the increased needs that students have, impacts of after-effects of the COVID-19 pandemic, and other factors. Therefore, most teacher participants claimed that other factors and focuses of their careers impact their level of pedagogical expertise. P7 stated, "Non-research base is kind of where teachers live in because it's the trial and error, what actually works and what actually gets students to engage because I think that's our biggest challenge right now."

Factors

The actual word or words concerning factors emerged from the data 281 times across the interviews, observations, and document analysis. Some of the smaller codes about factors that emerged from the data included time, money, stress, mental health, workload, and other factors that may impact the application of praxis in high school classrooms, middle leader development of teachers, and alternative teacher licenses in Colorado. Participant P2 shared,

One thing I think that's hard is when you have a professional and experienced the way that most districts are set up, it's a couple of hours in a row on one day of the year and

that's it. Maybe there's a little follow-up throughout the year. Maybe not but it's hard. I think that there could be more follow-up and consistency. The more follow-up there is and the more you consistently take one idea and work with it for weeks and weeks and months and months, the more realistic it is as teachers implement it in the classroom and the more like the better results I would expect to get out of it because they're implementing it in the best way more strongly. It's hard when I sit through professional development and I get all these like great ideas and then, but you know, then tomorrow as school starts again and I'm swamped with grading and students in my face, and I can't really implement those, and then usually I never hear about them again.

Based on the data and participant conversation, factors are reasons why teachers do or do not implement praxis in their instruction. The data that emerged from this study revealed that the factors impacting instructional methods consist of time, state and district-mandated practices, time used to conduct professional learning communities (PLC), and the need to ensure that teachers are giving the grades the students need to graduate. Most of the participants claimed that they are required to perform a state- or district-mandated professional development. The professional development mentioned by the participants was focused on PLC, social-emotional learning (SEL), and grading students to ensure that all students graduate. Many participants stated that the impacts of the COVID-19 pandemic were a large factor in SEL and even getting students to attend school. Participant P8 stated, "Depends on the district and it depends on the school you're at and if the school district is on the state timeline or not. Social justice equity-based, standards-based grading is the big, big push."

Most teacher participants in this study mentioned PLC as a factor. PLC are designed for teachers to collaborate, reflect, think critically, and use data to drive their instruction to ensure

students are mastering content. The PLC is a team model where a set or group of teachers attend to reach a goal with fidelity. Teachers meet consistently and often to assess and analyze data relevant to their goal. Participant P6 stated,

I do have to work with other individuals, and we have to come to a consensus of what practices that we are using. If we're all on board, and we agree to the skills are these practices, then that's a big thing, as long as we're hitting those standards of these through this particular district, right.

While observing the participants, factors were present in their teaching strategies and classroom climate. Similar factors are included in the documents of the Colorado State Board of Education Quality Teacher Standards.

The high schools in this case promoted the aforementioned factors of students' needs to be greater than content proficiency. Most participants felt that factors are forcing them to be expert teachers who aim to graduate students regardless of their level of or proficiency in learning and who invest more into the needs of every student to foster equitable learners in a diverse world. As Participant P1 stated, "Get the grade; get them to the point where as far as school is concerned, get the students to the point where they have the grades that the school wants them to have.

Transforming Focus

The actual word or words concerning transforming focus emerged from the data 180 times across the interviews, observations, and document analysis. Transforming focus is the shift, reform, or change of the targeted focus of instruction, pedagogical expertise, and purpose of a high school teacher that may be emerging due to external factors. The most common data that emerged was the transforming focus due to meeting the needs of diverse students, equity,

and SEL skills needed. Additionally, most of the teacher participants held a bachelor's degree in an individual content area with an alternative teacher license. In the past, alternative teacher credentials did not exist. Instead, to be a licensed teacher, one had to complete a 4-year teacher preparation program and either pass a national praxis exam or have a second bachelor's degree in an individual content area. In the past, high schools were focused on student learning, proficiency in content, and successful graduates who transition to postsecondary educational careers. However, due to teacher shortages, an alternative teacher license program was created to bring content proficiency experts into high school classrooms to continue the focus on student learning and proficiency in content. Over time, and with the impact of the COVID-19 pandemic, participants noted that the focus appears to be transforming. Participant P9 noted,

Students are always changing and growing, but because of the pandemic, we don't really even know what has happened to a lot of the students and they might not even know what that effect was. So, I think we're gonna really have to do so much more social-emotional learning.

The current educational policy and reform in the United States is the national education law, ESSA, which was passed in 2015 to equally provide an opportunity for all students. This act pledges to ensure by law that all educational settings, teachers, and classrooms are focused on the goal of increasing student learning and achievement to prepare students for future success in college and the workforce beyond high school (Blazar & Kraft, 2017; Fuller et al., 2017). The analyzed documents of the Colorado State Department of Education teacher standards reflected ESSA in its requirement of teacher intentional conduct and inclusion of diversity, SEL, and equity. The codes of diversity, equity, SEL, and meeting the needs of students emerged from data over 30 times across the interviews, observations, and document analysis. Most of the

teacher participants stated that the focus of their purpose and role as a teacher was to meet the needs of all the students by building relationships and being more of a mentor than an expert in a content area. Participant P3 stated, “Switch what you’re doing to be able to make connections. Making connections is gonna be more important than anything else you do.

The participants continued to demonstrate that the focus and purpose of professional teachers in high school classrooms, middle leaders, and school districts are transforming. As Participant P7 stated, “Reduce the gap within social, low social, economic and lower in students to raise them up and make them ready for college.” With a transforming focus, many teacher participants felt that they were active in so many different roles as a teacher, that they were struggling to keep up with the transformation. Participant P5 shared,

You’re trying to do all these things. And, by the way, teaching, you know, the role of teachers as of now to include, you know, suicide prevention and like, all these things that we’re looking for, I wonder if the data I’m being asked to collect is really meaningful, given how hard our jobs are and all the outside factors that influence a kid’s education, and, you know, is my instruction that key cause for their outcome? In this way we’re going for data pieces, but I teach Econo.

Participant P10 related to P5’s comments by stating,

So that’s really hard. And I think that’s just kind of like an ongoing question that all teachers have and are continually like, it’s continually evolving as the years go on and society changes and you’re just, classroom, you know your students are different year to year. So that’s something I will always probably be working on.

In observing the teachers, the transforming focus was observed over and over. Teachers were constantly asking questions and scaffolding learners to think so that all students stayed

engaged, particularly the harder-to-reach students who may need SEL. While the participants referenced the changing nature of their role and the changing needs of their students, praxis was observed and practiced in their classrooms. This finding is further explored in the research question response section that follows.

Research Question Responses

Analysis of the data from the interviews, observations, and document analysis provided answers to the research questions that guided this study. Each research question response is connected to the theoretical framework to provide rich reflection for each research question. The answers to the study's three research questions are examined in the following sections.

Research Question One

Research Question One asked, "How do secondary high school teachers practice research-based instructional methods?" Although most of the participants were not aware which instructional methods they used were or were not praxis, they did apply praxis in their classrooms. I observed many participants applying the Kagan method, a praxis instructional method. Other participants conducted cooperative group work, which is also a praxis instructional method. There were evident factors that impacted the application of praxis in high school classrooms, such as state and district-mandated practices, time used to conduct PLC, and the need to ensure that teachers are giving the grades the students need to graduate. Factors was the second-largest theme emerging from the data. Participant P2 stated, "If we're all on board, and we agree to the skills are these practices, or you know, are these research-based practices, then that's a big thing, as long as we're hitting those standards of these through this particular district, right?". Furthermore, the analyzed Colorado State Board of Education teacher standards echoed the teachers' perceptions that they were to employ strategies to embrace SEL, diversity,

and students' needs, rather than emphasize content mastery or praxis-based instructional methods.

Research Question Two

Research Question Two asked, "Why do high school teachers choose to use instructional methods that are not research-based?" The focus on education and a teacher's role in the classroom is transforming. The data of this study reflected this transformation as teachers were more focused on meeting the needs of diverse students, equity, SEL, and building relationships. P5 stated, "And just because something doesn't have research behind it doesn't necessarily mean that it will or will not work, especially since each class is different." The analysis of the CDE documents resulted in a high number of codes pertaining to teacher professionalism and pedagogical expertise that focus more on SEL, diversity, and equity. However, from the data of the interviews, the teacher participants were not aware of which instructional methods are praxis and which are non-research based, but did claim the importance of SEL, diversity, and equity. The data from the observations included a high volume of codes including inquiry and questions, collaborate, relationship, engage, and teacher-led. In the observations, most of the participant teachers performed teacher-led instructional methods, direct instruction, and proposing inquiry with questions. Although the participants claimed that they prefer to use both praxis and non-research-based instructional methods, all participants used praxis. Therefore, in conclusion of this research question, the participants claimed that they used non-research-based methods to meet the needs of the students regarding SEL, diversity, and equity, but in fact, used praxis only. The participants were not aware of which teaching methods are praxis and which methods are not research-based.

Research Question Three

Research Question Three asked, “How do high school teachers foster self-sufficient learners through their instructional methods?” Data from the study suggested that teachers who are experts in their content can provide cognitive ways for students to learn the content and other skills in their classroom that the students will need in the future. The analyzed documents from the Colorado State Board of Education ensure that all teachers foster self-sufficient learners. Teachers are to be mentors in their pedagogical expertise. The motivation, relationship, and SEL skills combined with content proficiency scaffold students in their self-sufficient learning as the data reflected in the observations. Participant P8 stated, “The better, the more efficiently you can do it, the more confident you’ll be, the more connections you can make with the material. Participant P7 stated, “I think building relationships is the probably the biggest chunk of the pie of that entire thing. Similarly, the observational data reflected these teachers are fostering self-sufficient learners by trying to meet their individual needs within a large group setting.

Summary

This single-case study was conducted to examine the application of praxis in high school classrooms. The researcher identified 10 public high school teacher participants across the state of Colorado who teach a core content area and are at or beyond Year 3 in their teaching career. Data were collected, analyzed, and triangulated from interviews, observations, and a document analysis according to Yin’s five-phase cycle (Yin, 2011). Three major themes emerged from the data. The three themes included pedagogical expertise, factors, and transforming focus. This chapter guided the reader through the results of this study’s findings by answering the research questions and discussing the themes that emerged from the data. Findings revealed that teachers may not have the pedagogical expertise to know which instructional methods are praxis and

which are not praxis. The participants stated that they use a combination of praxis and other practices in their instructional methods. However, in observing the participants, they were indeed applying praxis in their instructional methods. Also, some factors impact what instructional methods teachers are applying in classrooms, such as state and district-mandated practices, teacher quality standards, the time used to conduct PLCs, and the need to ensure that teachers are giving the grades the students need to graduate. Lastly, there appears to be a transforming focus in classrooms and education. The transforming focus that was once on student learning and content proficiency is now gauged more on meeting the needs of diverse students, equity, and SEL skills that the students need. The teachers, who for the majority completed an alternative teacher preparation, were experts in their content area and are now being required to be more of a mentor and relationship builder. In summary, the transforming focus on SEL and the teacher being more of a mentor impacts the application of praxis in classrooms due to factors from educational leadership and the lack of pedagogical expertise.

