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Teachers' and Principals' Perceptions Regarding the Implementation of Project Based Learning

Kenneth Ray Moore II
Walden University

Walden University

College of Education

This is to certify that the doctoral study by

Kenneth Moore II

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Review Committee
Dr. Mary Lou Morton, Committee Chairperson, Education Faculty
Dr. Kimberley Alkins, Committee Member, Education Faculty
Dr. Kelly Hall, University Reviewer, Education Faculty

Chief Academic Officer
Eric Riedel, Ph.D.

Walden University
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Abstract

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MA, Arkansas State University, 2008

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Dissertation Submitted in Partial Fulfillment

of the Requirements for the Degree of

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Abstract

The majority of teachers in a medium-sized, rural, low socioeconomic high school in the U.S. state of Arkansas were not implementing mandated project-based learning (PjBL) or were not implementing the method with fidelity, which was problematic because students may not have been reaping benefits associated with the method. The reasons underlying those conditions were not well understood. Therefore, the purpose of this study, which was reflected in the study's 2 main research questions, was to better understand why teachers at the focus school were not implementing PjBL or were not implementing PjBL with fidelity and to generate potential solutions for improving teacher implementation of PjBL. Concepts from Ajzen and Fishbein's theory of planned behavior, Bandura's self-efficacy theory, and Deci and Ryan's self-determination theory served as a foundation for understanding the conceptual framework in this study, teacher behavior. In this generic qualitative study, data were collected from 28 teachers using an online anonymous qualitative survey, and from 3 principals using a focus group. Documents from faculty and personnel meetings did not yield usable data. Open and axial coding were used to analyze the survey and focus group data. Results showed that teachers may not implement PjBL or may not implement it with fidelity because (a) they are not knowledgeable about PjBL, (b) they have a negative attitude toward PjBL, (c) they do not feel confident in their ability to implement PjBL, (d) they are not motivated to implement PjBL, and/or (e) they do not have the needed supports to implement PjBL. Results of this study could be used by stakeholders to improve teacher implementation of PjBL at the focus school, which could lead to positive social change in the form of improved student engagement, motivation, and achievement.

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Dedication

This dissertation is dedicated to all the wonderful people who assisted and believed in me throughout this process: my wife, Cassie Moore; my children, Shelby, Kasen, Haven, Harrison, Preslee, and Hayes; my parents, Kenny and Judy Moore; my in-laws, Ray and Brenda Shempert; my dear friends Gene and Beth Boeckmann; my school; and all the students who make education the greatest profession in America.

Acknowledgments

A coach will impact more young people in one year than the average person does in a lifetime.

-Dr. Billy Graham

Education, in my opinion, is the greatest profession in America. As an educator I want to always look for ways to increase my knowledge and understanding in the content I teach. I also want to reach the highest possible level in my own level of education. This requires persistence and a drive like no other as one moves down the various paths it takes to reach these higher levels of education. We are entrusted daily with the care and education of hundreds of children and their future. This is a task too great for many and requires endless hours of preparation. It is a task that drives many educators to not just increase their education, but to be persistent in seeking out strategies to help the young people in our path become the best they can be. We cannot ever give up on any of these precious children who cross our path. Whether a coach or teacher, we have an opportunity to impact more young people than any other profession in America.

I am so grateful to my Lord and Savior Jesus Christ for allowing me the opportunity and the strength to persevere through earning a doctoral degree, and I thank Him for my beautiful wife, Cassie R. Moore, who has been by my side in all my endeavors and has always believed in me. When I questioned my abilities, you always gave me encouragement and the push I needed to continue my studies. I also want to thank all my children for encouraging me and saying, “Daddy, we believe in you.” You

make my life complete, and I love you all very much. Thank you for sacrificing your time with me so that I might complete this degree.

I am thankful for my parents, Kenneth R. Moore Sr. and Judy L. Moore, for instilling in me a hard work ethic and the drive to never quit and for teaching me to always place Christ first in all I do and to lean on Him during trying times. Both of you always have encouraged me to use others' doubts as motivation to do my best and to never reach a level of satisfaction but rather to always push ahead to be better today than I was yesterday. I would like to thank my brother, Wil, for making me laugh when things were hard and trying. You always see the joy in life and always send a word of encouragement right when I need it. This helped me get through the down times.

I want to thank my in-laws, Ray and Brenda Shempert, for helping watch all six of my children at times when my wife was not available and I needed to spend extra time working on my dissertation. I would also like to thank my friends Gene and Beth Boeckmann for constantly encouraging me to push through my degree and never give up. Your belief in me always gave me a push right when I need it.

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Chapter 1: Introduction to the Study

A slow but steady trend in educational transformation from teacher-focused learning to student-focused learning has become apparent in the United States (Aslan & Reigeluth, 2016). At the center of this transformation is project-based learning (PjBL), a student-centered approach to learning characterized by teachers who serve as facilitators of constructivist learning environments (GlobalSchoolNet.org, 2006) that help students learn by applying previous knowledge to new learning experiences (Bruner, 1964). In academic settings where PjBL is implemented, students learn by engaging in real-world and complex problem-solving projects (Buck Institute for Education, 2018). When PjBL is implemented with fidelity (Capraro et al., 2016), the student-focused learning method promotes deeper learning, which prepares students to "master core academic content, think critically and solve complex problems, work collaboratively, communicate effectively, learn how to learn, and develop academic mindsets" (William & Flora Hewlett Foundation [WFHF], 2013, p. 1; see also Alliance for Excellent Education [AEE], 2012, Deeper Learning infographic section). PjBL also can help students become more motivated in their educational endeavors and improve their (a) self-esteem (Morales, Bang, & Andre, 2013); (b) self-confidence (Chen, Hernandez, & Dong, 2015); and (c) personal, social, and leadership skills (Capraro et al., 2016; Morales et al., 2013). These deeper learning and personal characteristics are essential for student success in educational, employment, and civic settings (AEE, 2012; WFHF, 2013).

Although PjBL has many benefits, teachers often are not willing to adopt PjBL in their classrooms or do not implement the method with fidelity (i.e., according to program

guidelines; Han, Yalvac, Capraro, & Capraro, 2015). Teachers' lack of implementation of a specific new pedagogy may be related to their attitudes toward implementing new pedagogies in general (Maskit, 2011) and the level of professional development they receive related to the new pedagogy (Tschannen-Moran & McMaster, 2009). Teachers' may not implement PjBL in particular because they (a) do not have a full understanding of what PjBL is (Condliffe, 2016), (b) do not know how to implement it (Pecore, 2013), or find the process challenging (Aslan & Reigeluth, 2016).

At a medium sized rural, low socioeconomic high school in the U.S. state of Arkansas supported by three principals and serving students in Grades 9-12, the majority of teachers were not implementing PjBL in their classrooms or were not implementing the method with fidelity despite the school mandate to do so (Principal 1 [lead principal], personal communication, January 10, 2017; Principal 2, personal communication, January 10, 2017; Principal 3 [former], personal communication, January 10, 2017). Principals in the shool mandated the use of PjBLat the focus school during the 2014-2015 school year to improve student engagement and promote achievement through improved learning (Principal 1, personal communication, January 10, 2017; Principal 2, personal communication, January 10, 2017; Principal 3, personal communication, January 10, 2017). The decision to mandate the use of PjBL in the school was based on research that has shown PjBL improves student engagement and promotes achievement through improved learning (Principal 2, personal communication, January 10, 2017). This study was needed because the reasons why teachers were not implementing PjBL or were not implementing the method with fidelity were unknown. Research at the focus school could

provide valuable insight that principals could use to initiate collaboration with teachers to promote improved teacher implementation of PjBL and improved teacher implementation of PjBL with fidelity. If teacher implementation of PjBL and the fidelity with which teachers implement PjBL are improved at the focus school, ultimately, student learning outcomes may be improved.

Chapter 1 consists of nine key sections providing an overview of the study: background, problem statement, purpose of the study, research questions, conceptual framework, nature of the study, and the significance. Additionally, definitions for key concepts are provided and the scope and delimitations, assumptions, and limitations of the study are discussed. The chapter concludes with a brief summary.

Background

Most teachers agree that PjBL can be beneficial for both mainstream (Tamim & Grant, 2013; Vega & Brown, 2013; Vens, 2013) and special education students (Hovey & Ferguson, 2014). However, the implementation of PjBL can be complex, leading some teachers to struggle with the process (Bradley-Levine et al., 2010). Challenges faced by teachers trying to implement PjBL can be related to students, to the school, or to the teachers themselves (Bradley-Levine et al., 2010). Among the most noted reasons that teachers find the implementation of PjBL challenging is lack of training (Capraro et al., 2016; Cook & Weaver, 2015; Han, Yalvac, et al., 2015) and support structures (Bradley-Levine et al., 2010; Vega & Brown, 2013). However, teachers' attitudes toward new pedagogies (Maskit, 2011) and their understanding of the PjBL approach to learning

(Condliffe, 2016) and the process for implementation it (Pecore, 2013) also may affect teacher implementation of PjBL and the degree of fidelity to which teachers implement it.

Because the implementation of PjBL can be challenging and at times overwhelming, some teachers do not implement the method or do not implement the method with fidelity (Capraro et al., 2016; Cook & Weaver, 2015; Han, Yalvac, et al., 2015). However, at the focus school, the particular reasons that teachers were not implementing PjBL or were not implementing it with fidelity were unknown. This gap in practice was the focus of this study. This study was needed because it could lead to the collection of valuable information that principals could use to initiate collaboration with teachers to promote improved teacher implementation of PjBL and improved teacher implementation of PjBL with fidelity. By improving teachers' implementation of PjBL and the fidelity with which they implement the method in classrooms, ultimately, student engagement and achievement may be improved.

The setting for this study was a medium-sized, rural, low-socioeconomic high school in Arkansas serving students in Grades 9-12. According to the most recent data from the University of Arkansas Division of Agriculture Research and Extension (UADARE, 2017), the population of the county in which the study site is located was 17,282 in 2015. Of the population, 95% held a high school diploma or higher (UADARE, 2017). Of the population who held a high school degree or higher, 4% held an associate's degree and 12.5% held a bachelor's degree (UADARE, 2017). The median household income in the county in 2014 was $37,725 (UADARE, 2017). Of the adults in this county, 64.5% were eligible for Medicaid and 62.5% of children received free or

reduced-price lunch in 2015 (UADARE, 2017). In 2015, the majority of the population in this county were White (73.2%), 22.8% were Black, 1.9% were Hispanic, and 2.1% were not designated with a specific ethnic origin (UADARE, 2017).

Based on school records, during the 2017-2018 school year, 59 teachers, three counselors, and three principals at the focus school served 790 students. Demographics for those students generally resembled those at the state level. The majority of students were White (66.0%). The next largest ethnic population was Black (30.8%), followed by Hispanic (2.4%), Asian (0.6%), and students of two or more races (0.3%). The majority (51%) of students were labeled as low income, and 14% of students were eligible to receive special education. Teachers in the school had an average of 12 years of teaching experience. The student to teacher ratio was 13:1. This setting is appropriate for this study because the gaps in practice identified in the literature, the lack of implementation of PjBL and the lack of implementation of the method with fidelity, were evident at the focus school.

Problem Statement

Despite the mandated use of PjBL in the classroom for the 2015-2016 school year and teacher training provided during the 2016-2017 school year, the majority of teachers at the focus school (81%) still were not implementing PjBL in their classrooms or were not implementing the method with fidelity (Principal 1, personal communication, January 10, 2017; Principal 2, personal communication, January 10, 2017; Principal 3, personal communication, January 10, 2017). Results of various principals' observations of teachers in their classrooms and ongoing teacher evaluations demonstrated this problem.

Of the 20 teachers under the supervision of Principal 1, almost 90% (n = 18) had not been implementing PjBL at all; the 10% of teachers who had been implementing the method had not been implementing it with fidelity (Principal 1, personal communication, January 10, 2017). Of the 20 teachers under the supervision of Principal 2, approximately 60% (n = 12) had not been implementing PjBL at all, and 20% had not been implementing PjBL with fidelity (Principal 2, personal communication, January 10, 2017). Of the 19 teachers under the supervision of Principal 3, including all but one of the department lead teachers, 55% (n = 11) had not been implementing PjBL at all, and 30% had not been implementing PjBL with fidelity (Principal 3, personal communication, January 10, 2017). In addition, it was not known why teachers were not implementing PjBL or were not implementing it with fidelity. This lack of knowledge about why teachers were not implementing PjBL or were not implementing it with fidelity represented the gap in practice in this study.

The principals at the school deemed the lack of teacher implementation of PjBL and lack of implementation of PjBL with fidelity as problematic because students were potentially missing out on the many benefits of using PjBL. The research has shown that when implemented with fidelity, PjBL has many benefits for students (Capraro et al., 2016; Chen et al., 2015; Morales et al., 2013), including engagement (Johnson & Delawsky, 2013; Morrison, McDuffie, & French, 2015) and learning (Johnson & Delawsky, 2013). Given such knowledge, the purpose of mandating the implementation of PjBL at the focus school was to improve student engagement and ultimately student performance, according to the three principals. However, all three principals at the focus

school recognized that if teachers did not implement PjBL in their classrooms or did not implement the method with fidelity, it would be unlikely that student engagement and achievement would improve as anticipated through the use of that method. Therefore, an exploration of this problem was warranted.

Lack of understanding of why teachers were not implementing PjBL or were not implementing it with fidelity was problematic because without that understanding, efforts to change teacher behavior and improve conditions at the focus school would lack focus and likely be ineffective as a result (Principal 1, personal communication, February 23, 2018; Principal 2, personal communication, February 23, 2018; Principal 3, personal communication, February 23, 2018). "It is vital that . . . [administrators] understand why teachers are or are not implementing" PjBL (Principal 1, personal communication, February 23, 2018). All three principals at the focus school (personal communication, February 23, 2018) also recognized that administrators must have a strong understanding of teachers' perceptions regarding the implementation of PjBL so that they may provide teachers support in critical areas of need. Because insight about why teachers were not implementing PjBL or were not implementing it with fidelity could be used to help administrators work effectively with teachers to improve their PjBL practices and ultimately improve students' academic and personal outcomes, exploration of that gap in practice was warranted.

Purpose of the Study

At the focus school, the majority of teachers were not implementing PjBL in their classrooms or were not implementing the method with fidelity. In addition, the reasons

why teachers were not implementing PjBL or were not implementing it with fidelity were unknown. In personal communications, principals from the focus school have expressed concern over both this problem and the gap in practice that remained evident after mandating the implementation of PjBL in classrooms and providing teaching training on the method.

To improve teacher implementation of PjBL and improve the implementation of the method with fidelity, it was necessary to understand why teachers were not implementing PjBL in their classrooms or were not implementing the method with fidelity. Additionally, it was necessary to ascertain the specific support teachers need so that effective support for teachers could be developed or provided as appropriate and teacher implementation of PjBL with fidelity could be improved. Therefore, the purpose of this study was to better understand why teachers at the focus school were not implementing PjBL in their classrooms or were not implementing it with fidelity and to generate potential solutions for improving teacher implementation of PjBL. Because such an understanding could be best facilitated by exploring teachers' and principals' perceptions, I conducted a generic qualitative study to explore teachers' perceptions regarding the implementation of PjBL and teachers' and principals' perceptions regarding the best means for supporting teachers' efforts to implement PjBL with fidelity.

Research Questions

There were two main research questions (RQs) posed in this study. These main RQs reflected the purposes in this study, which were to better understand why teachers at the focus school were not implementing PjBL in their classrooms or were not

implementing it with fidelity and to generate potential solutions for improving teacher implementation of PjBL, respectively. RQ1 also had three subquestions.

RQ1: Why do teachers in the focus school not implement PjBL in their classrooms or not implement it with fidelity?

RQ1a: What are teachers' perceptions regarding their capacity to implement PjBL in their classrooms?

RQ1b: What are teachers' perceptions regarding the value or detriment of implementing PjBL in the classroom?

RQ1c: What are teachers' perceptions regarding the influence of others on their implementation of PjBL in the classroom?

RQ2: How may teacher implementation of PjBL with fidelity be encouraged and supported in classrooms?

RQs1a-1c, respectively, represented the three underlying concepts of the theory of planned behavior—self-efficacy, attitude, and subjective norm—described by Ajzen and Fishbein (1972) as determinants of a person's intent to behave in a particular way. Although the answers to these research questions provided insight into teacher behavior that could be used to answer RQ1, they may not represent all the possible factors that participants may have indicated contribute to teachers' lack of implementation of PjBL and their lack of implementation of PjBL with fidelity. Rather, the answers were a starting point for analyzing and organizing the data I collected in this study. It was possible that the data would indicate other factors as well, which would be reported as themes and used to help answer RQ 1.

Conceptual Framework

According to Jabareen (2009), a conceptual framework is a knowledge framework made up of various potentially multi-disciplinary concepts that together provide a means for understanding a phenomenon of some type. Although many researchers who have conducted studies related to PjBL have used the PjBL concept as a conceptual framework for their inquiries (e.g., Chen et al., 2015), PjBL as a framework in this study was not appropriate. Although the problem in this study, that teachers in the focus school were not implementing PjBL or were not implementing the method with fidelity, was related to PjBL, the underlying concern was why teachers were not implementing PjBL or were not implementing the method with fidelity. Thus, the focus was not on the PjBL method itself but rather on teacher behavior, which according to the literature, is an outcome of behavioral intent and multiple underlying factors (Ajzen, 2012; Ajzen & Fishbein, 1972).

Behavioral intent refers to a person's decision to act in a certain way (Ajzen, 2012; Ajzen & Fishbein, 1972). Three primary factors are associated with the decision-making processes that contribute to a person's behavioral intent: subjective norm, attitude, and perceived behavioral control (Ajzen, 2012; Ajzen & Fishbein, 1972). Subjective norm refers to the beliefs a person develops based on the expectations of others in their lives whom the person respects, referred to as *important others* (Ajzen, 2012). Attitude refers to a person's disposition toward a particular behavior (Ajzen, 2012). Perceived behavioral control refers to the extent to which a person believes he or she has control over the outcome of a behavior (Ajzen, 2012). A person's decision to behave in a particular way also can be influenced by self-efficacy (Ajzen, 2012; Bandura,

1977) and motivation (Ajzen, 2012; Ajzen & Fishbein, 1972; Deci & Ryan, 1985, 2000, 2008). Self-efficacy can affect behavior by influencing the development of a person's perceived behavioral control, and motivation can affect behavior by influencing the development of a person's subjective norms (Ajzen, 2012). Together, these multiple factors determine a person's behavioral intent, which ultimately drives behavior (Ajzen, 2012). The concept of teacher behavior is discussed more thoroughly in Chapter 2.

Teacher behavior as a conceptual framework for this study was appropriate. According to the principals from the focus school, the majority of teachers were not implementing PjBL or were not implementing the method with fidelity. However, it was not clear why teachers were not implementing PjBL or were not implementing it with fidelity. In other words, the reasons for their behavior were unknown. However, an understanding of behavior can be gleaned from an understanding of behavioral intent, which in turn can be predicted by examining a person's (a) subjective norm and underlying motivations; (b) attitudes; and (c) perceived behavioral control and underlying self-efficacy regarding the behavior in question (Ajzen, 2012; Ajzen & Fishbein, 1972). It stood to reason then, that by exploring teachers' and principals' perceptions regarding the implementation of PjBL, I would be able to generate data about teachers' (a) subjective norms and underlying motivations; (b) attitudes; and (c) perceived behavioral control and underlying self-efficacy regarding the implementation of PjBL, information that could have provided insight into why teachers at the study site were behaving the way they were with regard to the implementation of PjBL. With this understanding of teacher behavior, principals would be able to take action to help teachers change their

behavior at the school with regard to the implementation of PjBL and the implementation of the method with fidelity. Further discussion of the appropriateness of teacher behavior as the framework for this study is presented in Chapter 2.

Teacher behavior as a conceptual framework for this study informed the approach, instrument design, research questions, and data analysis strategies I chose for this study. Teacher behavior as a conceptual framework informed my choice of study approach because, ultimately, the purpose of this study was to better understand teacher behavior, and according to Kahlke (2014) and Merriam (2002), generic qualitative studies are useful when a researcher wants to promote understanding of a topic or situation. Because I wanted to better understand teacher behavior at the focus school in particular, I chose a generic qualitative research approach for this study. (This concept is discussed in detail in Chapter 3.)

Collecting detailed and in-depth data about teachers' and principals' perceptions about teachers' lack of implementation of PjBL and lack of implementation of PjBL with fidelity was likely to provide valuable insight into reasons for teachers' actual behaviors related to those practices. According to Mertler (2016), one-on-one interviews, focus group interviews, and documents are good sources of data for qualitative education research, and Merriam and Tisdell (2016) suggested that interviews are a good way to generate data on people's opinions and views of past events and experiences. Although I recognized that perceptions differ slightly in nature from opinions and views, all three terms express the idea of personal understanding in some way, and therefore, for the purposes of rationalizing choice of data collection method, the terms can be considered

similar in nature. For all of these reasons, I determined that using one-on-one interviews, a focus group interview, and documents was appropriate for generating data about teachers' perceptions, which in this study, was about behavior, specifically why teachers were not implementing PjBL or were not implementing it with fidelity. However, during the development of this study, my role at the study site changed from teacher to principal, and as such I took on supervisory role. As a result, it was necessary for me to collect data from teachers using an online anonymous qualitative survey.

Teacher behavior as a conceptual framework also informed my research questions, which were designed to indirectly generate data about teachers' and principals' perceptions about teacher behavior, in particular, why teachers were not implementing PjBL or were not implementing it with fidelity. Research Questions 1a-1c specifically reflected the behavior-related concepts of (a) subjective norms and underlying motivations; (b) attitudes; and (c) perceived behavioral control and underlying self-efficacy regarding the implementation of PjBL. Finally, teacher behavior as a conceptual framework informed my choice of approaches to data analysis. The purpose of my study was to better understand why teachers at the focus school were not implementing PjBL in their classrooms or were not implementing it with fidelity and to generate potential solutions for improving teacher implementation of PjBL as opposed to quantifying specific teacher behaviors related to the implementation of PjBL; therefore, it was most logical to conduct inductive qualitative analysis on the qualitative survey, focus group, and document data by coding them and developing themes, a process Merriam and

Tisdell (2016) and Mertler (2016) have suggested is appropriate for understanding data of this type.

Nature of the Study

This qualitative study was a generic qualitative study. Generic qualitative studies are used when researchers want to describe and promote a general understanding of a topic or situation (Kahlke, 2014; Merriam & Tisdell, 2016) or when a general body of knowledge about a real-world issue exists but the researcher wants to better understand that issue from the viewpoint of particular study participants as opposed to relying on viewpoint of others expressed in that existing general body of knowledge (Percy, Kostere, & Kostere, 2015). Generic qualitative studies also are appropriate when a researchers' probing question does not obviously align with the prescriptions of other established methodologies (Caelli, Ray, & Mill, 2003; Kahlke, 2014). According to Merriam and Tisdell (2016), generic qualitative studies are well-suited for research in educational settings (Merriam & Tisdell, 2016). This choice of research design was appropriate for this study because this study was qualitative in nature, did not fit the description for other types of qualitative research, was conducted in an educational setting, and was conducted to better understand a real-world issue from the viewpoint of particular study participants as opposed to the viewpoint of the issue expressed in the literature. This concept is discussed in detail in Chapter 3.

I collected data from a variety of sources. I collected data about teachers' (n = 28) perceptions regarding the implementation of PjBL in the focus school using a qualitative survey, and I collected data about principals' (n = 3) perceptions regarding the

implementation of PjBL in the focus school using a focus group. I also collected supplemental data from documents. Specifically, I reviewed faculty meeting minutes and personnel committee meetings from the 2015-2016 and 2016-2017 school years to search for statements made by teachers and principals that expressed their perceptions about PjBL. Topics discussed in faculty meetings are related to the daily administrative management of the school, and topics discussed in personnel committee meetings may be related to any concern any district employee has and wishes to bring before school principals and the superintendent. Both faculty meeting minutes and personnel committee meetings were easily accessible through school resources.

To analyze qualitative data so that meaningful conclusions may be drawn from them, the data must be organized, described, and interpreted (Mertler, 2016). To accomplish the data analysis in this study, I used initial and axial coding. During initial coding, I coded the data using a coding scheme developed based on meaningful units of data. I considered any word, phrase, or sentence that conveys an idea a meaningful unit of data. During axial coding, I categorized the coded data based on patterns of codes that emerged in the data and then conceptualized the categorized data thematically to arrive at inferences about the data. A thorough description of the study methodology, including the data collection and analysis processes, and a discussion of the rationale for choices regarding the study methodology is provided in Chapter 3.