CHAPTER FIVE: CONCLUSION

Overview

The purpose of this single-case qualitative case study was to explore the application of praxis in public high school classrooms in Colorado. Bruner's (1966) constructivist theory of learning and instruction guided this study. Each of the 10 participants were at Year 3 or more in their active teaching profession of a core content area. The use of the 10 participants' interviews and observations, along with the analyzed documents from the Colorado State Board of Education provided the data for this study. The data from the three forms of evidence were analyzed using Yin's five-phase cycle (Yin, 2011). First, the data were compiled using inductive coding (Yin, 2013). Second, the data were disassembled using open coding (Creswell, 2018). Third, the data were reassembled using axial coding (Creswell, 2018). Fourth, the data were then interpreted with a new narrative by being triangulated using a within-case analysis to synthesize the meaning that emerged from the data (Creswell & Poth, 2018; Yin, 2018). Naturalistic generalizations were conducted to link interpretation and generalization to the larger research literature to present implications by providing an account of the findings (Creswell & Poth, 2018). Lastly, the data were concluded by providing a new narrative for the study. This chapter includes an interpretation of the findings, implications for policy and practice, theoretical and methodological implications, limitations and delimitations, and recommendations for future research. The chapter ends with a conclusion.

Discussion

This section of Chapter Five discusses the study's findings considering the themes that emerged from the data. The three themes that emerged from the data in this study include pedagogical expertise, factors, and transforming focus. This section also includes the

interpretation of findings, implications for policy or practice, theoretical and empirical implications, limitations and delimitations, and recommendations for future research.

Interpretation of Findings

The purpose of this study was to explore the application of praxis in public high school classrooms. Three thematic findings emerged from this study: pedagogical expertise, factors, and transforming focus. These themes and the research question responses were used to create a series of interpretations that are significant to the implications of this study. A summary of the thematic findings and my interpretations are outlined in the following sections.

Summary of Thematic Findings

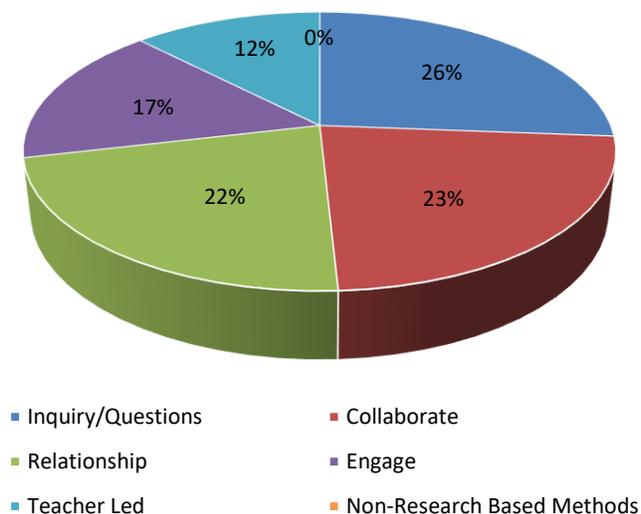
The following subsections communicate the significant interpretations of the implications of this study that emerged from the three themes of pedagogical expertise, factors, and transforming focus. The interpretations include: (a) teachers know the difference between praxis but are not aware of what methods are and are not praxis, (b) district and school leadership are more focused on PLC and SEL, and (c) content expert teachers are being transformed to focus on meeting the needs of diverse students, equity, and SEL skills that they are not developed to do, and (d) the majority of the participants received a content-specific degree and then completed an alternative teacher license program as compared to completing a typical teacher preparation program.

Pedagogical expertise was the largest theme that emerged from the data. It revealed that the participants have knowledge without identification. Teacher participants could define what praxis and non-research-based methods are, but they were not able to identify which instructional methods are praxis and which are not praxis. The expertise that emerged from the data consisted of the teachers being experts in their content area, not pedagogy. Lastly, the data in this theme

suggests that teachers' focus and purpose in their professional life was impacting their ability to grow and perform their pedagogical expertise.

Figure 1

Observed Instructional Methods



Note. Figure 1 displays the observed instructional methods used by the participants that emerged from the data. All observed instructional methods and data present that all methods were research-based.

Factors was the second largest theme that emerged from the data. This theme revealed that time, money, stress, mental health, workload, middle leader development of teachers, and district mandates have shifted the purpose of a teacher. The shifting purpose of a teacher from a content expert to a mentor is required. The data suggested that content experts are graduating students as required, and the focus of content mastery is evaporating.

Transforming focus was the third largest and final theme that emerged from the data. It revealed data pertaining to teacher licensure accountability. Most of the participants are content experts who completed an alternative teacher licensure program after they received a bachelor's degree in their content. Middle leaders are focused on PLC and SEL. School districts are focused

on graduating students. Therefore, the theme of teacher licensure accountability needs attention to address the pedagogical expertise and factors present in this study's data.

Knowledge Without Identification. A significant finding in this study was that teachers could define praxis and non-research-based instruction but were not aware of what methods were or were not praxis. The data in the study reflect that there is a lack of pedagogical expertise. As Participant P1 stated, "So I don't think most teachers would actually know that, sure, based on my experience in working with other teachers in the field, know that separate definition." The observations provided evidence that teachers are applying praxis in their teaching strategies, but the documents analyzed showed that teacher standards do not include pedagogical expertise in identifying praxis in their instructional standards. Literature shows that teacher preparation programs are designed to embed a theoretical and research-based mindset into the thinking and practices of new teachers entering the field of education (Arnold & Mundy, 2020; Blazar & Kraft, 2017; Nguyen, 2018; Tilson et al., 2017; Ünver, 2014). While teachers are prepared with a theoretical and research-based mindset and practices, they could not practically distinguish between which instructional methods were praxis and those that were not praxis. If a teacher cannot identify what instructional methods are praxis, they may not know or choose the most effective methods to instruct their students.

Shifting Purpose of a Teacher. Another significant finding in this study was that the purpose of a teacher appears to be shifting or transforming in focus. Most of the participants completed a fast-track alternative teacher licensure program after they obtained their degree in a particular content area. As a result, most of the participants are experts in their content area and are licensed to teach only that content area. Having content area experts as teachers ensures that students are receiving optimal instruction to learn content. However, most of the participants in

this study claimed they are shifting their purpose as a teacher to be more of a mentor for their students and that their district and school leadership are more focused on PLC and SEL. As Participant P5 stated, “I think building relationships is probably the biggest chunk of the pie of that entire thing.” Therefore, most of the development teachers were being provided help by their district and middle leaders that focused more on PLC and SEL rather than ensuring that praxis is applied in the classroom. Instructional methods were not the focus of their school’s or district’s training.

Intentional professional learning designed with praxis may further the gains in student learning (Doğan & Yurtseve, 2018; Fuller et al., 2017; Rickman, 2014). When middle leaders infuse the application of praxis in their school through mentorship and accountability, the school’s students experience greater learning and achievement outcomes (Adolfsson & Håkansson, 2019; Doğan & Yurtseve, 2018; Farley-Ripple et al., 2018; Gregson et al., 2019; Rickman, 2014). However, according to the data in this study, the purpose of a teacher is shifting from pedagogical expertise to mentoring students to foster relationships and SEL using the PLC model. If this shift is intentional, it appears that middle leaders are leading well. However, if the intent is truly to move away from praxis and a focus on pedagogy and instructional methods, there will likely be a future impact on the classroom and student learning.

Teacher Licensure Accountability. It is noteworthy that the analysis of the data from this study highlighted a need for teacher licensure accountability. The literature confirms that higher education students in teacher preparation programs obtain knowledge about pedagogy, subject matter, educational theory, and exposure to classroom experiences (Feuer et al., 2013; Hood et al., 2021). The literature further includes that teacher preparation programs craft teachers to be successful in educating students in classrooms with the goal of optimal student

learning and achievement, and teacher preparation programs are evaluated continually in their effectiveness (Feuer et al., 2013; Hood et al., 2021; Ünver, 2014). These findings in the literature propose reform of the entire ecosystem of teacher preparation programs is needed (Mahon et al., 2019; Tilson et al., 2017). The analyzed documents from the Colorado State Board of Education require teachers to be accountable and conduct professional application of SEL, diversity, and equity in their classrooms more than pedagogical expertise. However, the data from the interviews provide rich evidence that the teachers lack in pedagogical expertise and have completed alternative licensure programs. The observations provide evidence that teachers are content experts in need of further development in pedagogical expertise to meet the needs of their students professionally. Therefore, the data suggested there is a need to ensure that alternative teacher licenses are held accountable to develop pedagogical experts.

Implications for Policy and Practice

The implications of this study include implications for policy and implications for practice. The implications for policy pertain to state policies to better meet the needs of a shifting purpose of a teacher. The implications for practice pertain to effectiveness. Overall, the implications propose a transformation shift in teachers, licensure, and student learning.

Implications for Policy

The implications for policy regarding the findings and outcomes of this study are for state policies and regulations on teacher licensure requirements, regulations on teacher preparation programs, and policies for district and middle leader development and guidance of teachers. State policies and regulations on teacher licensure requirements must ensure that individuals who qualify to be licensed teachers in their state have pedagogical expertise regarding praxis. The gap in the literature indicated that there is a disconnect between the application of praxis and practice

in education (Blazar & Kraft, 2017; Farley-Ripple et al., 2018; Fuller et al., 2017; Göktepe Yildiz & Göktepe Körpeoğlu, 2019; Gomes-Koban, et al., 2019; Gregson et al., 2019; Hordern, 2019; Ion et al., 2018; Mahon et al., 2019; Rovio-Johansson, 2020; Slavin, 2020). Studies indicated that the need for praxis in educational classrooms may impact or reform current educational policies such as ESSA, teachers, and students (Al-Rawi, 2013; Arnold & Mundy, 2020; Baier et al., 2019; Blazar & Kraft, 2017; Emaliana, 2017; Hordern, 2019; Slavin, 2020). The data from the interviews, observations, and document analysis provided rich evidence to support the need for further state policies and regulations on teacher licensure requirements in relation to applying praxis in their classrooms and developing experts in pedagogy. Participant P9 stated, “My teacher preparation program was pretty much like the only thing that probably benefited me with some content.” The evidence of the impact of teacher preparation programs is strong.

Most of the participants in this study received their state teacher licensure through the alternative licensure program. Participant P5 stated, “I was done with my licensure in a year and a half plus two summer classes.”. If an individual is seeking to gain their teacher license in their state through an alternative teacher license program, that program too must ensure that the fast-track option to be a licensed teacher guarantees that the teacher has pedagogical expertise before state licensure. Teacher preparation programs are designed to embed a theoretical and research-based mindset into the minds and practices of new teachers entering the field of education (Arnold & Mundy, 2020; Blazar & Kraft, 2017; Nguyen, 2018; Tilson et al., 2017; Ünver, 2014). Policy must be put in place to ensure teacher preparation programs, whether a typical 4-year university or an alternative teacher license program through the state’s department of education,

must be regulated to ensure that each student in teacher preparation programs is girded with pedagogical expertise and the ability to implement praxis.

Policies for district and middle leader development and guidance of teachers are needed to further ensure that the district provides and holds middle leaders accountable for ensuring that the teachers are adequately and continually developed to apply praxis in their classrooms, eliminate factors that impact the application of praxis in classrooms, and craft further experts in pedagogy amidst the transforming focus in education. The specific instructional methods that are executed and required are provided by each school board, school district, and educational leaders within their walls (Bellibaş et al., 2020; U.S. Department of Education, 2021). Therefore, reforming educational policy with sound theoretical and research-based evidence will mold the arena of education as a singular ecosystem that reforms teacher preparation programs, middle leader development, and the use of praxis in all instructional methods to ensure that the optimal level of student learning and achievement is obtained across the United States in each classroom (Tilson et al., 2017).