Definitions

Behavior: People's actions resulting from both innate influences (i.e., nature) and consequences of both the environment and learning (i.e., nurture; Bruce & Yearley, 2006;

Skinner, 1976). A multitude of cognitive, motivational, affective, and selection processes are involved in a person's decision-making with regard to his or her behavior (Bandura, 1977). In this study, behavior refers to teachers' actions with regard to the implementation of PjBL.

Constructivist learning environment: A learning environment created based on the assumption that children develop their own sense of reality and learn by integrating new knowledge with previous knowledge (Bruner, 1964). The new knowledge and learning experiences offered to children are culturally infused and "transmitted with varying efficiency and success" (Bruner, 1964, p. 1) depending in part on the way those children cognitively store and retrieved information.

Fidelity: The implementation of an approach (Andrews, 2014), a treatment (Gall, Gall, & Borg, 2007), or an intervention (Owen, 1999) in the exact way the approach, treatment, or intervention was intended to be implemented. In this study, I used fidelity to refer to the exactness to which teachers are following the focus school's expectations for implementing PjBL. A detailed project design rubric created by the Buck Institute of Education (2017) and used by the study site to assess teachers' fidelity of implementation of PjBL in their classrooms is presented in Appendix A.

Professional development: Prepared and integrated learning activities that are designed specifically to help teachers improve their understanding of and ability to implement teaching conventions that improve their effectiveness as teachers (Arkansas Department of Education, 2012). Professional development also may apply to administrators' and paraprofessionals' improved understanding of and ability to

disseminate effective instructional approaches, designs, and competencies (Arkansas Department of Education, 2012). Professional development activities also should be "research-based, standards-based, and continuous" (Arkansas Department of Education, 2012, p. 1) and support students' academic performance. For the purposes of this study, professional development refers to any activities in which teachers engage to improve the knowledge and skills they apply to facilitating individual, team, school-wide, and district-wide improvements for the purpose of increasing student achievement.

Project-based learning (PjBL): A student-centered approach to learning characterized by teachers who serve as facilitators of constructivist learning environments (GlobalSchoolNet.org, 2006) where students learn by engaging in real-world, authentic, and complex problem-solving projects that promote student voice and require sustained inquiry, reflection, critique, and revision (Buck Institute for Education, 2017). Definitions of PjBL vary (Condliffe, 2016).

Assumptions

In this study, I made three assumptions. First, I assumed that the teachers who agree to participate in this study would be a representative sample of the larger population of teachers at the focus school. It was necessary to make this assumption because I was not able to use a random sample and therefore could not guarantee that my sample would be representative of the larger population of teachers at the school despite my efforts to recruit such a sample. For example, it was possible that teachers with certain characteristics could be more drawn to participate in this study than other teachers. In particular, because the focus of this study was the implementation of PjBL at

the focus school, teachers who were strong proponents or opponents of PjBL may have been more interested in expressing their perceptions regarding this method in comparison to teachers who may have had less-extreme perceptions. However, I anticipated that teachers who may have had less-extreme perceptions would have been equally willing to participate in this study because they wanted to support me as a colleague. Therefore, I also anticipated that the sample of teachers in my study would be representative of the larger group of teachers at the school. Because there were only three principals who could have participated in this study, I could not make that same assumption regarding the representativeness of the sample should any of them have chosen not to participate in this study.

Second, I assumed that the teachers and principals who agreed to participate in this study would be honest in their responses to the survey and focus group items, respectively. It was necessary to make that assumption because it was possible that teachers and principals could have responded to survey and focus group items in the way they perceived would have been most helpful to me as a researcher rather than in the way that would have been most truthful. However, this situation was unlikely. As teachers and principals, the potential participants were professionals who valued education and understood the importance of collecting accurate data for research. I anticipated that they would be honest in their responses to the survey and focus group items.

Third, I assumed that the minutes from the faculty meetings and personnel committee meetings, documents from which I planned to collect data, would be accurate records of the discussions that occurred at those meetings. It was necessary to make that

assumption because it was possible that the people responsible for recording those meeting minutes made mistakes during the recording process. However, that situation was unlikely. Because the teacher responsible for recording the minutes at these meetings has been responsible for this task for more than a decade, it was feasible to assume that she has been deemed capable of recording accurate meeting minutes and, subsequently, that the meeting minutes themselves would be accurate.

Scope and Delimitations

At the study site, the majority of teachers in the Grade 9-12 focus school either were not implementing PjBL in their classrooms at all or were not implementing the method with fidelity. This problem was based on teachers' behaviors; therefore, teacher behavior was the aspect of the problem that was of interest in this study. To develop insight on teacher behavior, I explored teachers' and principals' perceptions regarding the implementation of PjBL.

Quantitative data about the extent to which teachers were implementing PjBL and the extent to which they were implementing the method with fidelity was not of interest in this study. Principals from the focus school were fully aware of these conditions. Duplicating their efforts to gather information they already knew would not have been productive.

The effect of PjBL in the focus school also was not explored in this study. The principals had made their decision to implement PjBL in the focus school, a decision made in large part based on the literature that has shown PjBL to be beneficial for students. My interest in this study was not to debate the value of implementing PjBL at

the focus school but to generate data that could be used to better understand why teachers are not implementing PjBL or are not implementing it with fidelity.

The study was delimited to teachers and principals from the focus school. Teachers and principals were obvious choices for sources of data for this study because they are direct sources of their own perceptions. No other source could have better explained teachers' perceptions than teachers, and no other source could have better explained principals' perceptions than principals. When compared to principals, teachers were a more direct source of information regarding teacher behavior associated with the implementation of PjBL because teachers could recount their behavior first hand and provide personal insight into their behavior. However, principals from the focus school have had regular and direct professional conversations with teachers about their implementation of PjBL because the principals were responsible for observing teachers in their classrooms and for evaluating teachers, in part based on their implementation of PjBL. For this reason, principals were likely to have a good understanding of some of the reasons why teachers were not implementing PjBL in their classrooms or were not implementing the method with fidelity. Other staff at the school, such as guidance counselors or the school psychologist, could have been aware of what PjBL is and, through casual or professional conversations with teachers, have had some understanding of teacher perceptions regarding the implementation of PjBL. However, those staff members were not likely to be a significant source of data for this study and, therefore, were not included.

The problem in this study, the majority of teachers at the focus school were not implementing PjBL in their classrooms or were not implementing the method with fidelity, was a matter of behavior. With regard to PjBL, teachers were choosing how they behaved. They were consciously choosing either to implement or not to implement PjBL in their classrooms, and if they were choosing to implement PjBL, they were consciously choosing either to implement the method with fidelity or not to implement the method with fidelity. For this reason, a conceptual framework of behavior was appropriate as the foundation for this study.

One concept overtly related to the topic in this study but not used as the conceptual framework was PjBL. PjBL was the instructional method of concern at the focus school, and for that reason, was inherently related to this study. Therefore, the underlying educational philosophy of the PjBL method and its implementation structure could have served as means for generating ideas about why teachers behave the way they do with regard to the implementation of PjBL. However, the use of this instruction-based framework would have required me to generate ideas about why teachers did or did not implement PjBL in their classrooms and why, if they did implement the method, they did not implement the method with fidelity without using any conceptual or theoretical framework to guide my conclusions about their behavior. Ideas generated in this way would have been assumptive in nature and, therefore, less desirable than using a conceptual framework of behavior as the foundation for this study.

Findings from this study were not generalizable to larger populations. However, findings from this study may still be transferrable to other educational settings. Principals

in other schools may find results of this study insightful if they also supervise teachers who are not implementing PjBL as they have been asked or mandated to do or who are not implementing the PjBL strategies with fidelity.

Limitations

One limitation in this study was related to the assumption that the teachers who agreed to participate in this study would be a representative sample of the larger population of teachers at the focus school. If only teachers who were strong proponents or opponents of PjBL chose to participate in this study, I could not have considered the data I collected to be generally representative of the teachers at the focus school. In that case, administrators may not be willing to take action based on my study findings. However, I anticipated that the perceptions of any teachers who participated in this study would be valuable and would provide insight into the gap in practice identified at the school with regard to the implementation of PjBL. In addition, it was feasible to assume that I would be able to use the data I collected from the documents and the focus group interview with the principals to development an accurate portrait of the conditions at the focus school that school administrators would be likely to use to make future decisions about how to improve teacher implementation of PjBL at the school.

Another limitation in this study was that the results of my study were not generalizable to teachers at other schools in the district or elsewhere. Although the results of this study may be used to make future decisions about how to improve teacher implementation of PjBL and ultimately improve student engagement and achievement at the study site, I would not be able to consider the results of this study generalizable to

other populations. However, in qualitative research, generalizability of findings is not a goal (Merriam & Tisdell, 2016). Because I conducted qualitative research, the lack of generalizability of findings in this study was not a concern. However, because conditions at the study site may resemble conditions in other schools, administrators in other schools may view this study as a valuable starting point for discussion of the implementation of PjBL in their schools and in this way the value of this study may be transferable to other locations.

Significance

Evidence in the literature has shown that the use of PjBL in the classroom promotes positive academic outcomes for students. It stands to reason then, that if teachers in the focus school were not implementing PjBL in their classrooms as required or were not implementing the method with fidelity, it was unlikely that students would receive the academic benefits associated with the use of that method. However, by conducting this study, I generated data I could use to describe teachers' and principals' perceptions regarding the implementation of PjBL at the focus school and better understand teachers' behaviors related to PjBL. By sharing my findings with the principals from the focus school, each principal may gain a better understanding not only of the perceptions of the other principals but also of the teachers. Those perceptions could provide insight into why teachers behave the way they do with regard to the implementation of PjBL. If principals can use the results of this study to develop a clearer understanding of the circumstances surrounding teachers' lack of implementation and lack of fidelity when implementing PjBL, the principals may become better equipped to

initiate changes that could, with the input of teachers, promote improved teacher implementation of PjBL in classrooms. Because the research has shown that PjBL promotes deeper learning (AEE, 2012; WFHF, 2013); motivation; self-esteem (Morales et al., 2013); self-confidence (Chen et al., 2015); and personal, social, and leadership skills (Capraro et al., 2016; Morales et al., 2013), ultimately, it is likely that if all the teachers at the focus school implemented the PjBL and implemented the method with fidelity, students would become more engaged in their own learning, which ultimately could help them achieve better academically. It is in the capacity to help students at the focus school improve academically that this study may promote positive social change.

Summary

When implemented with fidelity, PjBL can affect students' levels of motivation; self-esteem (Morales et al., 2013); self-confidence (Chen et al., 2015); personal, social, and leadership skills; and learning (Capraro et al., 2016; Morales et al., 2013). When students improve in these areas, they are likely to be more successful in the academic setting (AEE, 2012; WFHF, 2013). It was for these reasons, that principals from the focus school mandated that teachers implement PjBL in their classrooms. However, at the time of this study, not all teachers had been implementing PjBL and many of them who were implementing the method were not implementing it with fidelity. That problem was the focus of this study.

For principals from the focus school to take action to initiate change in teacher behavior, it is necessary for them to understand why teachers are behaving the way they are. That lack of understanding was the gap in practice in this study. I anticipated that an

exploration of teachers' and principals' perceptions regarding the implementation of PjBL would generate insightful data about the reasons that teachers were behaving the way they were. To conduct this exploration at the focus site, I surveyed teachers (n = 24) using an online anonymous qualitative survey and interviewed principals (n = 3) using a focus group. I also examined faculty meeting minutes and personnel committee meetings. By sharing the results of my study with the principals from the focus school, I may prompt change and improve teacher implementation of PjBL at the focus school, which ultimately may contribute to improved student outcomes.

In Chapter 2, I provide a review of literature. The purpose of this literature review is to provide context for the exploration of teachers' and principals' perceptions regarding the implementation of PjBL. The discussion of the conceptual framework will help readers understand what factors influence a person's behavior in general, and the discussion of the factors that affect teacher implementation of PjBL will help readers understand what factors influence teachers' behaviors specifically with regard to PjBL. The discussion of the effect PjBL has on student outcomes will help the reader understand the value of exploring this topic as a means of promoting change at the focus school.

Chapter 2: Literature Review

Despite the mandated use of PjBL in the classroom for the 2015-2016 school year and teacher training provided during the 2016-2017 school year, the majority of teachers at the focus school still were not implementing PjBL in their classrooms or were not implementing the method with fidelity. Lack of teacher implementation of PjBL and lack of implementation of PjBL with fidelity at the focus school was problematic considering the array of positive outcomes associated with PjBL. Some positive outcomes of PjBL are associated with students' personal characteristics. Examples of those types of outcomes are self-esteem (Morales et al., 2013), self-confidence (Chen et al., 2015), and motivation (Morales et al., 2013; Morrison et al., 2015; Tamim & Grant, 2013). Other outcomes are associated with students' actions and interactions within their physical environments. Examples of those types of outcomes are engagement (Johnson & Delawsky, 2013; Morrison et al., 2015; Tamim & Grant, 2013); cognition and learning (American Institutes of Research [AIR], 2016; Capraro et al., 2016; Morales et al., 2013; Schwalm & Tylek, 2012); and personal (Schwalm & Tylek, 2012), social (Morales et al., 2013), and leadership skills (Morales et al., 2013). For these reasons, lack of teacher implementation of PjBL and lack of implementation of PjBL with fidelity at the focus school was problematic.

Based on this literature, it was logical to assume that if teachers at the focus school were not implementing PjBL in their classrooms or were not implementing the method with fidelity, students may have been missing out on the potential benefits of learning through PjBL. Therefore, the purpose of this study was to better understand why

the teachers at the focus school were not implementing PjBL in their classrooms or were not implementing it with fidelity and to generate potential solutions for improving teacher implementation of PjBL. I developed this understanding through an exploration of teachers' and principals' perceptions regarding the implementation of PjBL and solutions for improving teacher implementation of PjBL with fidelity.

This section includes a review of the key concepts in the literature related to this study. In particular, I reviewed literature pertaining to teacher implementation of new pedagogies in general and PjBL in particular. Also, to provide readers with an understanding of the value of PjBL, I included a discussion of the effect of PjBL on student outcomes. Readers can use this information to understand data about participating teachers' perceptions of the value of PjBL. Before discussing these topics however, I explain the search strategy I used to complete the literature review. In addition, I present a more thorough discussion of the study's conceptual framework.

Literature Search Strategy

To search for literature pertaining to this study, I used online databases accessed through Walden University Library. The primary databases used were EBSCOhost, JSTOR, PsychINFO, SAGE Journals Online, and Educational Information Resource Center. The primary search term I used was *project based learning*. I also abbreviated the term and searched for literature using *PjBL*. In addition, I searched for literature using associated phrases such as *implementing PjBL*, *challenges/barriers to implementing PjBL*, *outcomes of PjBL*, *PjBL and student self-efficacy*, *PjBL and student self-confidence*, *PjBL and student motivation*, *PjBL and student engagement,* and *PjBL and*

student skills. I also searched for literature using terms and phrases for concepts associated with PjBL such as *challenges/barriers to implementing new teaching strategies* and *deeper learning.* The discussion of the conceptual framework for this study also required a search for literature. Search phrases associated with this study's conceptual framework were *theory of planned behavio*r*, attitude and behavior*, *self-efficacy and behavior,* and *motivation and behavior*.

Initially, to narrow the scope of the sources I accessed for this study, I limited my search to sources from peer-reviewed journals published between 2012 and 2017. However, in the case of the conceptual framework, I did use sources published prior to 2012 because they were seminal sources. In some instances, I used other older sources I found through data mining. I included these sources because they were particularly relevant to my discussion. Also, to fully develop the concepts presented in the conceptual framework and to thoroughly describe the concept of PjBL, I also used books and information from well-respected organizations.

Conceptual Framework

I included a discussion of the conceptual framework for this study in Chapter 1. Here, I include some additional pertinent details about the elements of the framework. Specifically, I address the concepts of attitude, self-efficacy, and motivation as they relate to behavior. Then, I discuss the applicability of the framework to this study.

Attitude

According to Ajzen and Fishbein (1972), a person's behavioral intentions, which are inherently associated with a person's actual behavior, can be predicted by considering

certain influential determinants. These determinants are “attitude toward the behavior, subjective norm, and perceived behavioral control; and these determinants follow, respectively, from beliefs about the behavior's likely consequences, about normative expectations of important others, and about the presence of factors that control behavioral performance” (Ajzen, 2012, p. 438). Normative expectations, which help form a person’s normative beliefs, and subjective norm refer to a person’s beliefs regarding the expectations of others who are important to that person (Ajzen, 2012). The effect of normative beliefs on a person’s subsequent subjective norm is mediated by a person’s level of motivation to meet the expectations of others (Ajzen & Fishbein, 1972). Factors that control behavioral performance and perceived behavioral control refer to a person’s perceptions about his or her capacity to perform a particular behavior and are firmly rooted in the concept of self-efficacy (Ajzen, 2012). To varying degrees and in combination with feedback to actual behavior, these determinants can predict a person’s behavioral intent (Ajzen, 2012).

Self-Efficacy

Ajzen (2012) recognized Bandura’s contributions to the importance of self-efficacy in determining behavioral outcomes. According to Bandura (1977), self-efficacy affects behavior because people have a tendency to avoid situations in which they fear they will fail. If a person does not believe that she or he has the capacity to accomplish a goal, that person will not attempt to accomplish that goal. The link between self-efficacy and a behavior is mediated by cognitive, motivational, affective, and selection processes (Bandura, 1997).

Motivation

Both external and internal motivation may affect a person's choice to act in a particular way (Deci & Ryan, 1985, 2000, 2008). When explaining their self-determination theory, Deci and Ryan (2000) stated that the effect of motivation on behavior is predicated by "innate psychological needs for competence, autonomy, and relatedness" (p. 227), needs that help explain the *what* and *why* of behavior. In addition, it is assumed that people choose to engage in certain behaviors that are relevant to them (Deci & Ryan, 2000). This relatedness helps to explain in what behaviors people choose to engage (Deci & Ryan, 2000). Self-determination theory also assumes that people choose to engage in behaviors that they feel capable of carrying out and over which they feel they have control (Deci & Ryan, 2000). This sense of competence and autonomy helps to explain why people engage in the behaviors in which they engage (Deci & Ryan, 2000).

Applicability of the Framework in This Study

Taken together, Ajzen and Fishbein's (1972) theory of planned behavior, Bandura's (1997) theory of self-efficacy, and Deci and Ryan's (2000) self-determination theory provided a framework for understanding teacher behavior in this study. Although the concept of behavior is the focal point of the theory of planned behavior, the theory is not a theory of behavior change (Ajzen, 2014). Rather, the theory of planned behavior is a means of understanding and predicting a person's intent to behave and actual behavior (Ajzen, 2014). However, the theory can effectively be used as a framework for behavioral change (Ajzen, 2011). The theories of planned behavior, self-efficacy, and self-

determination were applicable to this study because they enabled understanding of the relationship between intent to behave and actual behavior and the application of this understanding to behavioral change.

Literature Review Related to Key Concepts

In this section, the discussion of the literature related to PjBL is divided into four subsections: factors that affect teacher implementation of new pedagogies, factors that affect teacher implementation of PjBL, the effect of PjBL on student outcomes, and the effect of deeper learning on student outcomes. Some of the sections have additional subsections as appropriate. This section ends with a summary of the literature reviewed for this study.

Factors That Affect Teacher Implementation of New Pedagogies

A variety of factors may affect the implementation of new pedagogies. Those factors are the focus of the discussion in this section. New pedagogies that may be introduced in educational settings may be introduced as (a) unique strategies in and of themselves, (b) strategies that are part of a larger teaching approach, or (c) a shift in educational philosophies. Although PjBL can be considered an approach to teaching, because it is the focus of this study, factors that may affect teacher implementation of PjBL are not discussed in this section. Those factors are discussed in the subsequent section dedicated solely to factors that may affect teacher implementation of PjBL.

Stage of professional development. The stage of a teacher's professional development at which a pedagogical change is introduced may affect the teacher's attitude toward the particular pedagogy and ultimately, whether or not the teacher

implements the pedagogical change (Maskit, 2011). In the teacher career model, Burke, Fessler, and Christensen (1984) identified eight stages of a teacher's career: preservice, induction, competency building, career frustration, stability and stagnancy, career wind down, and career exit. Excluding the first and last stages, Maskit (2011) found significant differences in teachers' cognitive, affective, and motivational attitudes toward pedagogical changes during all stages of teacher development. Between the induction and competency building stages, all three types of teacher attitudes toward pedagogical changes not only increased but also reached the highest levels of teachers' careers (Maskit, 2011). Between the competency building stage and the career wind down stage, teachers' attitudes toward pedagogical changes decreased steadily, ending lower than they started during the induction stage (Maskit, 2011). These results indicated that teachers in the induction, competency building, and enthusiasm and growth stages of their careers were more willing to take on professional challenges and to perceive the promotion of change as an integral part of the teaching profession (Maskit, 2011). Thus, teachers in induction, competency building, and enthusiasm and growth stages of their careers would be more willing to accept pedagogical change as a necessary and critical step in improving outcomes in their classrooms (Maskit, 2011).

Type of professional development. Type of professional development can affect level of teacher implementation of new teaching strategies. Tschannen-Moran and McMaster (2009) found that training that includes information, demonstration, practice, and, in particular, coaching can significantly affect ($p < .01$) teacher implementation of a new strategy for teaching beginning readers. Tschannen-Moran and McMaster suggested

that this type of teacher training was found to be effective on teacher implementation of the new teaching strategy because it provided teachers with mastery experiences that helped improve their levels of self-efficacy with regard to implementing the new strategy. Other training formats in which mastery experiences were not fully integrated into the training did not have an effect on teachers' levels of self-efficacy for implementing the new strategy (Tschannen-Moran & McMaster, 2009). Kretlow and Bartholomew (2010) also found that professional development in the form of coaching can help teachers improve the fidelity with which they implement evidence-based teaching practices, and Reinke, Stormont, Herman, and Newcomer (2014) found that coaching can help improve fidelity of implementation of a classroom management intervention.

Factors That Affect Teacher Implementation of PjBL

Teachers perceive PjBL learning to be beneficial for a variety of reasons. Some teachers have reported finding value in PjBL because it is focused on authentic student projects and provides opportunities to engage authentic audiences for those projects (Bradley-Levine et al., 2010). Other teachers find value in PjBL because the approach supports student learning and improves student creativity (Tamim & Grant, 2013). PjBL also can be implemented with similar positive outcomes for exceptional and diverse populations of students (Hovey & Ferguson, 2014). Despite teachers' perceived benefits of PjBL learning, not all teachers embrace the PjBL approach (Vega & Brown, 2013).

Various challenges to implementation may affect the ways in which and the extent to which teachers implement PjBL. Factors that may affect the ways in which and the extent to which teachers implement PjBL include (a) teacher understanding of

project-based learning (AEE, 2012; Condliffe, 2016; Hovey & Ferguson, 2014; Tamim & Grant, 2013; WFHF, 2013); (b) teacher knowledge of concepts that support the implementation of PjBL (Bradley-Levine et al., 2010; Capraro et al., 2016; Condliffe, 2016; Cook & Weaver, 2015; Han, Yalvac, et al., 2015; Hovey & Ferguson, 2014); (c) teachers characteristics (Aslan & Reigeluth, 2016; Bradley-Levine et al., 2010; Hovey & Ferguson, 2014); (d) support structures (Aslan & Reigeluth, 2016; Bradley-Levine et al., 2010; Vega & Brown, 2013); and (e) conflicts of interest (Aslan & Reigeluth, 2016; Bradley-Levine et al., 2010; Rogers, Cross, Gresalfi, Trauth-Nare, & Buck, 2011). In the remainder of this literature review, I discuss these factors. I also use the term *PjBL* in the contexts used by the authors of the studies I reviewed for this chapter.

Teacher understanding of project-based learning. Since its inception, researchers and educators in the PjBL community have not agreed on a universal definition of PjBL (Condliffe, 2016), in part because of the lack of agreement over the type and extent of teacher involvement and guidance that is appropriate for PjBL (Morales et al., 2013). However, in response to the lack of agreement on what constitutes PjBL and how it should be implemented, Condliffe (2016) summarized areas of interest lacking consensus in the PjBL literature published since 2000 and concluded that to be a best practice in education, PjBL should (a) be measurable and adaptable to the contexts of each unique educational setting, (b) address both content and assessment, and (c) be informed by practice. In addition, the AEE and WFHF, two well-respected organizations committed to improving education for students in the United States, have proposed a set of six deeper learning competencies promoted by PjBL that can be useful guidelines

when considering the structure and value of PjBL. As indicated previously, deeper learning has been described as learning that prepares students to "master core academic content, think critically and solve complex problems, work collaboratively, communicate effectively, learn how to learn, [and] develop academic mindsets" (AEE, 2012, Deeper Learning infographic section; WFHF, 2013, p. 1). These competencies are straight forward, with perhaps two exceptions, learning to learn and developing an academic mindset. The idea of learning how to learn refers to students' capacities to be self-directed and to be able to manage and monitor their own learning (WFHF, 2013). Developing an academic mindset refers to students' capacities to become members of academic communities, to develop a sense of academic self-efficacy, and understand the value of effort in the development of knowledge and skills (WFHF, 2013).