Implications for Practice

The implication for practice regarding the findings and outcomes of this study are for teacher and school effectiveness and student learning. While student learning is proportional to the effectiveness of teachers and schools, it may also be effective to ensure the practices of teachers and schools guarantee praxis is being utilized in classrooms. According to recent studies, students learn best when taught through theoretical and research-based instructional methods and strategies (Al-Rawi, 2013; Anwar & Wardhono, 2019; Baier et al., 2019; Blazar & Kraft, 2017; Byrd, 2020; Deslauriers et al., 2019; Drew et al., 2017; Eddy, 2017; Emaliana, 2017; Entwistle et al., 2005; Haymon & Wilson, 2020; Khan et al., 2019; Swarts & Ye, 2018).

These findings relate to and are built upon the theoretical framework of Bruner's (1966) constructivist theory of learning and instruction that framed the design of this study. Participant P7 stated, "Social justice, equity-based, standards-based grading, is the big, big push." The data from the observations revealed that teachers were not prepared to meet the needs of the students, SEL skills, and equity. The analyzed document from the Colorado State Board of Education showed that the state does not require the application of praxis for student learning in their standards. The implication for practice that results from these findings is that the application of praxis in the classroom should be part of each teacher's yearly evaluations and effectiveness ratings. Schools are also given an effectiveness rating according to the teacher evaluations, student attendance, graduation rates, and state assessment data. Therefore, it may also be effective to ensure that school effectiveness ratings include the application of praxis in classrooms. While student learning is the primary goal in education, schools, and teachers, it may also be effective to ensure that praxis is being applied in classrooms. With many codes about factors that emerged from the data, factors may impact the application of praxis in high school classrooms and foster self-sufficient learners.

Theoretical and Empirical Implications

The theoretical and empirical implications of this study are included in this section. The theoretical implications of this study verify the theoretical framework of the study, Bruner's (1966) constructivist theory of learning and instruction, and uncovered how the theory has been applied in public high school classrooms in Colorado. The empirical implications of this study help close the empirical gap in the literature, extend research on instructional best practices, and contribute to the body of literature informing educational policy and teacher preparation programs.

Theoretical Implications

This study verified the theoretical framework of this study, Bruner's (1966) constructivist theory of learning and instruction. Bruner's (1966) theory states that teachers should employ research-based instructional methodologies, known as praxis (Freire, 1972). The goal of the teacher is to scaffold learners to be independent learners in their problem solving who are self-sufficient, where the learning constructs knowledge on past experiences, in a learning environment filled with visuals, feedback, cooperative group work, and cyclical depth of content (Bruner, 1966). Bruner's (1966) constructivist theory of learning and instruction employs that teachers' application of praxis in classrooms is the ultimate way for all students to learn and achieve. In the analysis of the data from the interviews, observations, and document analysis, it is evident that Bruner's (1966) constructivist theory of learning and instruction is verified. The 10 participants in the study construct knowledge on past experiences, use visuals, provide feedback to their students, provide cooperative group work opportunities, and spiral their curriculum.

The other theoretical implication of this study is that it uncovers how Bruner's (1966) constructivist theory of learning and instruction is applied in public high school classrooms in Colorado. Although the 10 participants were not aware of what methods are praxis and what methods are not, they did apply praxis in their classrooms. The data that emerged from the interviews, observations, and document analysis was rich in evidence supporting that Bruner's (1966) constructivist theory of learning and instruction is being applied in public high school classrooms in Colorado.

Empirical Implications

This study extends the body of research on instructional best practices, contributes to the body of literature informing educational policy and teacher preparation programs, and provides implications for future use of this study's method for a new light on theory reflecting the transforming focus that teachers are experiencing. Literature indicates that there is a disconnect between the application of praxis and other practices in education, particularly in high school classrooms (Blazar & Kraft, 2017; Farley-Ripple et al., 2018; Fuller et al., 2017; Göktepe Yildiz & Göktepe Körpeoğlu, 2019; Gomes-Koban, et al., 2019; Gregson et al., 2019; Hordern, 2019; Ion et al., 2018; Mahon et al., 2019; Rovio-Johansson, 2020; Slavin, 2020). Bruner's (1966) constructivist theory of learning and instruction has been used to understand differentiated instruction in elementary, middle school, and higher education classrooms, but has not been applied to understanding praxis in high school classrooms (Adolfsson & Håkansson, 2019; Emaliana, 2017; Entwistle & Peterson, 2005; Farley-Ripple et al., 2018; Gheysens et al., 2020; Göktepe Yildiz & Göktepe Körpeoğlu, 2019). This study contributed to closing that gap by focusing narrowly on praxis in the high school classroom.

Accompanying the closing of this gap is a list of best practices from the participants that can now be explored further in future literature. The application of praxis in high school classrooms employed by this study's participants included lecturing, essential questions, and student cooperative learning. The literature in connection with the study's evidence supports the need for further study on instructional best practices that can prepare teachers, develop middle leaders, and impact the transformation of focus in classrooms to meet the needs of the students. Participant P3 stated, "I do kind of both, like I do some of the research base, old school stuff, but I try to always make it more interesting for the students or switch it up in different ways so that

they're engaged.”. By extending research on instructional best practices, teachers can have a guide to direct their instructional methods as they focus on the needs of the students.

This study also contributes to the body of literature that informs teacher preparation programs. Empirically, the literature shows there is a need for praxis in educational classrooms and how praxis may impact or reform current educational policies such as ESSA, teachers, and students (Al-Rawi, 2013; Arnold & Mundy, 2020; Baier et al., 2019; Blazar & Kraft, 2017; Emaliana, 2017; Hordern, 2019; Slavin, 2020). The empirical literature further suggests that the whole system of education should be looked upon as an educational reform within the ecosystem of education (Doğan & Yurtseven, 2018; Farley-Ripple et al., 2018; Gomes-Koban et al., 2019; Greggson et al., 2019; Hordern, 2019; Slavin, 2020). The data from the study provided rich evidence that most of the participants concluded their licensure through an alternative licensure program after their degree conferral in a particular content. Therefore, they were content experts and not pedagogical experts. The data from the documents provided rich evidence that teachers must be professional pedagogists. Empirically, there is evidence in the body of literature supporting the need of a whole system of education that should be looked upon as an educational reform within the ecosystem of education (Doğan & Yurtseven, 2018; Farley-Ripple et al., 2018; Gomes-Koban et al., 2019; Greggson et al., 2019; Hordern, 2019; Slavin, 2020).

Limitations and Delimitations

There are limitations and delimitations in this study. Limitations in this study include potential weaknesses of the study such as the setting of the study and participation of participants. The delimitations in this study include the boundaries of the study regarding participants at or beyond Year 3 in their active teaching profession. One limitation of this study is that it was limited in geographic scope. The setting of the study was the state of Colorado.

Colorado is a Mid-western state and is only one of the 50 states in the United States. The study's setting could be extended nationally or globally to encompass a broader perception of the application of praxis in high school classrooms. Furthermore, each state guides and directs its policies, programs, and teacher evaluation systems. Therefore, those factors that may impact the study may differ from state to state and nation to nation.

Another limitation of the study was the sample size of participants. It took 2.5 months to glean 10 viable participants for this study. A monetary gift was given to each participant after the necessary modification was made. Teachers in today's classrooms were very reluctant to participate due to the exponential stress of teaching in the post-Covid era.

The delimitation in this study includes the boundary of the study of participants at or beyond Year 3 in their active teaching profession. This study aimed to examine and explore the phenomenon in veteran teachers. However, the data in the analysis of this study's findings emerged codes about teachers' inability to remember their teacher preparation due to the considerable time that had lapsed since they participated in their teacher preparation program. Perhaps if that boundary was removed, the data from a first-year teacher as compared to a veteran teacher would have provided altering perception, implications, and understanding of the data and outcomes.

Recommendations for Future Research

The recommendations for future research include the setting of the study, the boundary of desired participants in the study, and the design of the study. The setting of the study could be expanded across the United States to perceive the application of praxis nationally, or comparatively from state to state. By expanding participant boundaries, a future study could capture perceptions and outcomes of first-year teachers as compared to veteran teachers.

Considering a majority of the participants obtained their licensure through an alternative program, further studies could compare the impact or praxis implementation methods of a teacher from a typical 4-year teacher preparation program to that of an alternative teacher licensure program. This could be done quantitatively, correlating instructional methods and student test scores. Lastly, due to the transforming focus in education where teachers are becoming mentors than experts in pedagogy, more study is needed to see if this transforming focus is a national phenomenon and how it is impacting students.

Conclusion

This qualitative intrinsic case study examined the application of praxis in high school classrooms. Bruner's (1966) constructivist theory of learning and instruction guided this study. The study examined 10 public high school teacher participants across the state of Colorado who teach a core content area and are at or beyond Year e in their teaching career. Data were collected, analyzed, and triangulated from interviews, observations, and a document analysis according to Yin's five-phase cycle (Yin, 2011). The themes that emerged from the data include: (a) those teachers may not have the pedagogical expertise to know which instructional methods are praxis and which are not, (b) some factors impact what instructional methods teachers are applying in classrooms, and (c) there appears to be a transforming focus in classrooms and education. The implications of this study include the need for state policies and regulations on teacher licensure requirements, regulations on teacher preparation programs, and policies for district and middle leader development and guidance of teachers. The theoretical implications of this study verify the theoretical framework of the study, Bruner's (1966) constructivist theory of learning and instruction, and may uncover how Bruner's (1966) constructivist theory of learning and instruction is applied in public high school classrooms in Colorado.

REFERENCES

- Abdi, A. (2014). The effect of inquiry-based learning method on students' academic achievement in a science course. *Universal Journal of Educational Research*, 2(1), 37–41. <https://doi.org/10.13189/ujer.2014.020104>
- Adolfsson, C., & Håkansson, J. (2019). Evaluating teacher and school development by learning capital: A conceptual contribution to a fundamental problem. *Improving Schools*, 22(2), 130–143. <https://doi.org/10.1177/1365480218784039>
- Al-Rawi, I. (2013). Teaching methodology and its effects on quality learning. *Journal of Education and Practice*, 4(6), 100–105. <https://core.ac.uk/download/pdf/234634129.pdf>
- Anagun, S. (2018). Teachers' perceptions about the relationship between 21st-century skills and managing constructivist learning environments. *International Journal of Instruction*, 11(4), 825–840. <https://doi.org/10.12973/iji.2018.11452a>
- Anand, A. (2019). Does the flipped classroom method enhance the learning of undergraduate medical students: A review. *Texila International Journal of Basic Medical Sciences*, 4(1), 1–7. <https://doi.org/10.21522/TIJBMS.2016.04.01.Art001>
- Anwar, K., & Wardhono, A. (2019). Students' perception of learning experience and achievement motivation: Prototyping English for academic purposes (EAP). *International Journal of Instruction*, 12(3), 271–288. <https://doi.org/10.29333/iji.2019.12317a>
- Arnold, J., & Mundy, B. (2020). Praxis pedagogy in teacher education. *Smart Learning Environments*, 7, Article 8. <https://doi.org/10.1186/s40561-020-0116-z>