Although useful for understanding the fundamental characteristics of PjBL, the various definitions proposed in the literature are broad in scope and only generally descriptive. They also lack descriptions of the finer points of the intervention process. Considering the lack of agreement in the literature as to what constitutes PjBL and how it should be implemented as well as the vagueness with which the student-centered approach to teaching has been described, it is no surprise that teachers describe PjBL in a variety of ways (Tamim & Grant, 2013). Often, teachers define PjBL in terms of its benefits for learning and through the processes they use to implement PjBL in their classrooms: scaffolding, clarifying goals and expectations, facilitating the construction of knowledge, and serving as a guide for learning (Tamim & Grant, 2013). However, many

teachers do not always understand what PjBL is, a condition that can affect if, how, and how well they implement the teaching approach (Hovey & Ferguson, 2014).

Rogers et al. (2011) also found that the way in which teachers understand PjBL can affect teacher implementation of PjBL. In their case study of first year implementation of a PjBL curriculum, Rogers et al. referred to teacher understanding as *teacher orientation* and defined it as "the knowledge and beliefs teachers have for the purpose and goals of using PBL to teach" (p. 896) specific subject content. After studying three ninth grade teachers for 1 year, the researchers concluded that all teachers do not possess the same orientation for teaching and that this orientation for teaching can affect how teachers implement PjBL (Rogers et al., 2011). For example, one teacher in the study perceived the purpose of implementing PjBL to be to prepare students to be successful in the workplace; this teacher perceived himself strictly as a facilitator and never instructed his students directly (Rogers et al., 2011). The other two teachers perceived the purpose of PjBL to be to help students engage with the content in a meaningful way; although one of those teachers functioned as a facilitator in the PjBL process, the other teacher functioned more as a manager and resorted to direct instruction on occasion (Rogers et al., 2011). These results show that the way teachers understand the purpose of PjBL may affect the way they implement the teaching approach (Rogers et al., 2011).

Teacher knowledge of concepts that support the implementation of PjBL. It is essential that educators have knowledge about the PjBL approach if they are to implement PjBL with fidelity. Professional development can be an effective means of

transferring this knowledge to educators (Bradley-Levine et al., 2010; Pecore, 2013). In addition, professional development can help educators gain knowledge that will support their continued development as facilitators of PjBL (Bradley-Levine et al., 2010). Professional development for PjBL that is focused on pedagogy and excludes or minimizes related knowledge can restrict the effect of that professional development on teachers' implementation of PjBL in their classrooms (Cook & Weaver, 2015).

Teachers working in schools where PjBL is implemented are likely to be provided some sort of professional development. These professional development opportunities may be provided in the form of training workshops teachers attend, coaches who visit educational settings, and online resources (Condliffe, 2016). Some teachers have reported wanting access to more in-house professional development opportunities (Bradley-Levine et al., 2010; Hovey & Ferguson, 2014), while other teachers have reported wanting to attend more workshops outside of their work settings (Bradley-Levine et al., 2010).

Regardless of the format of the professional development, increased teacher knowledge through professional development does not inherently translate to fidelity of implementation of PjBL in classrooms (Han, Yalvac, et al., 2015). One reason for this scenario is that teachers may not be able to apply the PjBL-related concepts they learn during professional development to student learning experiences (Han, Yalvac, et al., 2015). For this reason, it is important that professional development opportunities for educators implementing PjBL also include skills for transferring new knowledge to the educators' respective teaching environments (Bradley-Levine et al., 2010). The use of

professional learning communities can help educators transfer new knowledge to applied PjBL practices in their classrooms (Capraro et al., 2016).

Another reason that increased teacher knowledge through professional development may not inherently translate to fidelity of implementation of PjBL in classrooms may be related to teacher longevity. In a longitudinal study of high school science, technology, engineering, and math teachers (STEM), teachers who participated in a 3-year professional development intervention on PjBL demonstrated improved implementation of PjBL in their classrooms; however, levels of fidelity of implementation of PjBL varied among teachers in the participating schools (Capraro et al., 2016). Although the differences could be explained by the challenges to implementation the teachers identified, Capraro et al. noted that teachers in schools with the lowest levels of fidelity of implementation also had the highest rates of teaching longevity. Extrapolating on that finding, Capraro et al. posited that teachers with high rates of longevity not only may be more complacent about their efforts to implement PjBL but also may influence the perceptions of newer and less experienced teachers, thus resulting in the lowest rates of fidelity of implementation of PjBL at schools with the greatest number of teachers with teaching longevity.

Teacher characteristics. Teacher characteristics may affect teacher implementation of PjBL. Those characteristics include self-efficacy, confidence, experience, and mindset. In some literature, the term *confidence* may be interpreted more generally than the term *self-efficacy* depending on the way the term is applied to the topic of the discussion. Also, whereas a person can be confident about a negative imagined

event, a person only is said to have self-efficacy with regard to imagined events that are marked by that person's capacity for success (Bandura, 1997). However, in this discussion, both self-efficacy and confidence refer to teachers' perceptions about their own capacity to implement PjBL with fidelity; therefore, literature pertaining to the influence of self-efficacy and confidence are discussed together.

Self-efficacy and confidence. Teachers may lack the self-efficacy and confidence needed to implement PjBL with fidelity. Some teachers have reported being concerned about their ability to recognize when different students had demonstrated mastery of a concept after the students had completed their projects (Aslan & Reigeluth, 2016; Hixson, Ravitz, & Whisman, 2012). Professional development may help teachers improve their levels of confidence. When Bradley-Levine et al. (2010) surveyed 250 various-level educators implementing PjBL, they found that 69.9% reported increased levels of confidence in their ability to design PjBL experiences for students, and 63.5% reported increased levels of confidence in their ability to implement PjBL in their classrooms after participating in professional development.

Teacher experience. Level of teacher experience also may affect the degree to which teachers implement PjBL with fidelity. This condition was found by Hovey and Ferguson (2014) among teachers of English language learners and exceptional learners. The teachers with greatest levels of experience working with these specific populations were more likely to implement PjBL with them (Hovey & Ferguson, 2014).

Teacher mindset. The transition from teacher-centered to student-centered PjBL can be challenging for teachers who not only must learn a new approach for planning

learning in their classrooms (Bradley-Levine et al., 2010) but who also must learn to relinquish control of the teaching process (Aslan & Reigeluth, 2016) in a constructivist learning environment (Pecore, 2013). For some teachers, it may be difficult to refrain from giving students answers when they are struggling (Nariman & Chrispeels, 2016). Teachers also need to be flexible to facilitate learning in a classroom of students who have various levels of content knowledge and self-regulation skills and who are working on multiple projects simultaneously (Bradley-Levine et al., 2010). Teachers in the later stages of their careers are less willing to accept pedagogical change and therefore less flexible when compared to teachers in the earlier stages of their careers (Maskit, 2011).

Support structures. The implementation of PjBL with fidelity often depends on support structures available to teachers. Teachers have described support structures in broad terms, referring to the need for administrators to consider scheduling, organization, structure, and flow within the school (Vega & Brown, 2013). Teachers also have described support structures more narrowly, including the need for a dedicated administrator in charge of managing PjBL in each school (Vega & Brown, 2013). Support structures also may be described in terms of specific resources teachers need to properly implement PjBL. Having support structures in place in schools can help ensure that all teachers grade student work consistently and that students master skills equally regardless of the instructor they have (Aslan & Reigeluth, 2016).

Time. Teachers have identified the need for support from administrators in the form of time (a) to attend professional development both in-house and external to the educational facility, (b) to engage in collaboration with other educators both at their

school and outside of their school, and (c) to engage with other community members (Bradley-Levine et al., 2010). By attending professional development opportunities, collaborating with other educators, and engaging with members of the community, teachers may gain knowledge that can affect the degree to which teachers implement PjBL with fidelity (Bradley-Levine et al., 2010). On the other hand, lack of time needed to meet the demands of implementing PjBL could lead teachers to feel overwhelmed (Aslan & Reigeluth, 2016). In particular, teachers have described lack of time in relation to planning and student feedback (Albritton & Stacks, 2016).

Technology. Teachers who perceive that PjBL is an effective approach for helping students gain 21st century learning skills are likely to perceive the value of promoting student use of technology (Bradley-Levine et al., 2010) and the use of technology has been found to be related to the extent to which teachers use PjBL in their classrooms (Ravitz & Blazevski, 2014). However, if technology in the classroom malfunctions (Bradley-Levine et al., 2010) or if technology is not available for use in the classroom, implementing PjBL that promotes 21st skills becomes more challenging for teachers. Without adequate technology in classrooms, teachers also may not use strategies such as digital concept mapping tools to implement PjBL in their classrooms (Rye, Landenberger, & Warner, 2013). In addition, repeated technology failures may lead to frustration for students, which ultimately could lead to students' refusal to work on their projects (Bradley-Levine et al., 2010; Hill, 2014).

Conflicts of interest. Teachers have reported that philosophies advocated through PjBL sometimes conflict with their perceived purpose for implementing PjBL. For

teachers who perceive the purpose of PjBL to be, at least to some degree, to prepare students for the workplace, instilling in students a sense of work ethic is an essential element of PjBL (Bradley-Levine et al., 2010). One aspect of work ethic is the consideration for completing work on time according to mandated deadlines; however, some schools, such as those with mastery learning policies, also encourage flexibility in deadlines (Bradley-Levine et al., 2010). Teachers then must choose between allowing the flexibility for deadlines promoted by the school through PjBL and holding students accountable for demonstrating a sense of work ethic by enforcing deadlines (Bradley-Levine et al., 2010).

Other teachers have expressed that philosophies advocated through PjBL may conflict with school and state requirements for student performance. When implementing PjBL, teachers are encouraged to support student-centered learning that includes student directing learning standards (Aslan & Reigeluth, 2016). However, when teachers allow students to direct their own learning, they may not master particular concepts required by the school and state for graduation (Aslan & Reigeluth, 2016). Teachers of math may be especially reluctant to implement PjBL in their classrooms because they feel pressured to meet critical and mandatory performance standards for that subject (Aslan & Reigeluth, 2016).

Supporting the philosophy of authenticity advocated through PjBL also may pose logistical challenges for teachers. To help students demonstrate project authenticity, teachers may arrange for authentic audiences to visit the classroom (Bradley-Levine et

al., 2010). However, the need to schedule this event precludes teachers' ability to be flexible with project deadlines (Bradley-Levine et al., 2010).

Finally, teachers have reported that the lack of flexibility within the PjBL structure has affected their ability to address students' day-to-day needs (Bradley-Levine et al., 2010). In particular, teachers implementing PjBL have noted that students often lack the content knowledge needed to complete their projects and meet state standards (Rogers et al., 2011). In these instances, teachers indicated that direct instruction is necessary (Rogers et al., 2011).

Teachers also have indicated that direct instruction is necessary to teach students the processes associated with PjBL (Vega & Brown, 2013). A prominent element of PjBL is the positioning of teachers as facilitators of student-directed learning, an approach that requires students be responsible for their own learning (Aslan & Reigeluth, 2016). However, the transition from teacher-centered to student-centered PjBL can be challenging for students (Bradley-Levine et al., 2010) because many students lack the self-regulation skills necessary to be self-directed learners (Aslan & Reigeluth, 2016), skills such as time management and self-monitoring (Bradley-Levine et al., 2010). In this new learning scenario, many students struggle to understand and fulfill their new roles in the learning process (Bradley-Levine et al., 2010). Because students' mindset toward their new role in the learning process is critical to the successful implementation of PjBL in classrooms, teachers may struggle to implement PjBL with students who lack self-regulation skills and as a result do not have the mindset of a self-directed learner (Aslan & Reigeluth, 2016). In addition, because many students lack the needed mindset to be

self-directed learners, they can easily become distracted by the freedom associated with the PjBL classroom and get off task or become distracting and disruptive to other students (Bradley-Levine et al., 2010). Teachers may find it difficult to manage off-task, distracting, or disruptive students without direct intervention that is in conflict with the underlying tenets of PjBL (Bradley-Levine et al., 2010).

Effect of Project-Based Learning on Student Outcomes

Participation in PjBL can have diverse positive outcomes for students, including improved cognition and learning, and personal, social, and leadership skills. However, participation in PjBL also can affect students' levels of self-esteem, self-efficacy, self-confidence, engagement, and motivation, which may serve as mediating factors between PjBL and student cognition and learning. These factors are discussed in this subsection.

Self-esteem, self-efficacy, and confidence. Engagement in PjBL may help students improve their levels of self-esteem (Morales et al., 2013). Engagement in PjBL also may help students improve their levels of self-efficacy. In particular, students may experience improved levels of domain-specific self-efficacy because PjBL engages students in real-life problems related to specific subject areas (Chen et al., 2015; DeWaters, Andersen, Calderwood, & Powers, 2014). Engagement in PjBL also may help students improve their levels of self-confidence (Marle et al., 2014). Student confidence may be improved through interactions with other students in which an underlying atmosphere of support is evident (La Porte, 2016). In addition, PjBL exposes students to new social interactions (Sahin & Top, 2015) and prompts them to take risks in their learning process (La Porte, 2016). When students repeatedly engage in social

interactions, their confidence in their ability to be successful in those interactions improves (Sahin & Top, 2015). Similarly, when students take academic risks and are successful, their level of confidence is likely to increase with regard to those particular experiences (La Porte, 2016). The scenario in which student success leads to improved confidence is reflective of Bandura's (1977, 1997) theory of self-efficacy in which mastery experiences contribute to improved self-efficacy.

Engagement and motivation. PjBL may affect levels of student engagement and motivation, which appear to be inextricably related. PjBL improves levels of student engagement (Dole, Bloom, & Doss, 2017; Hall & Miro, 2016) because PjBL promotes self-direction in learning, and when students work on projects that help them become independent learners (Mosier, Bradley-Levine, & Perkins, 2016), are purposeful (Hill, 2014), and that have meaning for them, they engage more deeply with their work (Tamim & Grant, 2013). PjBL also can improve students' levels of engagement because students may perceive the PjBL activities to be fun compared to traditional learning environments (Hill, 2014). Improved levels of student engagement during the learning process are beneficial because student engagement helps improve student motivation to learn (Morales et al., 2013; Morrison et al., 2015).

PjBL also can help motivate students (La Porte, 2016; Marle et al., 2014), which can improve student engagement (Holmes & Hwang, 2016). Because PjBL is focused on real-world problems, student interest in the study topic and project outcome may be increased, which may in turn help motivate students to learn (Morrison et al., 2015; Tamim & Grant, 2013). When compared to students who are not motivated to learn,

students who are motived to learn are likely to engage in projects that include complex concepts (Morales et al., 2013). In these ways, student engagement and motivation to learn may contribute to higher levels of student learning (La Porte, 2016; Morales et al., 2013).

Although the literature has shown that PjBL can help improve students' levels of motivation and engagement, PjBL may not always have that outcome. For example, Johnson and Delawsky (2013) found that when compared to students who do not learn in PjBL environments, students who do learn in PjBL environments have the same or lower levels of behavioral engagement (Johnson & Delawsky, 2013). However, the researchers posited that the study design affected the outcomes. In the study, students participated in two units: one PjBL unit and one non-PjBL unit (Johnson & Delawsky, 2013). Although the same students participated in both of the units, the non-PJBL unit was presented earlier in the semester than the PjBL unit (Johnson & Delawsky, 2013). Citing previous literature, Johnson and Delawsky suggested that because students may naturally begin to disengage half way through a school term, as was the case with the PjBL unit, the decrease in student engagement may not have been a result of student participation in PjBL but rather because of the time during the term in which it was introduced.

Hasni and Potvin (2015) also did not find any effect on student engagement among Canadian students studying science and technology when they participated in student-centered learning that included student projects (i.e., PjBL). Students did report that they preferred to learn in environments that were student centered and that they were generally interested in science and technology (Hasni & Potvin, 2015). However, the

students did not find value in the underlying subject matter and thus were not interested in their projects (Hasni & Potvin, 2015). Hasni and Potvin suggested that educators working with students in student-centered learning environments consider how to improve students' attitudes toward subject matter, which may best be accomplished starting in the youngest grades.

Cognition and learning. When teachers implement PjBL with fidelity, students may experience improvement in learning and cognition (Duke, Halvorsen, Strachan, & Kim, 2017; Hasni et al., 2016). In some cases, PjBL helps students learn general critical thinking skills (Holmes & Hwang, 2016; Mosier et al., 2016), problem solving skills (Morales et al., 2013; Morrison et al., 2015), and 21st century technology skills (Sahin & Top, 2015) as well as become more creative with regard to the ways in which they solve problems (Munakata & Vaidya, 2015; Remijan, 2016; Tamim & Grant, 2013). In other cases, PjBL may help students improve their overall work performance (Tamim & Grant, 2013) and grade-level assessment scores (Capraro et al., 2016; Harris et al., 2015) as well as meet college and career readiness standards (Summers & Dickinson, 2012).

Other researchers also have found that PjBL helps students improve performance in STEM-related subject areas including science (Harris et al., 2015; Walker, Clary, Jones, & Carlton, 2016), engineering (Cogger & Miley, 2012), math (Cervantes, Hemmer, & Kouzekanani, 2015), computer language (Morales et al., 2013), and various computer networking related subjects (Chen et al., 2015). This outcome was found in Capraro et al.'s (2016) study in which STEM teachers engaged in a 3-year, evidence-based, professional development intervention that included professional learning

communities. Capraro et al. found that when teachers implemented PjBL with moderate or high levels of fidelity, student performance on state accountability assessments improved. However, the effect of the STEM PjBL on the 836 students who participated in the study varied according to baseline performance levels (Han, Capraro, & Capraro, 2015). When compared to scores for high and middle level performing students, scores for low level performing students increased most significantly (Han, Capraro, & Capraro, 2015). Improvements in student outcomes in STEM-based PjBL have been found to remain effective over time (Erdogan, Navruz, Younes, & Capraro, 2016). Of these studies on the effect of STEM PjBL on student outcomes, only Capraro et al. (2016) distinguished between low, middle, and high achieving students.

Although PjBL may help students improve academically in STEM-related subjects, PjBL also may help students learn concepts in other specific subject areas (Johnson & Delawsky, 2013). For example, positive outcomes of PjBL environments have been found for students in reading (Cervantes et al., 2015) and social studies (Halvorsen et al., 2012; Summers & Dickinson, 2012). Halvorsen et al. (2012) in particular showed that PjBL may help students from low socioeconomic schools meet social studies assessment benchmarks of students from high socioeconomic schools.

With regard to ethnicity and improved cognition and learning through engagement in PjBL, findings in the literature have been mixed. Some research has shown that PjBL may help Hispanic students improve their academic outcomes in computer networking related subjects (Chen et al., 2015) and STEM-based subjects (Han, Capraro, & Capraro, 2015). However, Erdogan et al. (2016) found no difference among

Hispanic and nonHispanic students with regard to improvements in student outcomes as the result of engagement in STEM-based PjBL. Erdogan et al. did find that when compared to female students, male students experienced a statistically significant greater long-term growth in performance (.93 points) as a result of engagement in STEM-based PjBL. It is possible that Han, Capraro, and Capraro (2015) found improved outcomes among the Hispanic students in their study because those students may have had additional time to learn terminology applicable to their projects.

When implemented with fidelity, PjBL also may help improve student outcomes when used in combination with other teaching approaches. For example, in a study funded by the WFHF, AIR (2016) found that PjBL, as part of a deeper learning platform, helped students achieve improved scores on content knowledge and complex problem solving assessments. At the school in the AIR study, teachers promoted deeper learning through the use of PjBL, student internship opportunities, group work, long-term projects, student participation in study groups and decision making. In addition, PjBL can help improve student outcomes when implemented in educational settings outside of the traditional classroom. When PjBL was implemented in more than 180 student education programs that occur outside of the regularly scheduled school day, students not only gained 21st century learning skills but also developed their own voice (Schwalm & Tylek, 2012).

Although the literature has shown that PjBL can help improve students' cognition and learning, PjBL is not without limitations. Despite demonstrated positive increases in learning based on measured assessments, when students are new to the PjBL

environment, they may perceive their levels of learning to be lower than when they are in traditional learning environments (Edmunds, Arshavsky, Glennie, Charles, & Rice, 2017; Johnson & Delawsky, 2013). Also, PjBL environments may not be ideal for students whose primary language is not English because they may require direct instruction to ensure that they have an understanding of the content knowledge needed to complete their projects (Campbell, 2012). In addition, at-risk students may not benefit from PjBL learning because they likely have unique needs that affect their learning (Han, Capraro, & Capraro, 2016). In addition, when teachers do not implement PjBL with high levels of fidelity, student performance may be negatively affected (Capraro et al., 2016), especially among low-income students (Han, Capraro, & Capraro, 2015). However, this outcome may not be unique to PjBL; it is likely that any new pedagogy could negatively affect student outcomes if not implemented with fidelity (Capraro et al., 2016). The negative effect of not implementing PjBL with fidelity may be mitigated by increasing teacher knowledge during professional development (Capraro et al., 2016).

Personal, social, and leadership skills. When implemented with fidelity, PjBL can help students improve their personal, social, and leadership skills. Students who attend schools focused on deeper learning, in part through the implementation of PjBL, have been found to have higher rates of interpersonal and intrapersonal skills when compared to students in schools that are not actively focused on deeper learning (AIR, 2016). Improvements in students' intrapersonal skills may contribute to accelerated academic and emotional maturation because students engaged in authentic learning experiences learn more than just basic subject content (Cho & Brown, 2013).

Improvements in students' intrapersonal skills as the result of the implementation of PjBL also may be related to improvements in student attendance (Creghan & Adair-Creghan, 2015). For disadvantaged students in particular, PjBL may provide a platform for improving students' attitudes and educational buy-in, which may in turn motivate students to attend school regularly (Creghan & Adair-Creghan, 2015).

Students' social and leadership skills can be improved when they engage in project activities that include play but also require peer-mentoring (Morales et al., 2013) and collaboration (Ryder, Pegg, & Wood, 2012; Sahin & Top, 2015; Tamim & Grant, 2013). Through these activities, the development of skills becomes a social process (Morales et al., 2013; Morrison et al., 2015) focused on verbal communication (Yew & Schmidt, 2012). One social skill that may be developed through PjBL is conflict resolution, a skill critical to success in collaborative learning environments such as is typically the case with PjBL (Lee, Huh, & Reigeluth, 2015). In virtual learning environments where there is little facilitator support, social learning also may take the form of learning communities (Morales et al., 2013).

Summary and Conclusions

This summary is made up of four sections. The first section is a review of the major themes identified in the literature. The second section is a review of the conceptual framework used in this study. The third section is a synthesis of what is known and what is not known in the discipline regarding PjBL. The final section is an explanation of how this study helps fill a gap in the literature.

Major Themes in the Literature

Three major themes emerged as the result of this literature review. The first theme was that different factors can affect teacher implementation of new pedagogies. The factors discussed in relation to that first theme were stage of teacher professional development and type of professional development in which teachers engage. The second theme was that a variety of factors can affect teacher implementation of PjBL. The factors discussed in relation to that second theme were teacher understanding of PjBL, teacher knowledge, teacher characteristics, support structures, and conflicts of interest. The third theme was that PjBL may have a variety of positive outcomes for students. The outcomes discussed in relation to that third theme were (a) self-esteem, self-efficacy, and confidence; (b) engagement and motivation; (c) cognition and learning; and (d) personal, social, and leadership skills.

The themes identified in the literature represent what is known about PjBL and in general demonstrate that PjBL has been established as a valuable approach to meaningful teaching in educational settings. However, educational and school reforms, inclusive of the use of PjBL in classrooms, may be hindered by the extent to which traditional learning structures are engrained in the educational landscape and the requirement that teachers meet local, state, and national accountability standards (Cervantes et al., 2015). As a result, the adoption of PjBL in classrooms has been slow (Cervantes et al., 2015), and much still needs to be understood about the potential for PjBL to improve student outcomes. It is possible that factors external to the PjBL context, such as teacher facilitation style, may be affecting students in PjBL environments and contributing to

improved student outcomes attributed to PjBL (DeWaters et al., 2014). Also, the mediating influence of student demographics and characteristics on outcomes for students engaged in PjBL is not clearly understood. For example, it is not known how factors unique to at-risk students may affect their capacity to benefit from PjBL (Han et al., 2016), why low, middle, and high achieving students may benefit differently from PjBL (Capraro et al., 2016), or why PjBL may be especially helpful for Hispanic students (Chen et al., 2015; Han, Capraro, & Capraro, 2015).