- Baeten, M., Dochy, F., Struyven, K., Parmentier, E., & Vanderbruggen, A. (2016). Student-centered learning environments: An investigation into student teachers' instructional preferences and approaches to learning. *Learning Environments Research*, 19(1), 43–62. <https://doi.org/10.1007/s10984-015-9190-5>
- Baier, F., Decker, A., Voss, T., Kleickmann, T., Klusmann, U., & Kunter, M. (2019). What makes a good teacher? The relative importance of mathematics teachers' cognitive ability, personality, knowledge, beliefs, and motivation for instructional quality. *British Journal of Educational Psychology*, 89(4), 767–786. <https://doi.org/10.1111/bjep.12256>
- Bellibaş, M. Ş., Polatcan, M., & Kiliç, A. Ç. (2020). Linking instructional leadership to teacher practices: The mediating effect of shared practice and agency in learning effectiveness. *Educational Management Administration & Leadership*, 50(5), 812–831. <https://doi.org/10.1177/1741143220945706>
- Blazar, D., & Kraft, M. (2017). Teacher and teaching effects on students' attitudes and behaviors. *Education Evaluation Policy Analysis*, 39(1), 146–170. <https://doi.org/10.3102/0162373716670260>
- Bloom, B. S. (1956) *Taxonomy of Educational Objectives Handbook*. New York: Longman.
- Bruner, J. S. (1961). *The act of discovery*. *Harvard Educational Review*, 31, 21–32.
- Bruner, J. S. (1966). *Toward a theory of instruction* (Vol. 59). Harvard University Press.
- Bruner, J. S. (1973). *Going beyond the information given*. Norton.
- Bruner, J. S. (1986). *Actual minds, Possible worlds*. Harvard University Press.
- Bulger, S., Mohr, D., & Walls, R. (2002). Stack the deck in favor of your students by using the four aces of effective teaching. *Journal of Effective Teaching*, 5(2). <https://uncw.edu/jet/articles/bulger/>

- Bush, T. (2018). Preparation and induction for school principals. *Management in Education*, 32(2), 66–71. <https://doi.org/10.1177/0892020618761805>
- Byrd, M. (2020). Capitalizing on differences: Keys to unlocking the academic achievement gap. *Multicultural Learning and Teaching*, 15(2), Article 20190003. <https://doi.org/10.1515/mlt-2019-0003>
- Cairns, D. (2019). Investigating the relationship between instructional practices and science achievement in an inquiry-based learning environment. *International Journal of Science Education*, 41(15), 2113–2135. <https://doi.org/10.1080/09500693.2019.1660927>
- Casey, D., & Murphy, K. (2009). Issues in using methodological triangulation in research. *Nurse Researcher*, 16(4), 40–55. <https://doi.org/10.7748/nr2009.07.16.4.40.c7160>
- Choy, L. T. (2014). The strengths and weaknesses of research methodology: Comparison and complimentary between qualitative and quantitative approaches. *Journal of Humanities and Social Science*, 19(4), 99–104. <https://iosrjournals.org/iosr-jhss/papers/Vol19-issue4/Version-3/N0194399104.pdf>
- Civil Rights Act of 1964, Pub. L. No. 88-352, 78 Stat. 241 (1964). <https://www.govinfo.gov/content/pkg/STATUTE-78/pdf/STATUTE-78-Pg241.pdf>
- Creswell, J. W., & Creswell, J. D. (2018). *Research design: Qualitative, quantitative, and mixed methods approaches*. SAGE Publications.
- Creswell, J. W., & Poth, C. N. (2016). *Qualitative inquiry and research design: Choosing among five approaches*. SAGE Publications.
- Darling-Hammond, L. (2020). Accountability in teacher education. *Action in Teacher Education*, 42(1), 60–71. <https://doi.org/10.1080/01626620.2019.1704464>

- Darling-Hammond, L., & Lieberman, A. (2013). *High-quality teaching and learning: Changing policies and practices*. Routledge.
- De Nobile, J. (2017). Towards a theoretical model of middle leadership in schools. *School Leadership & Management*, 38(4), 395–416.
<https://doi.org/10.1080/13632434.2017.1411902>
- Deslauriers, L., McCarty, L., Miller, K., Callaghan, K., & Kestin, G. (2019). Measuring actual learning versus the feeling of learning in response to being actively engaged in the classroom. *Proceedings of the National Academy of Sciences of the United States of America*, 116(39), 19251–19257. <https://doi.org/10.1073/pnas.1821936116>
- Dewey, J. (1963). *Experience and education*. Collier Books.
- Doğan, S., & Yurtseven, N. (2018). Professional learning as a predictor for instructional quality: A secondary analysis of TALIS. *School Effectiveness and School Improvement*, 29(1), 64–90. <https://doi.org/10.1080/09243453.2017.1383274>
- Drew, S. V., Olinghouse, N. G., Faggella-Luby, M., & Welsh, M. E. (2017). Framework for disciplinary writing in science grades 6–12: A national survey. *Journal of Educational Psychology*, 109(7), 935–955. <https://doi.org/10.1037/edu0000186>
- Eddy, S. (2017). Recent research in science teaching and learning. *CBE Life Sciences Education*, 16(6), 1–3. <https://doi.org/10.1119/1.5065907>
- Elementary and Secondary Education Act of 1965, Pub. L. No. 89-10, 20 U.S.C. § 6301 (1965).
<https://www.govinfo.gov/content/pkg/COMPS-748/pdf/COMPS-748.pdf>
- Emaliana, I. (2017). Teacher-centered or student-centered learning approach to promote learning? *Journal Social Humaniora*, 10(2), 59–70.
<https://doi.org/12962/j24433527.v10i2.2161>

- Entwistle, N., & Peterson, E. (2005). Conceptions of learning and knowledge in higher education: Relationships with study behavior and influences of learning environments. *International Journal of Educational Research*, 41(1), 407–428.
<https://doi.org/10.1016/j.ijer.2005.08.009>
- Etim, J. S., Etim, A. S., & Blizard, Z. D. (2020). Teacher effects, student school attendance and student outcomes: Comparing low and high performing schools in North Carolina. *Educational Research Quarterly*, 44(2), 47–81.
- Every Student Succeeds Act, 20 U.S.C. § 6301 (2015).
<https://www.congress.gov/114/plaws/publ95/PLAW-114publ95.pdf>
- Farley-Ripple, E., May, H., Karpyn, A., Tilley, K., & McDonough, K. (2018). Rethinking connections between research and practice in education: A conceptual framework. *Educational Researcher*, 47(4), 235–245. <https://doi.org/10.3102/0013189X18761042>
- Feuer, M., Floden, R., Chudowsky, N., & Ahn, J. U. (2013). *Evaluation of teacher preparation programs: Purposes, methods, and policy options*. National Academy of Education.
<https://naeducation.org/wp-content/uploads/2016/11/028489-Evaluation-of-Teacher-prep.pdf>
- Fleming, S. (2014, September 1). The power of reflection: Insight into our own thoughts, or metacognition, is key to higher achievement in all domains. *Scientific American*.
<https://www.scientificamerican.com/article/metacognition-is-the-forgotten-secret-to-success/>
- Freire, P. (1972). *Cultural action for freedom*. Penguin.

- Fuller, E. J., Hollingworth, L., & Pendola, A. (2017). Every student succeeds act, state efforts to improve access to effective educators, and the importance of school leadership. *Educational Administration Quarterly*, 53(5), 727–756.
<https://doi.org/10.1177/0013161X17711481>
- Gall, M. D., Gall, J. P., & Borg, W. R. (2006). *Educational research: An introduction* (8th ed.). Pearson.
- Gheysens, E., Coubergs, C., Griful-Freixenet, J., Engels, N., & Struyven, K. (2020). Differentiated instruction: the diversity of teachers' philosophy and praxis to adapt teaching to students' interests, readiness, and learning profiles. *International Journal of Inclusive Education*. Advance online publication.
<https://doi.org/10.1080/13603116.2020.1812739>
- Gillies, R. M. (2016). Cooperative learning: Review of research and practice. *Australian Journal of Teacher Education*, 41(3), Article 3. <https://doi.org/10.14221/ajte.2016v41n3.3>
- Göktepe Yildiz, S., & Göktepe Körpeoğlu, S. (2019). A new approach for assessing teachers' teaching methods used in lessons: Game-theoretic analysis. *Acta Didactica Napocensia*, 12(2), 29–44. <https://doi.org/10.24193/adn.12.2.3>
- Gomes-Koban, C., Calet, N., & Defior, S. (2019). Intervention programs in educational psychology: Bridging research and practice. *Anales De Psicología*, 35(3), 378–388.
<https://doi.org/10.6018/analesps.35.3.327941>
- Gregson, D., Gregson, M., & Spedding, T. (2019). Top-down and outside-in: Breaking boundaries between research, theory, and practice in education. *Journal of Management Policy and Practice*, 20(3), 36–52. <https://doi.org/10.33423/jmpp.v20i3.2229>

- Hancock, D., Black, T., & Bird, J. (2006). A study of factors that influence teachers to become school administrators. *Normes*, 91–105.
- Haymon, C., & Wilson, A. (2020). Differentiated reading instruction with technology for advanced middle school students' reading achievement. *Journal of Educational Research and Practice*, 10(1) 70–89. <https://doi.org/10.5590/JERAP.2020.10.1.05>
- Higgins, S., & Coe, R. (2014, October 31). Seven 'great' teaching methods not backed up by evidence. *The Conversation*. <https://theconversation.com/seven-great-teaching-methods-not-backed-up-by-evidence-33647>
- Holtz, P., & Gnambs, T. (2017). The improvement of student teachers' instructional quality during a 15-week field experience: A latent multi-method change analysis. *Higher Education*, 74(4), 669–685. <https://doi.org/10.1007/s10734-016-0071-3>
- Hood, S. L., Dilworth, M. E., & Lindsay, C. A. (2021). *Landscape of teacher preparation program evaluation policies and progress*. National Academy of Education Committee on Evaluating and Improving Teacher Preparation Programs. National Academy of Education. <https://naeducation.org/evaluating-and-improving-teacher-preparation-programs-commissioned-paper-series/>
- Hordern, J. (2019). Knowledge, evidence, and the configuration of educational practice. *Education Sciences*, 9(1), Article 70. <https://doi.org/10.3390/educsci9020070>
- Hughes, C., Morris, J., Therrien, W., & Benson, S. (2017). Explicit instruction: Historical and contemporary contexts. *Learning Disabilities Research & Practice*, 32(3), 140–148. <https://doi.org/10.1111/ldrp.12142>

- Hughes, C., Riccomini, P., & Morris, J. (2019). Use explicit instruction. In J. McLeskey, L. Maheady, B. Billingsley, M. T. Brownell, & T. J. Lewis (Eds.), *High leverage practices for inclusive classrooms* (1st ed., pp. 215–236). Routledge.
- Ige, A. M. (2018). Perceived potential of motivational strategies operating in school to impact teacher effectiveness, by teachers in public secondary schools in Ondo State, Nigeria. *Educational Studies*, 44(4), 488–503. <https://doi.org/10.1080/03055698.2017.1382326>
- Ikpeze, C. (2013). Increasing urban students' engagement with school: Toward the expeditionary learning model. *Journal of Urban Learning, Teaching, and Research*, 9, 55–64.
- Ion, G., Marin, E., & Proteasa, C. (2018). How does the context of research influence the use of educational research in policymaking and practice? *Educational Research for Policy and Practice*, 18(2), 119–139. <https://doi.org/10.1007/s10671-018-9236-4>
- Johnson, D., Maruyama, G., Johnson, R., Nelson, D., & Skon, L. (1981). Effects of cooperative, competitive, and individualistic goal structures on achievement: A meta-analysis. *Psychological Bulletin*, 89(1), 47–62. <https://doi.org/10.1037/0033-2909.89.1.47>
- Johnson, D. W., & Johnson, R. T. (2002). Learning together and alone: Overview and meta-analysis. *Asia Pacific Journal of Education*, 22(1), 95–105. <https://doi.org/10.1080/0218879020220110>
- Johnson, K. E., Verity, D. P., & Childs, S. S. (2020). Praxis-oriented pedagogy and the development of L2 novice teacher expertise. *European Journal of Applied Linguistics and TEFL*, 9(2), 3–23.
- Kallick, B., & Zmuda, A. (2017). *Students at the center: Personalized learning with habits of mind*. ASCD.

- Kallio, J., & Halverson, R. (2020). Distributed leadership for personalized learning. *Journal of Research on Technology in Education*, 52(3), 371–390.
<https://doi.org/10.1080/15391523.2020.1734508>
- Kelly, N., Kickbusch, S., Hadley, F., Andrews, R., Wade-Leeuwen, B., & O'Brien, M. (2018). Raising the quality of praxis in online mentoring. In: J. Kriewaldt, A. Ambrosetti, D. Rorrison, & R. Capeness (Eds.), *Educating future teachers: Innovative perspectives in professional experience* (pp. 123–134). Springer, Singapore.
- Khan, S. A., Manzoor, H. A., & Yousuf, M. I. (2019). A study of relationship between learning preferences and academic achievement. *Bulletin of Education and Research*, 41(1), 17–32.
- Koedel, C., Parson, E., Podgursky, M., & Ehlert, M. (2015). Teacher preparation programs and teacher quality: Are there real differences across programs? *Education Finance and Policy*, 10(4), 508–534. https://doi.org/10.1162/EDFP_a_00172
- Koziuff, M. A., LaNunziata, L., Cowardin, J., & Bessellieu, F. B. (2000). Direct instruction: Its contributions to high school achievement. *The High School Journal*, 84(2), 54–71.
- Kraft, M. A., & Blazar, D. (2017). Individualized coaching to improve teacher practice across grades and subjects: New experimental evidence. *Educational Policy*, 31(7), 1033–1068.
<https://doi.org/10.1177/0895904816631099>
- Låg, T., & Sæle, R. G. (2019). Does the flipped classroom improve student learning and satisfaction? A systematic review and meta-analysis. *AERA Open*, 5(3). Advance online publication. <https://doi.org/10.1177/2332858419870489>

- Lana, V., Royan, A., & Fazal, N. (2016). Kinesthetic learning modalities' approach in understanding concepts of hypersensitivities immunological reactions. *The Journal of Immunology*, 196(1). https://www.jimmunol.org/content/196/1_Supplement/130.6
- Lang, M. L. (2019). Planning for differentiated instruction: Instructional leadership practices perceived by administrators and teachers in middle schools. *Educational Planning*, 26(2), 29–45.
- LaPointe-McEwan, D., DeLuca, C., & Klinger, D. A. (2017). Supporting evidence use in networked professional learning: The role of the middle leader. *Educational Research*, 59(2), 136–153. <https://doi.org/10.1080/00131881.2017.1304346>
- Lincoln, Y. S., & Guba, E. G. (1985). *Naturalistic inquiry*. Sage.
- Liu, Z., Shaikh, Z. A., & Gazizova, F. (2020). Using the concept of game-based learning in education. *International Journal of Emerging Technologies in Learning (iJET)*, 15(14), 53–64. <https://doi.org/10.3991/ijet.v15i14.14675>
- Loyce, O. C., & Victor, A. A. (2017). Principals' application of instructional leadership practices for secondary school effectiveness in Oyo State. *Journal of the Nigerian Academy of Education—JONAED*, 13(1), 32–44.
- Mahon, H., Heikkinen, H. L. T., & Huttunen, R. (2019). Critical educational praxis in university ecosystems: Enablers and constraints. *Pedagogy, Culture & Society*, 27(3), 463–480. <https://doi.org/10.1080/14681366.2018.1522663>
- Mamba, D., & Putsoa, B. (2018). Secondary school science teachers' knowledge and implementation of effective teaching strategies in high-performing schools in Swaziland. *African Journal of Research in Mathematics, Science and Technology Education*, 22(1), 14–26. <https://doi.org/10.1080/18117295.2017.1386346>

- McGlynn, K., & Kozlowski, J. (2017). Science for all: Kinesthetic learning in science. *Science Scope*, 40(9), 24–27. https://my.nsta.org/resource/?id=10.2505/4/ss17_040_09_24
- Merriam, S. B. (2009). *Qualitative research: A guide to design and implementation*. Jossey-Bass.
- Mori, T. (2017). The flipped classroom: An instructional framework for promotion of active learning. In K. Matsushita (Ed.), *Deep active learning* (pp. 95–109). Springer, Singapore.
- Nanquill, L. (2019). Making a difference through effective instructional strategies. *Journal of English Teaching*, 5(2), 135–143. <https://doi.org/10.33541/jet.v5i2.1067>
- Nguyen, H. (2018). Teacher preparation programs in the United States. *International Journal of Progressive Education*, 14(3), 76–92. <https://doi.org/10.29329/IJPE.2018.146.6>
- No Child Left Behind Act of 2001, Pub. L. No. 107-110, 20 U.S.C. § 6319 (2002).
<https://www.govinfo.gov/content/pkg/PLAW-107publ110/pdf/PLAW-107publ110.pdf>
- Omemu, F. (2017). Correlates of effective instructional supervision in Bayelsa State secondary schools. *World Journal of Education*, 7(4), 40–49. <https://doi.org/10.5430/wje.v7n4p40>
- Özdemir, N. (2020). How to improve teachers' instructional practices: The role of professional learning activities, classroom observation and leadership content knowledge in Turkey. *Journal of Educational Administration*, 58(6), 585–603. <https://doi.org/10.1108/JEA-10-2019-0189>
- Patton, M. Q. (1990). *Qualitative evaluation and research methods* (2nd ed.). Sage.
- Perry, J., Lundie, D., & Golder, G. (2018). Metacognition in schools: What does the literature suggest about the effectiveness of teaching metacognition in schools? *Educational Review*, 71(4), 483–500. <https://doi.org/10.1080/00131911.2018.1441127>
- Petrina, S. (2006). *Advanced teaching methods for the technology classroom*. IGI Global.
- Piaget, J. (1952). *The origins of intelligence in children*. International Universities Press.

- Polit, D. F., & Beck, C. T. (2014). *Essentials of nursing research: Appraising evidence for nursing practice* (8th ed.). Wolters Kluwer.
- Pozas, M., Letzel, V., & Schneider, C. (2019). Teachers and differentiated instruction: Exploring differentiation practices to address student diversity. *Journal of Research in Special Educational Needs*, 20(3), 217–230. <https://doi.org/10.1111/1471-3802.12481>
- Prendergast, S., & Rickinson, M. (2018). Understanding school engagement in and with research. *Australian Educational Researcher*, 12(2), 17–39. <https://doi.org/10.1007/s13384-018-0292-9>
- Pressley, M., Goodchild, F., Fleet, F., Zaichowski, R., & Evans, E. D. (1989). The challenges of classroom strategy instruction. *The Elementary School Journal*, 89(3), 301–342. <https://doi.org/10.1086/461578>
- Rickman, D. (2014). *Race to the Top: Georgia's vision for educational excellence*. Georgia Partnership for Excellence in Education, Georgia Department of Education. <https://www.gadoe.org/Race-to-the-Top/Documents/Race%20to%20the%20Top%20Four%20Year%20Report%20by%20GPEE.pdf>
- Roegman, R., & Woulfin, S. (2019). Got theory: Reconceptualizing the nature of the theory-practice gap in K-12 educational leadership. *Journal of Educational Administration*, 58(1), 2–20. <https://doi.org/10.1108/JEA-01-2018-0002>
- Rovio-Johansson, A. (2020). Reinvestigating the theory and practice gap in participatory educational research. *International Journal for Lesson and Learning Studies*, 9(1), 1–10. <https://doi.org/10.1108/IJLLS-01-2020-094>

- Slavin, R. (1989). Cooperative learning and student achievement. In R. Slavin (Ed.), *School and classroom organization* (pp. 129–156). Routledge.
- Slavin, R. (2020). How evidence-based reform will transform research and practice in education. *Educational Psychologist*, 55(1), 21–31. <https://doi.org/10.1080/00461520.2019.1611432>
- Stains, M., & Vickrey, T. (2017). Fidelity of implementation: An overlooked yet critical construct to establish effectiveness of evidence-based instructional practices. *CBE—Life Sciences Education*, 16(1), 1–11. <https://doi.org/10.1187/cbe.16-03-0113>
- Stake, R. (1995). *The art of case study research*. Sage Publications.
- Stiller, K. D., & Schworm, S. (2019). Game-based learning of the structure and functioning of body cells in a foreign language: Effects on motivation, cognitive load, and performance. *Frontiers in Education*, 4, Article 18. <https://doi.org/10.3389/feduc.2019.00018>
- Stockard, J., Wood, T. W., Coughlin, C., & Rasplika Khoury, C. (2018). The effectiveness of direct instruction curricula: A meta-analysis of a half century of research. *Review of Educational Research*, 88(4), 479–507. <https://doi.org/10.3102/0034654317751919>
- Subban, P. (2006). Differentiated instruction: A research basis. *International Education Journal*, 7(7), 935–947.
- Suppes, P. (1974). The place of theory in educational research. *Educational Researcher*, 3(1), 3–10. <https://doi.org/10.3102/0013189X003006003>
- Swartz, R. D., & Ye, Y. (2018). A comparative correlational study of grades six to eight students' perceptual learning style preference and their learning achievement at Pan-Asia International School, Thailand. *Scholar: Human Sciences*, 10(1), 99–110.

- Tilson, J., Sandretto, S., & Pratt, K. (2017). Connecting theory to practice: Using pre-service teachers' beliefs, theories, and video-recorded teaching to prompt a cycle of praxis. *Teaching and Teacher Education*, 67, 454–463.
<https://doi.org/10.1016/j.tate.2017.07.012>
- Tyack, D., & Cuban, L. (1995). *Tinkering toward Utopia, A century of public school*. Harvard University Press.
- Ünver, G. (2014). Connecting theory and practice in teacher education: A case study. *Educational Sciences: Theory & Practice*, 14(4), 1402–1407.
<https://doi.org/10.12738/estp.2014.4.2161>
- U.S. Department of Education. (2021, June 15). *The federal role in education*.
<https://www2.ed.gov/about/overview/fed/role.html>
- Vadeboncoeur, J. (1997). Child development and the purpose of education: A historical context for constructivism in teacher education. In V. Richardson (Ed.) *Constructivist teacher education: Building new understandings* (pp. 15–37). Falmer Press.
- Walker, K., Dyck, B., Zhang, Z., & Starke, F. (2019). The use of praxis in the classroom to facilitate student transformation. *Journal of Business Ethics*, 157, 199–216.
<https://doi.org/10.1007/s10551-017-3630-3>
- Watson, J. B. (1913). Psychology as the behaviorist views it. *Psychological Review*, 20(2), 158–177. <https://doi.org/10.1037/h0074428>
- Yalçın, M. T., & Eres, F. (2018). A study of validity and reliability on the instructional capacity scale. *Universal Journal of Educational Research*, 6(1), 57–67.
<https://doi.org/10.13189/ujer.2018.060105>
- Yin, R. K. (2009). *Case study research: Design and methods* (4th ed.). Sage Publications.