Conceptual Framework

The conceptual framework for this study, teacher behavior, can be understood through concepts fundamental to (a) Ajzen and Fishbein's (1972) theory of planned behavior, which describes behavior in terms of decision making based on subjective norm, attitude, and perceived behavioral control; (b) Bandura's (1977) social cognitive theory based on people's translation of self-efficacy to action; and (c) Deci and Ryan's (1985, 2000, 2008) self-determination theory based on the idea that intrinsic and extrinsic motivators impact decision making and thus behavior. Those concepts are attitude, self-efficacy, and motivation. By understanding teachers' attitudes toward the implementation of PjBL, teachers' perceptions about their self-efficacy for implementing PJBL, and teachers' motivations for implementing PjBL, a clearer understanding of the reasons teachers are not implementing PjBL or are not implementing it with fidelity may be developed.

Filling a Gap in the Literature

This study is a generic qualitative study that was conducted at one school. Because the sample was purposive and small, results of this study could not be generalized to other settings. For this reason, results of this study did not fill a gap in the overall literature per se. However, results from this study may be used to address a gap in practice related to the implementation of PjBL at the study site. More specifically, research at the study site may provide insight into reasons teachers are not implementing PjBL or are not implementing it with fidelity. This information can be shared with principals who could use this valuable insight to initiate collaboration with teachers to promote change in teacher behaviors associated with this gap in practice. By changing teacher behaviors and improving the fidelity of the implementation of PjBL in classrooms, ultimately, student outcomes may be improved. Chapter 3 contains a discussion of the research methods used to generate the data that could be used to achieve that long-range goal.

Chapter 3: Research Method

The purpose of this study was to better understand why teachers at the focus school were not implementing PjBL in their classrooms or were not implementing it with fidelity and to generate potential solutions for improving teacher implementation of PjBL. In this section, I discuss five aspects of the research method for this study: the research design and rationale, the role of the researcher, the specific study methodology, the trustworthiness of the study, and the procedures for ensuring the conduct of ethical research and the ethical treatment of participants. A brief summary of key points is included at the end of the chapter.

Research Design and Rationale

A variety of designs are available to researchers conducting qualitative studies (Creswell, 2014). In this section, I discuss the common types of research designs used for qualitative research. Then, I introduce the generic qualitative study as a research design and explain why it was the most appropriate design for this study of teacher behavior related to the implementation of PjBL and for generating data that can be used to answer the research questions posed in this study:

RQ1: Why do teachers in the focus school not implement PjBL in their classrooms or not implement it with fidelity?

RQ1a: What are teachers' perceptions regarding their capacity to implement PjBL in their classrooms?

RQ1b: What are teachers' perceptions regarding the value or detriment of implementing PjBL in the classroom?

RQ1c: What are teachers' perceptions regarding the influence of others on their implementation of PjBL in the classroom?

RQ2: How may teacher implementation of PjBL with fidelity be encouraged and supported in classrooms?

The most commonly used designs for qualitative research in the social and health sciences are narrative, phenomenology, ethnography, case study, and grounded theory (Creswell, 2014). Most researchers agree on the definitions and uses of narrative, phenomenological, ethnographic, and grounded theory studies (Mertler, 2016). Narrative research involves in-depth exploration of the experiences of typically one or two participants to generate stories that encapsulate the meanings participants associate with their experiences (Mertler, 2016). Phenomenological research involves in-depth analysis of between five and 25 participants to describe the meaning of a particular experience from the perspective of the participants (Mertler, 2016). Ethnographic research involves long-term exposure to a particular population, typically through immersive interaction with the population, to understand cultural and social phenomena associated with that population (Mertler, 2016). In contrast to narrative, phenomenological, and ethnographic research, grounded theory research involves the collection and inductive analysis of data over time for the purpose of generating theory based on that data (Mertler, 2016). None of these study designs were appropriate for this study.

A narrative research design was not appropriate for this study because I intended to collect data from 27 participants (24 teachers and three principals) and I did not intend to express my findings as stories of the participants' lives. A phenomenological research

design was not appropriate for this study because the purpose of this study was to better understand why teachers at the focus school were not implementing PjBL in their classrooms or were not implementing it with fidelity as a unique event rather than to uncover the personal meaning participants associate with the practice. An ethnographic research design was not appropriate for this study because I did not intend to study teachers in the focus school for an extended period or to study them to uncover cultural or social insight about them. A grounded theory research design also was not appropriate for this study because I did not intend to generate theory from the data I collected in this study. After deliberation, I opted to use a case-study design for the study. Whether a case study was appropriate for this study required additional consideration.

Although most researchers agree on the definitions of narrative, phenomenological, ethnographic, and grounded theory research and their function in the research landscape (Mertler, 2016), not all researchers agree on the definition of case-study research or its status as a research method (Caelli et al., 2003; Gay, Mills, & Airasian, 2015; Merriam & Tisdell, 2016; Mertler, 2016; Percy et al., 2015; VanWynsberghe & Khan, 2007). Despite the lack of consensus regarding the definition of case study, commonly, case study research involves intensive analysis (Hancock & Algozzine, 2017) of some sort of unit of analysis, referred to as a case (Fraenkel, Wallen, & Hyun, 2012). However, "a case is a noun, a thing, an entity; it is seldom a verb, a participle, a functioning" (Stake, 2006, p. 1). The case in a study is a bounded system, the boundaries of which can be identified (Gay et al., 2015). For example, researchers may study "one student, one classroom, one school, one program, or one community"

(Mertler, 2016, p. 95). However, a case study also may include multiple cases (Gay et al., 2015).

Customarily, the purpose of conducting a case study is to generate an increased understanding of conditions surrounding the case being studied (Leedy & Ormrod, 2016). "A case study research method is appropriate when the researcher wants to answer a descriptive question (e.g., what happened?) or an explanatory question (e.g., how or why did something happen?)" (Gay et al., 2015, p. 403). Case-study research may be exploratory when researchers want to examine processes surrounding the implementation of a program or other intervention (Gay et al., 2015; Mertler, 2016).

The lack of agreement in defining what constitutes a case study and when it should be used may be evident, in part, due to the origins of the term and its subsequent evolution. In the 1960s and 1970s, when qualitative research was beginning to gain attention among researchers, appropriate terminology was lacking; as a result, the term *case study* was used to describe any nonexperimental, descriptive study (Merriam & Tisdell, 2016). By the 1980s, the idea of the case study as a research method began to emerge (Merriam & Tisdell, 2016). Since the emergence of the case study as a research method, the term has become synonymous with any qualitative study that is not narrative, ethnographic, phenomenological, or grounded theory research (Merriam & Tisdell, 2016). The problem with this scenario is that not all qualitative studies that are not narrative, ethnographic, phenomenological, or ground theory research are inherently case studies (Merriam & Tisdell, 2016). Therefore, it makes sense to recognize that an

additional category is needed to incorporate research that cannot accurately be described as narrative, ethnographic, phenomenological, ground theory, or case study research.

Merriam and Tisdell (2016) have suggested that education research is best characterized as *basic qualitative research*. Kahlke (2014) has used the term *generic* to refer to this basic qualitative research, and Hancock and Algozzine (2017) referred to research intended to be descriptive of a particular population rather than to be generalizable to larger populations or settings as *illustrative*. In 2003, Caelli et al. described the use of generic qualitative research as "quite common" (p. 2), and in 2013, Lichtman stated that it "has gained fairly wide acceptance" (p. 114) since 2003. That the use of a generic qualitative research design has been described as common and fairly widely accepted is not surprising, considering that researchers have been identifying alternatives to narrative, phenomenological, ethnographic, case study, and grounded theory designs for as long as 2 decades prior to this study (e.g., Brink & Wood, 2001; Sandelowski, 2000; Thorne, Kirkham, & MacDonald-Emes, 1997).

Basic (Merriam & Tisdell, 2016) and generic (Kahlke, 2014) qualitative studies are inherently interpretive, innately descriptive, and useful when a researcher wants to promote general understanding of a topic or situation. Generic qualitative research also is useful when a researcher wants to better understand real-world issues from the viewpoint (e.g., beliefs, attitudes, opinions) of the study participants, and is neither interested in the lived experiences of the participants, as would be the case in a phenomenological study, nor a particular unit of analysis, as would be the case in a case study (Percy et al., 2015). Percy et al. (2015) have suggested that researchers use generic qualitative research any

time they are studying how people perceive events that occur in external settings, as opposed to, for example, how situations may make people feel internally.

Based on this current discussion in the literature, this study is best described as a generic qualitative study. First, the purpose of this study was to better understand why teachers at the focus school were not implementing PjBL in their classrooms or were not implementing it with fidelity and to generate potential solutions for improving teacher implementation of PjBL. This exploration was based on a real-world issue and the generation of data was focused on the participants' views of an issue that occurred externally to them. Second, the exploration was not focused on any particular teacher or principal as a unique unit of analysis. Likewise, the school itself did not represent a unit of analysis for the focus of this exploration. Third, I interpreted the data generated in this study to develop a general understanding of a topic or situation (i.e., why teachers at the focus school were not implementing PjBL in their classrooms or were not implementing the method with fidelity).

Because generic qualitative studies are not bound by the philosophical assumptions and processes associated with any specific research design, it is important to identify criteria for establishing rigor in generic qualitative studies (Kahlke, 2014). Although Caelli et al. (2003) also suggested that identifying criteria for establishing rigor is important in generic qualitative research, Caelli et al. argued that its relevance was to establish overall credibility of the study. In addition to identifying criteria for establishing rigor, Caelli et al. suggested that credibility in generic qualitative studies could be demonstrated when researchers identify their theoretical perspective, demonstrate

alignment between their chosen methodology and methods, and identify a clear lens through which the data may be analyzed. In this study, I have demonstrated these concepts.

First, I demonstrated my theoretical perspective by explaining my personal connection to the research problem and the assumptions I made about the topic through the literature I reviewed for Chapter 2. Second, I aligned the study's methodology and methods by choosing to collect data using a focus group and archival documents, two data collection methods associated with qualitative research. I recognized that the collection of qualitative data using a survey is not a recommended practice for qualitative research. However, my role as a principal at the study site necessitated that I use this data collection method to collect data from teachers. Third, I identified criteria for establishing rigor, described in the subsequent Trustworthiness section, including (a) the collection of data from more than one source using more than one data collection method, (b) the inclusion of a detailed explanation of my research processes so that they could be duplicated, (c) the use of member checking when the population allows, and (d) the use of a second coder. Fourth and finally, I established a clear lens through which I analyzed the data by choosing to use an inductive data analysis process that represented my epistemological philosophy that knowledge is socially constructed. By identifying criteria for establishing rigor in this study, identifying the theoretical perspective from which I approached this study, demonstrating alignment between the study methodology and methods, and identifying a clear lens through which I analyzed the data, I provided a

framework for demonstrating the credibility of this study and the use of the generic qualitative research design.

To collect data for this study, I intended to gather data from 27 participants (24 teachers and three principals) one time. I was able to probe principals for rich, thick data during the focus group. However, because I had to use an anonymous qualitative survey to collect data from teachers, I anticipated the data I would receive from teachers would be less detailed. I did anticipate I would be able to generate enough data to generally answer my research questions; however, I did not perceive that collecting qualitative data using one-time discussions with three participants and using an anonymous survey with the remaining participants constituted an in-depth or intensive exploration of a case, as is expected for case study research. Also, although one aspect of my study was the exploration of reasons teachers have not implemented PjBL in their classrooms or have not implemented it with fidelity, the scope of my study was narrow and delimited to the study of teachers and principals with relation to the implementation of PjBL. I did not explore the actual implementation process itself, as would be indicated for a case study. In summary, I did not ignore the noted potential similarities between certain aspects of the study method for this study and certain aspects of the study method for case studies. However, based on my research for this study, I determined that it was more appropriate to describe this study as a generic qualitative study rather than a case study.