- Yin, R. K. (2011). *Qualitative research from start to finish*. The Guilford Press.
- Yin, R. K. (2013). *Case study research: Design and methods* (5th ed.). Sage Publications.
- Yin, R. K. (2018). *Case study research and applications: Design and methods* (6th ed.). Sage.
- Zepeda, C. D., Hlutkowsky, C. O., Partika, A. C., & Nokes-Malach, T. J. (2019). Identifying teachers' supports of metacognition through classroom talk and its relation to growth in conceptual learning. *Journal of Educational Psychology, 111*(3), 522–541.
<https://doi.org/10.1037/edu0000300>

APPENDIX A

Liberty University IRB Approval

LIBERTY UNIVERSITY.

INSTITUTIONAL REVIEW BOARD

February 24, 2022

Tonia Maher
Kristy Motte

Re: IRB Exemption - IRB-FY21-22-544 THE APPLICATION OF PRAXIS IN HIGHSCHOOL CLASSROOMS: A QUALITATIVE CASE STUDY

Dear Tonia Maher, Kristy Motte,

The Liberty University Institutional Review Board (IRB) has reviewed your application in accordance with the Office for Human Research Protections (OHRP) and Food and Drug Administration (FDA) regulations and finds your study to be exempt from further IRB review. This means you may begin your research with the data safeguarding methods mentioned in your approved application, and no further IRB oversight is required.

Your study falls under the following exemption category, which identifies specific situations in which human participants research is exempt from the policy set forth in 45 CFR 46:104(d):

Category 2.(iii). Research that only includes interactions involving educational tests (cognitive, diagnostic, aptitude, achievement), survey procedures, interview procedures, or observation of public behavior (including visual or auditory recording) if at least one of the following criteria is met:

The information obtained is recorded by the investigator in such a manner that the identity of the human subjects can readily be ascertained, directly or through identifiers linked to the subjects, and an IRB conducts a limited IRB review to make the determination required by §46.111(a)(7).

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

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

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

Sincerely,

G. Michele Baker, MA, CIP

Administrative Chair of Institutional Research

Research Ethics Office

APPENDIX B

Recruitment Email

Dear Educator:

As a doctoral student in the School of Education at Liberty University, I am conducting research as part of the requirements for a Ph.D. degree in Higher Education: Educational Leadership. The purpose of my research is to explore the application of praxis in public high school classrooms by gaining understanding to how secondary high school teachers practice research-based instructional methods, why high school teachers choose to use instructional methods that are not research-based, and how high school teachers foster self-sufficient learners through their instructional methods. Therefore, I am writing to invite eligible participants to join my study.

Participants must be at or beyond year three in their active educator profession that teaches a core content area such as math, language arts, science, or history. Participants, if willing, will be asked to be interviewed and observed up to three times teaching in their classroom. All participants will member check their interview question responses to ensure their responses are as they desire them to be. It should take approximately thirty minutes to conduct the interview, thirty minutes for member-checking, and twenty-minutes per each classroom observation. Names and other identifying information will be requested as part of this study, but the information will remain confidential.

To participate, please click [here](#).

A consent document will be given to you at the time of the interview. The consent document contains additional information about my research. If you choose to participate, you will need to sign the consent document and return it to me at the time of the interview.

Each participant that completes the interview and three observations will receive a gift card of \$100.

Sincerely,

Tonia R. Maher, M.Ed.
Liberty University, Ph.D. Candidate, School of Education

APPENDIX C

Follow up Email

Dear Research Participant:

As a graduate student in the School of Education at Liberty University I am conducting research as part of the requirements for a Ph.D. degree. Last week an email was sent to you inviting you to participate in a research study. This follow-up email is being sent to remind you to complete the survey if you would like to participate and have not already done so. The deadline for participation is May 1st, 2022.

Participants, if willing, will be asked to be interviewed and observed up to three times teaching in their classroom. Participants may member check their interview question responses to ensure their responses are as they desire them to be. It should take approximately thirty minutes to conduct the interview, approximately thirty minutes to member-check, and twenty-minute per each classroom observation. Names and other identifying information will be requested as part of this study, but the information will remain confidential.

To participate, please click [here](#).

A consent document will be given to you at the time of the interview. The consent document contains additional information about my research. If you choose to participate, you will need to sign the consent document and return it to me at the time of the interview.

Each participant that completes the interview and three observations will receive a gift card of \$100.

Sincerely,

Tonia R. Maher, M.Ed.
Liberty University, Ph.D. Candidate, School of Education

APPENDIX D

Application to Participate

2/15/22, 7:01 PM Application for Research Participation	2/15/22, 7:01 PM Application for Research Participation
<p>Application for Research Participation</p> <p>* Required</p> <p>1. Email *</p> <p>_____</p> <p>2. What is your name? *</p> <p>_____</p> <p>3. How long have you been teaching high school students? *</p> <p>_____</p> <p>4. What high school do you currently teach at? *</p> <p>_____</p> <p>5. What classes do you teach? (eg, math, language arts, science, history) *</p> <p>_____</p> <p>6. What is your gender? *</p> <p>Mark only one oval.</p> <p><input type="radio"/> Male</p> <p><input type="radio"/> Female</p> <p><input type="radio"/> Other: _____</p> <p><small>https://docs.google.com/forms/d/1rASyYc8BPvEJ7eBNXOGRnCX2SRlUP_QlQa3-IQzBw/edit</small></p>	<p>7. What is your race/ethnicity? *</p> <p>Mark only one oval.</p> <p><input type="radio"/> American Indian or Alaska NativeAsian</p> <p><input type="radio"/> Black or African American</p> <p><input type="radio"/> Native Hawaiian or Other Pacific Islander</p> <p><input type="radio"/> White</p> <p><input type="radio"/> Hispanic or Latino</p> <p><input type="radio"/> Other: _____</p> <p>8. What is your preferred method of contact?</p> <p>Mark only one oval.</p> <p><input type="radio"/> Email</p> <p><input type="radio"/> Phone</p> <hr/> <p>This content is neither created nor endorsed by Google.</p> <p>Google Forms</p> <p><small>https://docs.google.com/forms/d/1rASyYc8BPvEJ7eBNXOGRnCX2SRlUP_QlQa3-IQzBw/edit</small></p>

APPENDIX E

Informed Consent

Consent

Title of the Project: Qualitative Case-Study Exploring the Application of Praxis in High School Classrooms

Principal Investigator: Tonia R. Maher, M.Ed., Liberty University, Ph.D. Doctoral Student

Invitation to be Part of a Research Study

You are invited to participate in a research study. To participate, you must be a high school teacher beyond year three at a public Colorado high school, teaching a core content area such as math, language arts, science, or history. Taking part in this research project is voluntary. Please take time to read this entire form and ask questions before deciding whether to take part in this research.

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

The purpose of this qualitative intrinsic case study is to explore the application of educational research-based instruction by secondary high school teachers in Colorado. At this stage in the research, the use of educational research-based instructional methods will be generally defined as praxis or the application of theory in classroom instruction (Freire, 1972). The theory guiding this study is Bruner's (1966) theory of instruction.

What will happen if you take part in this study?

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

1. Interview: Each participant will be interviewed either in person or virtually through Google meets. The interview will be audio recorded and transcribed to ensure that the answers to the questions from the participants reflect their intended response. Participants may member check their responses to ensure their responses are as they desire them to be. Each interview will be approximately 30 minutes in length. Member checking will be approximately 30 minutes.
2. Observation: Each participant will be observed up to three times in their natural setting at a date and time of their agreement. The observations may be either in person or virtual using Google meets. The observations will be audio recorded only and transcribed for accuracy. Each observation will be approximately 20 minutes in length.

How could you or others benefit from this study?

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

Benefits to society include proposals to educational policy, further teacher professional development, teacher preparation programs, and student learning and achievement.

What risks might you experience from being in this study?

The risks involved in this study are minimal, which means they are equal to the risks you would encounter in everyday life.

How will personal information be protected?

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

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Approved on 3-24-2022

the researcher will have access to the records.

- Participant responses will be kept confidential with the use of pseudonyms. Interviews will be conducted in a location where others will not easily overhear the conversation.
- Data will be stored on a password-locked computer and may be used in future presentations. After three years, all electronic records will be deleted.
- Interviews and observations will be recorded and transcribed. Recordings will be stored on a password locked computer for three years and then erased. Only the researcher will have access to these recordings.

How will you be compensated for being part of the study?

Participants who fully complete the interview and observations will receive a gift card of \$100.

Is study participation voluntary?

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

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

If you choose to withdraw from the study, please contact the researcher[s] at the email address/phone number included in the next paragraph. Should you choose to withdraw, data collected from you will be destroyed immediately and will not be included in this study.

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

The researcher conducting this study is Tonia R. Maher. You may ask any questions you have now. If you have questions later, you are encouraged to contact her at [REDACTED]. You may also contact the researcher's faculty sponsor, Dr. Motte, at [REDACTED].

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

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

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

Your Consent

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

Liberty University
IRB-FY21-22-544
Approved on 3-24-2022

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

The researcher has my permission to audio-record me as part of my participation in this study.

Printed Subject Name: _____

Signature & Date: _____

Liberty University
IRB-FY21-22-544
Approved on 3-24-2022

APPENDIX F

Standardized Open-Ended Interview Questions

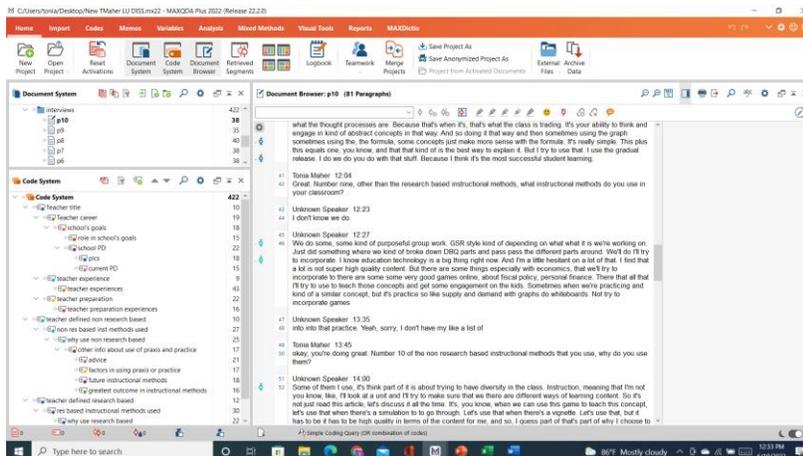
1. Please introduce yourself to me, as if we just met one another. GTQ
2. Please walk me through your teacher preparation experiences, and professional teacher experiences. GTQ
3. Of the teacher preparation experiences and professional teacher experience, which would you say that incorporated the most research-based instructional methods? GTQ
4. What professional development, graduate work, etc., are you currently engaged in and why? GTQ
5. What professional development does your school promote the most for teachers to engage in? GTQ
6. How would you define or compare research-based instructional methods to non-research-based instructional methods? (Praxis vs. Practice) R1
7. What research-based instructional methods do you use in your classroom? R1
8. Of the research-based instructional methods that you use, why do you use them? R1
9. Other than research-based instructional methods, what instructional methods do you use in your classroom? R2
10. Of the non-research-based instructional methods that you use, why do you use them? R2
11. In comparing the use of praxis and practice, which has greater outcomes in student learning and why? R3
12. What factors do you face when choosing to employ praxis or Practice in your instructional methods? R3
13. What are the goals your school is aiming to achieve? R3

14. Of the goals your school is aiming to achieve, what is your role in obtaining those goals for the school? R3
15. I'd like to ask you a question that will prompt you to put everything together, so to speak. Reflecting on your preparation, experience, and use of instructional methodologies, what advice would you give to new teachers coming into the secondary school setting? R1, R2, R3
16. This next question is unique in that it will invite you to look ahead. How do you expect your instructional methods to change or develop over the next several years? R1, R2, R3
17. We've covered a lot of ground in our conversation, and I so appreciate the time you've given to this. One final question... What else do you think would be important for me to know about the use of praxis and practice in your instructional methods in your classroom?
R1, R2, R3

APPENDIX G

Interview Data Analysis Spreadsheet

MAXQDA put interview data into codes



Spreadsheet used to open code and axial code

	A	B	C	D
1	def res based	data driven	data driven - 2	
2	data driven or having some kind of basis in some aspect of the educational experience research base dealing with you know what's been done in the past.	been done in the past		
3	I'm not consciously aware of whether or not methods are research.	not aware of it	not aware of it - 2	data driven 11
4	it holds water. You know what I mean? And I mean, it's, it's proven.	proven	proven - 6	proven 12
5	Marzano	marzano		inquiry, questions, data 8
6	if it's research base, then you know, that it's, it's proven and it's good.	proven good		collaborative 5
7	research backed method has like a study has been done data has been collected and conclusions can be drawn based off of like formal experiments or	study has been done, data collected, conclusions drawn		not known 10
8	So research base, to me it's just kind of like you lecture. You do some group work, you maybe differentiate the work and then you give an inquiry based units and collaborative learning.	lecture, group work, differentiate, assessment		
9	examples kind of definitions.		inquiry based units, collaborative learning definitions	
10	someone has researched it, the level and there's some sort of publication out there that saying, 'Yes, this has proven to be effective in most teachers wouldn't actually know that'	research, publication, proven to be effective		
11	res based used	teachers don't know		
12	buzzwords			
13	gradual release model			
14	scaffolding			
15	Different learning			
16	collaborative assignments projects.			
17	stating objectives.			
18	Making sure students			
19				

Final analysis of interview data

	A	B	C	D	E
4	data driven 11				
5	proven 12	know the difference 35			
6	inquiry, questi ons, data 8	don't know what is and is not praxis 32			
7	collaborative 5	claim both work 31			
8	not known 10				
9		Instruction with greatest outcome			
10	marzano, kagan, scaffold 13	praxis 38			
11	group work, collaborative 15	practice 34			
12	inquiry, questions, data 7	combination 40			
13	differentiate 13	don't know 30			
14		factors 35	Factors		
15	ssl, covid 8	leadership 29	SEL 38		
16	questions/inquiry 4		time 31		
17	teacherimpact/purpose 6		leadership 29	PD, school/district	
18	differentiation 6			PLC 41	
19				SEL 38	
20	authentic learning 5			mandated 25	teacher role, purpose
21	don't know 3				graduate 40
22	back to normal 2				SEL 38
23	they work 16				PLC 41
24	easy/fast 2				equity 37
25	homework 2				
26	diversity 6				
27					
28	engage 13				
29	easy/fast 10				
30	they work 8				
31	organized 6				
32					
33	take risks 12				
34	relationship 10				
35	be organized 8				
36	flexible 6				
37	reflect 3				
38	follow through 2				
39	real education 2				
40					
41	research based 12				
42	combination of both 10				
43	don't know 6				
44	non research based 2				
45					
46	factors 20				
47	combination of both 14				
48	district mandated 4				
49					
50	graduate 12				
51	mentor 11				
52					
53	graduate 16				
54					

Page 1

APPENDIX H**Observation Protocol**

Unscheduled, Nonparticipant Observation, 20 minutes in length

Participant	Grade/Subject	Date:
Descriptive Notes:		
Reflective Notes		

APPENDIX I

Observation Data Analysis Spreadsheet

	A	B	C	D
10	Questions			
11	inquiry			
12	Questions			
13	connects to	themes		
14	p2	Direct instruction 10		
15	Direct instruction	questions 19		
16	lecture	teacher led 5		
17	spiral	collaborate 10	codes	
18	collaboration	group work 9	teacher led 15	
19	accountability	inquiry 5	collaborate 28	
20	plc decided	learning target 8	inquiry/questions 32	
21	I do we do you do	climate 10	relationship 27	codes connected
22	discuss	behavior 9	engage 20	Direct instruction - teacher led
23	teacher led	relationship 8		Learning targets as questions
24	inquiry	practice/homework 12		group work on question, solving a problem
25	questions	engaged 8		relationships are focus
26	p3	student led 2		some students engaged
27	learning target			
28	Questions			* perceptions, thoughts, questions
29	connections			all engaged?
30	questions			community of learners or response to teacher?
31	connected			assessments not observed?
32	practice			How do you know if they know what you want them to know?
33	homework			diversity and meeting students needs not observed
34	questions			
35	practice			
36	p4			
37	Direct instruction			
38	questions			

Page 1

APPENDIX J

CDE Document

A Common Vision of Great Teaching

The Colorado Teacher Quality Standards

Excellent teaching is vital to every student's success: teachers have the honored role of helping to prepare their students for the world ahead.

To have maximum impact on student learning, teachers must develop and evolve along with their students. This involves self-reflection, increased levels of meaningful feedback on instructional practice and an overall commitment to continuously refining their craft.

Identifying the complex components of quality teaching is a fundamental step in supporting teachers' professional growth as well as developing a fair and reliable evaluation process; both aspects of the Great Teachers and Leaders Act. The statewide Teacher Quality Standards provide this shared understanding of the essentials of great teaching—a common vision.

Just as the Colorado Academic Standards provide common expectations for student learning, the Teacher Quality Standards outline the knowledge and skills required of an excellent teacher. They are the core of the evaluation process and offer a tool for teacher self-reflection, goal setting and ongoing professional growth.

The Teacher Quality Standards are foundational to providing every student with what they deserve—excellent teachers who are consistently supported in their efforts to improve their practice and influence student learning in new and powerful ways.



Students have the greatest chance to succeed when their teachers receive meaningful feedback and are supported in their efforts to continuously improve their craft.

QUALITY STANDARD I

Teachers demonstrate mastery of and pedagogical expertise in the content they teach.

The elementary teacher is an **expert** in literacy and mathematics and is knowledgeable in all other content that he or she teaches (e.g., science, social studies, arts, physical education, or world languages). The secondary teacher has knowledge of literacy and mathematics and is an **expert in his or her content endorsement area(s)**.

ELEMENT A: Teachers provide **instruction that is aligned with the Colorado Academic Standards** and their district's organized plan of instruction.

ELEMENT B: Teachers develop and implement **lessons that connect to a variety of content areas/disciplines** and emphasize literacy and mathematics.

ELEMENT C: Teachers demonstrate **knowledge of the content, central concepts, inquiry, appropriate evidence-based instructional practices, and specialized characteristics** of the disciplines being taught.

QUALITY STANDARD II

Teachers establish a safe, inclusive and respectful learning environment for a diverse population of students.

ELEMENT A: Teachers foster a **predictable learning environment** characterized by acceptable student behavior and efficient use of time in which each student has a positive, nurturing **relationship** with caring adults and peers.

ELEMENT B: Teachers demonstrate an awareness of, a commitment to, and respect for **multiple aspects of diversity**, while working toward **common goals** as a community of learners.

ELEMENT C: Teachers **engage students** as individuals, including those with diverse needs and interests, across a range of ability levels by adapting their teaching for the benefit of all students.

ELEMENT D: Teachers **work collaboratively with the families and/or significant adults** for the benefit of students.

QUALITY STANDARD III

Teachers plan and deliver **effective instruction** and create an environment that **facilitates learning** for their students.

ELEMENT A: Teachers demonstrate knowledge about the ways in which learning takes place, including the **levels of intellectual, physical, social, and emotional development of their students.**

ELEMENT B: Teachers use **formal and informal methods to assess student learning, provide feedback, and use results to inform planning and instruction.**

ELEMENT C: Teachers integrate and utilize appropriate available **technology to engage students in authentic learning experiences.**

ELEMENT D: Teachers establish and communicate high **expectations** and use processes to **support the development of critical-thinking and problem-solving skills.**

ELEMENT E: Teachers provide students with opportunities to **work in teams and develop leadership.**

ELEMENT F: Teachers **model and promote effective communication.**

QUALITY STANDARD IV

Teachers demonstrate **professionalism through ethical conduct, reflection, and leadership.**

ELEMENT A: Teachers demonstrate high standards for **professional conduct.**

ELEMENT B: Teachers link professional growth to their **professional goals.**

ELEMENT C: Teachers are able to respond to a complex, **dynamic environment.**

ELEMENT D: Teachers **demonstrate leadership** in the school, the community, and the teaching profession.

APPENDIX K

Document Data Analysis Spreadsheet

	A	B	C	D
1	Doc Analysis			
2				
3	data			
4	pedagogy			
5	expertise			
6	instruction aligned			
7	expert in content			
8	standards	themes		
9	concepts	pedagogy 17		
10	inquiry	expertise 5		
11	evidence based	standards 4		
12	instructional practices	inquiry 3	smaller codes	
13	characteristics	evidence based 2	pedagogical expertise17	
14	connections	diversity 2	expertise5	
15	predictable	relationship 3	leadership5	connections
16	relationship	community 2	standards 4	pedgogical expertise 40
17	goals	engage 3	goals3	environments for diverse learners12
18	diversity	collaborate 2	inquiry3	professionalism 5
19	engage	assess 2	engage3	
20	collaborate	technology 2	relationship3	
21	effective instruction	expectations 2	evidence based2	
22	facilitate learning	professionalism 2	diversity2	
23	teacher knowledge	goals 3	community	
24	intellectual dev	leadership 5	collaborate2	
25	physical dev			
26	social dev SEL			
27	assessments			
28	feedback			
29	result to inform instruction			