Role of the Researcher

The role of the researcher in qualitative research is multifaceted; however, two primary and related functions are that of instrument (Pezalla, Pettigrew, & Miller-Day,

2012; Stake, 2010) and respondent (Pezalla et al., 2012). In order for researchers to collect data during interviews, the researcher must interact with the participant and in doing so, becomes a participant in the process (Pezalla et al., 2012). In this sense, the researcher becomes an instrument of data collection. To be an effective instrument of data collection, a researcher must be a good listener, be patient, and be able to accept silence, all practices that allow participants to reflect and provide valuable responses to questions (Gay et al., 2015). Interviewers also should avoid asking leading questions, avoid judging participants' responses, and keep participants focused on the topic (Gay et al., 2015). Establishing rapport with respondents can help establish a safe environment (Fraenkel et al., 2012) in which participants feel free to answer questions candidly (Gay et al., 2015), which can support the collection of detailed data. Good written communication in the form of interview notes helps the researcher capture initial ideas that emerge during the interview process (Leedy & Ormrod, 2016). The need for good written communication is not limited to the interview; it also is important during the presentation of results when the researcher must express the data in narrative form (Creswell, 2014).

In this study, I assumed the roles of researcher, instrument, and communicator and was responsible for all aspects of data collection, analyses, and presentation of findings. Although I did not conduct individual interviews, I conducted a focus group, during which I was responsible for interviewing a group of participants. In addition to these roles in this study, I also filled a role as an employee in the focus school. At the time of this study, I had worked at the school for 8 years. During that time, in addition to

teaching sixth, seventh, and eighth grade math, Algebra I, Geometry, Algebra II, and Topics in Mathematics, I coached football and baseball and served in additional student mentor and administrative advisory capacities. In May of 2016, I was promoted to athletic director, and in July of 2017 I was promoted to principal, to replace the former Principal 3. As a principal, I was responsible for, among other things, evaluating teachers with regard to the implementation of PjBL in their classrooms. As the athletic director, I was responsible for ensuring that the coaches fulfilled their contractual duties as coaches. I did not, however, evaluate the coaches with regard to their capacities as teachers in their classrooms. In my role of principal, I supervised 19 teachers, and in my role of athletic director, I supervised 13 coaches, two of whom were among the 19 teachers under my supervision as principal. In total, I supervised 30 employees at the focus school. Because teachers were invited to complete an anonymous survey, no teacher should have felt pressured or coerced into participating. Also, although it was possible that the identities of the teacher participants could be discerned through their responses to the survey items, teachers were informed of this possibility and could have decided not to participate in this study for that reason. Participation in this study was not mandatory, and teachers could have chosen not to participate if they felt uncomfortable doing so. It was possible that principals could have decided to participate in this study because they wanted to help me, as a colleague, succeed in my endeavor. Despite that possibility, I did not anticipate that anyone at the focus school would feel obligated to participate. For those reasons, I did not regard my position at the school a concern in this study.

Although a strong proponent of PjBL, I took precautions against research bias and promoted objective thinking through active awareness of my thought processes. When researchers actively engage in objective thinking, researchers are more likely to record data without evaluating or judging them and subsequently to draw conclusions free of bias (Mertler, 2016). Researchers can promote engagement in objective thinking prior to data collection by reflecting on and identifying their potential biases, a process that promotes awareness (Gagnon, 2010; Kahlke, 2014). When a researcher is aware of his or her biases, the researcher can then consciously pay attention that these biases are not injected into the research. In this study, I remained actively aware of my positive regard for PjBL so that I too could consciously pay attention that potential biases were not injected into the research.

Researchers also can decrease the potential for researcher bias in data interpretation by (a) actively acknowledging the potential for researcher bias in descriptive research (Leedy & Ormrod, 2016), (b) using an external auditor or peer debriefer who may identify potential biases (Mertler, 2016), (c) using a second coder to confirm initial data analyses, and (d) conducting member checking to validate findings (Gagnon, 2010). In this study, I helped decrease the potential for researcher bias by using a second coder and conducting member checking with the principals. Further discussion of these processes and their value is presented in subsequent sections in this chapter.

Methodology

Determining relevant data sources, developing or locating suitable instruments for data collection, and choosing appropriate data analysis procedures are critical elements in

successful qualitative research (Creswell, 2014). In this section, I discuss four topics associated with these three elements. Those topics are participant selection; sample size; instrumentation; procedures for recruitment, participation, and data collection; and data analysis.

Participant Selection

The population for this study was teachers and principals from the focus school. This sample was a purposive sample. Researchers engage in purposeful sampling when they recruit participants with specific characteristics for study based on the potential for those participants to be rich sources of information pertinent to the focus of the study (Gall et al., 2007; Patton, 1990). In this study, my interest was in exploring teachers' and principals' perceptions regarding the implementation of PjBL in the focus school and solutions for improving teacher implementation of PjBL with fidelity. It was feasible to assume that teachers would be rich sources of information about teacher' perceptions regarding the implementation of PjBL in the focus school and that principals would be rich sources of information about principals' perceptions regarding the implementation of PjBL in the focus school. Therefore, because the most logical sources of teachers' and principals' perceptions were teachers and principals, I purposefully chose those participants for my study.

A total of 51 people were eligible to participate in this study. All principals who were employed at the focus school during the 2016-2017 school year were eligible to participate in the study (n = 3). All teachers who were employed at the focus school

during the 2017-2018 school year and who either were not implementing PjBL or were not implementing it with fidelity were eligible to participate in the study (n = 48).

Because my potential pool of participants for this study was relatively small, realistically I could only expect to recruit a small sample of teachers. Based on this expectation and having already limited my participant selection to teachers who were not implementing PjBL or were not implementing it with fidelity, I concluded that limiting my sample further by trying to recruit teachers from specific grades and with specific years of teaching experience would not have been feasible and could have hindered my effort to recruit 24 teachers. For the same reason, I did not limit teacher participation based on gender, ethnicity, or any other demographic characteristics. In addition, my intended sample size of teachers (n = 24) was 50% of the total pool of potential teacher participants (N = 48), and I had no reason to expect that the teachers who agreed to participate would not be a representative sample.

It was possible that some teachers who completed the survey may have had more experience than others with regard to implementing PjBL in their classrooms. However, those differences were likely to add dimension to the data. For this reason, teachers were invited to participate in this study regardless of their experience with PjBL. There was no logical reason to exclude any teachers from this study for any reason. For similar reasons, all three principals who worked at the focus school during the 2016-2017 school year were invited to participate in the study. Specific procedures for how participants were identified, contacted, and recruited are presented in the Procedures for Recruitment, Participation, and Data Collection section.

Sample Size

Determining sample size in a qualitative study can be challenging (Guest, Bunce, & Johnson, 2006; Marshall, Cardon, Poddar, & Fontenot, 2013). One reason for this is that appropriate sample size varies based on the characteristics of a study (Creswell, 2014), including the nature of the research questions, data, and analysis processes, as well as the resources a researcher has available to him/her (Merriam & Tisdell, 2016), including time, money, and access to participants (Gay et al., 2015). Another reason that determining sample size in a qualitative study can be challenging is that there is no universal method for doing so (Marshall et al., 2013).

When researchers collect quantitative data, they typically determine sample size using a priori analysis before they begin the data collection process (Guest et al., 2006). Some suggestions have been made for determining sample sizes in qualitative studies before the data collection process begins. For example, many qualitative researchers who collect data using one-on-one interviews use a sample size of 12 (Guest et al., 2006; Onwuegbuzie & Leech, 2007) and those collecting data using focus groups use sample sizes ranging between six and eight (Hennink, 2014; Morgan, 2013). Samples sizes in qualitative studies typically include fewer than 20 participants (Fraenkel et al., 2012; Gay et al., 2015; Marshall, et al., 2013). However, researchers may include up to 60 or 70 participants (Gay et al., 2015).

Although some researchers may determine sample size in qualitative studies before they begin the data collection process, researchers often determine sample size while they are collecting data (Merriam & Tisdell, 2016). Researchers collecting data in

qualitative studies regularly collect data to the point of redundancy (Lincoln & Guba, 1985), when the data can be considered to be saturated (Merriam & Tisdell, 2016). Data saturation is an accepted sign that a researcher has collected enough data to be able to thoroughly answer his or her research question or questions (Merriam & Tisdell, 2016). Surpassing the point of redundancy by one (Lincoln & Guba, 1985) or more participants can help ensure the accuracy of the study results (Gall et al., 2007).

To collect data from principals in this study, I used a focus group interview. Although Creswell (2014), Hennink (2014), and Morgan (2013) suggested that a sample of six to eight is appropriate for a focus group, there were only three principal positions at the focus school. For this reason, it was not possible to have a focus group sample size greater than three.

To collect data from teachers in this study, I used an online qualitative survey made available through SurveyMonkey. Because teachers had to type their responses to my questions, I anticipated teachers' responses would be briefer than they would be if they were speaking their responses in an interview. In addition, I was not present to prompt teachers to expand on their responses or to ask follow-up questions, which limited the amount of data I could collect. For those reasons, I doubled the typical sample size of 12 suggested in the literature for collecting qualitative data using interviews (e.g., Guest et al., 2006; Onwuegbuzie & Leech, 2007) and planned to collect data from 24 teachers. That sample size was realistic considering the typical response rate of surveys is approximately 50% (Baruch & Holtom, 2008; Gay et al., 2015) and there were 48 teachers who fit the criteria for participation in this study. I anticipated my sample size

would be determined by the number of teachers who agreed to complete the survey or the number of teachers needed to reach data saturation, both of which could have been less than 24. However, ultimately, 28 teachers participated in this study. The final sample size was greater than what was intended because five teachers completed the study on the last day of data collection prior to my closing the survey.

Instrumentation

To collect data in this study, I surveyed teachers and interviewed principals in a focus group. To collect data from the teachers and principals, I used instruments I developed myself. I also collected documents, specifically, faculty meeting minutes and personnel committee meetings minutes. In this section, I discuss the survey, the focus group interview protocol, and the documents intended for collecting data. I also discuss the rationale for collecting data using those methods.

Teacher survey and focus group protocol. The qualitative teacher survey included five background items and 11 items specific to PjBL. The teacher survey is presented in Appendix B. The focus group interview protocol for principals included four background items and seven items specific to PjBL. The focus group interview protocol for principals is presented in Appendix C. I developed both the teacher survey and the principal focus group protocol considering the study problem, conceptual framework, and related literature. The survey items were open ended. The focus group items were semi-structured.

The term *validity*, when applied to the field of research, is associated with measurements (Hayes, Richard, & Kubany, 1995; Trochim & Donnelly, 2008), and thus

with quantitative research. For this reason, a discussion of validity was not appropriate in this qualitative study. However, to demonstrate that the instruments I developed were appropriate for generating data that would be useful for answering the research questions posed for this study, in Appendix D, I provide a table of the survey and focus group protocol items, the concepts from the conceptual framework or general literature associated with those items, and the research questions for which they were intended to generate data. The data in this table show the interconnectedness of (a) the content domain, in this case factors that affect behavior; (b) the survey and focus group items; and (c) the research questions.

The potential number of teachers participating in this study was small ($N = 48$). For this reason, it was possible that someone at the focus school could figure out the identities of the teacher participants if I disclosed detailed background information for each unique participant. For this reason, I limited the amount of background data I collected. Also, I did not share teachers' background information in a descriptive table in my study findings. However, it was possible that teachers' characteristics could have helped me better understand their responses to survey items. For example, teachers' years of experience could have been indicative of their capacity to implement new strategies in their classrooms and could have helped to explain why some teacher were more willing to implement PjBL than other teachers. Similarly, teachers' years of experience with PjBL may could have been indicative of their acceptance of PjBL and helped to explain why some teachers were implementing PjBL with more fidelity than other teachers. For this reason, I referred to specific characteristics in my findings only when they helped me

identify patterns of behavior across participants' characteristics and only when I could do so without risk that readers of this study could identify the study participants. Protection of participants is discussed in more detail in the Ethical Procedures section.

Documents. Minutes from both faculty meetings and personnel committee meetings from the 2015-2016 and 2016-2017 school years were collected to search for data about teachers' and principals' perceptions regarding the implementation of PjBL. Topics discussed in faculty meetings typically are related to the daily administrative management of the school, which means that included topics could have been related to PjBL either directly or indirectly. Topics discussed in personnel committee meetings may be related to any concern any district employee has and wishes to bring before school principals and the superintendent, which also means that included topics could have been related to PjBL either directly or indirectly. The faculty meeting and personnel committee meeting minutes were assumed to be reputable sources of data because the teacher responsible for recording the minutes at these meetings has been responsible for this task for more than a decade and thus experienced in the role and because the minutes are available to all staff members, who likely would note errata in the minutes.

Rationale for