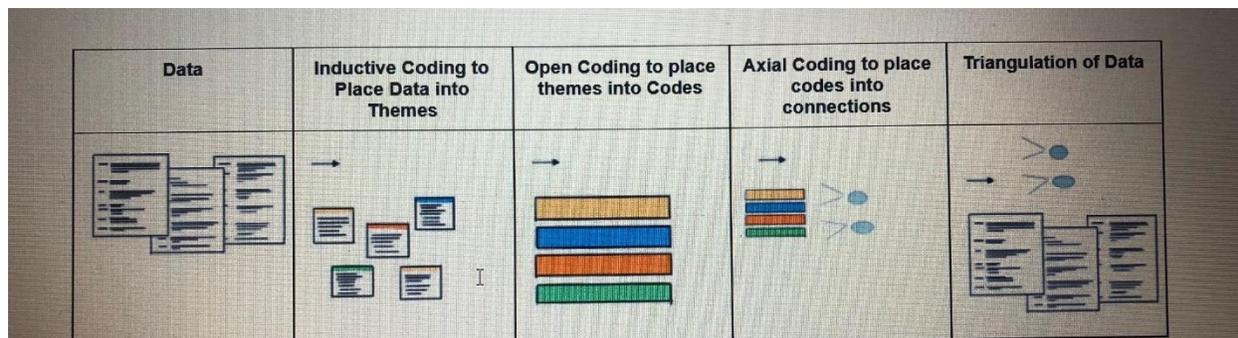
APPENDIX L

Triangulation Data Analysis Spreadsheet

A	D	E
1	Triangulation Data Analysis Spreadsheet	
2	INT	OBS
3	Perceptions and beliefs of praxis vs practice	codes connected
4	know the difference 35	Direct instruction - teacher led 15
5	don't know what is and is not praxis 32	Learning targets as questions 28
6	claim both work 31	group work on question, solving a problem 32
7	Instruction with greatest outcome	relationships are focus 27
8	praxis 38	engaged 20
9	practice 34	
10	combination 40	
11	don't know 30	
12	factors 35	
13	leadership 29	
14	Factors	
15	SEL 38	Final Themes
16	time 31	Factors and Leadership 781 time, PLC, mandated, graduate
17	leadership 29	engaged/diversity/equity/SEL - Relationships - Transforming focus 180
18	PD, school/district	pedagogical expertise 339
19	PLC 41	
20	SEL 38	
21	mandated 25	
22	teacher role, purpose	
23	graduate 40	
24	SEL 38	
25	PLC 41	
26	equity 37	
27		
28		

APPENDIX M

Data Analysis Illustration



APPENDIX N

Data Analysis Spreadsheet

The diagram illustrates a spreadsheet layout for data analysis. The spreadsheet is organized into several distinct regions:

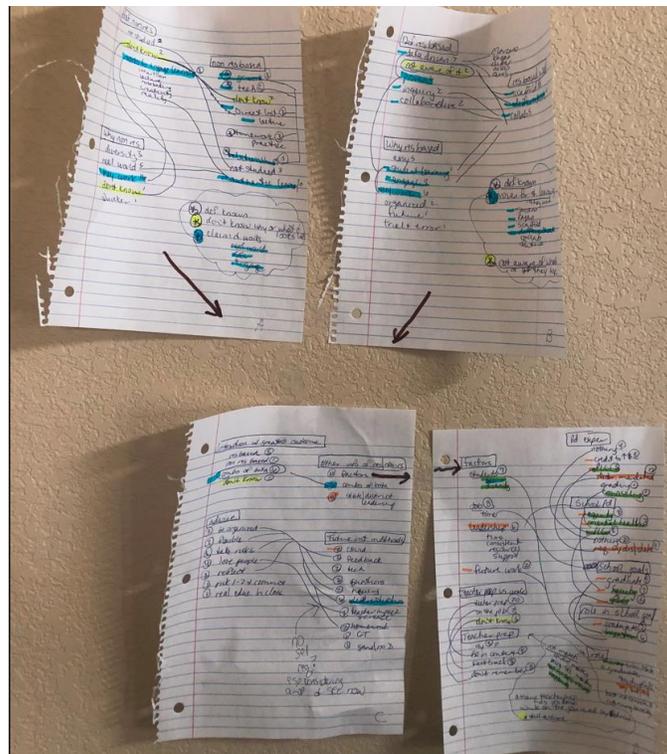
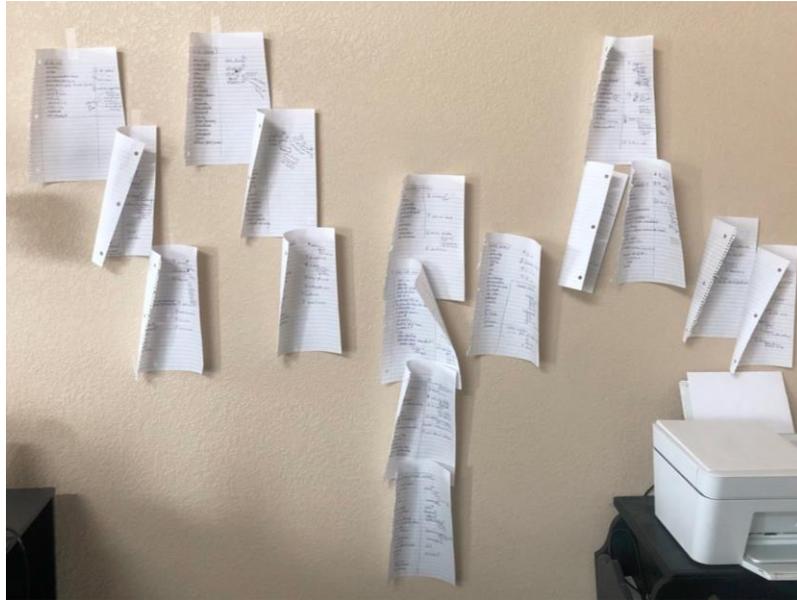
- data**: A large yellow rectangular region on the left side of the spreadsheet.
- themes**: An orange rectangular region positioned to the right of the 'data' region.
- smaller codes**: A green rectangular region positioned to the right of the 'themes' region.
- connections**: A grey rectangular region positioned to the right of the 'smaller codes' region.

Additionally, there is a small green-bordered rectangular box located in the upper right area of the spreadsheet grid.

At the bottom of the spreadsheet, the sheet tabs are visible: "Sheet1", "Sheet2" (highlighted in green), and a plus sign (+) indicating additional sheets.

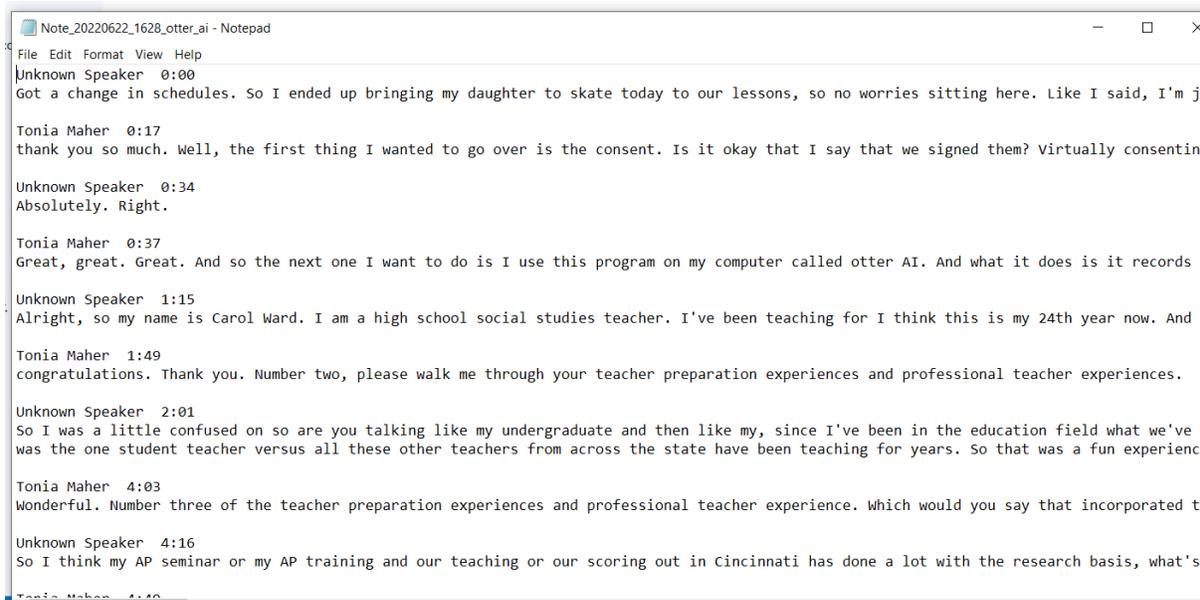
APPENDIX O

Visual of Analyzed Data



APPENDIX P

Transcribed Interview Evidence



APPENDIX Q

Observation Data Evidence

APPENDIX F

Observation Analysis Rubric *P4 Foster* *Math - triangles geo* *4/13* *1-1:45pm*

Participant:	Observation 1	Observation 2	Observation 3
R1: How do secondary high school teachers practice research-based instructional methods?	<u>Direct inst.</u> <u>Questions</u>	- gave instruction of what need - intro today's learning forecast + why - stud asked ques. - wks, book - Pythag - then - projector	- materials
R2: Why do high school teachers choose to use instructional methods that are not research-based?	<u>understand</u> <u>learn</u> <u>engage</u> <u>connect</u>	① asked? - stud answered - teacher took notes on projector - stud copied notes she was writing - gave time to work - gave prompts for spec words - she clarification + encouragement	L & notes
R3: How do high school teachers foster self-sufficient learners in their instructional methods?	<u>homework</u> <u>accountability</u> <u>expectations</u>	- gave example - clar. info of example + why ② asked question - confirmed gave info ③ asked question - gave confirm + info - clarified	teacher provides guided notes - during instr - write down ex. - good class manage - org. structured - good prof. appie + relation - teacher is rich in content knowledge - has expertise - clear - visuals - shows work to stud
Theme, Key words	<u>Direct inst.</u> <u>Questions</u> <u>for understanding</u>	- gave answer to kids - clarified - gave example - gave wk - do a const together - then rest are on students own - can be HW if not complete →, structured tools needed → when over instructor → went thru step by step ④ asked ques - stud provided - confirmed	

Direct instruction
- teacher led
- low tech
- Qs
- practical

APPENDIX R

Code Reduction Evidence

	A	B	C	D	E
1	INT		OBS		DOC
2					
3	know the difference 35		Direct instruction - teacher led 15		pedgogical expertise 40
4	don't know what is and is not praxis 32		Learning targets as questions 28		environments for diverse learners 12
5	claim both work 31		group work on question, solving a problem 32		effective instruction 14
6			relationships are focus 27		professionalism *5
7	praxis 38		engaged 20		
8	practice 34				
9	combination 40				
10	don't know 30				
11	factors 35				
12	leadership 29				
13					
14	SEL 38		Final Themes		
15	time 31		Factors and Leadership, time, PLC, mandated, graduate - 281		
16	leadership 29		engaged/diversity/equity/SEL - Relationships - Transforming focus 180		
17			pedagogical expertise 339		
18	PLC 41				
19	SEL 38				
20	mandated 25				
21					
22	graduate 40				
23	SEL 38				
24	PLC 41				
25	equity 37				
26					

APPENDIX S

Audit Trail

April 12, 2022: P3 and P5 interview today....it is apparent that teachers are not aware of what are and are not research based instructional methods.

April 13, 2022: P4 interview....again, the teacher is not sure of which instructional methods are research based and which are not. Although teachers desire to use praxis, they may need to change it up according to student needs.

April 14, 2022: Interview P6, He is very supportive of PhD studies due to his experience in obtaining his degree.

April 15, 2022: P7 interview...He was a bit leary of being a valid study and wanted to gain his admin permission to be observed. He teaches at a title I school, and he inspires me in his energy. I also observed P4. She is an excellent teacher, she has excellent student-teacher relationships and boundaries. Her students were very well behaved due to the climate and expectations she has established in her classroom.

April 18, 2022:

I observed P5 and P7 today. P5's observation went very well. The teacher has great classroom management and rich discussion with students. He has great energy, passion, and thought to what he does and when. P7's observation went well too. It appears he had to shift and change to a last minute change of letting some students make up a quiz. He relates well with the students and they had great input and conversations in the classroom. The climate and census of the room appeared with more at risk students.

April 19, 2022: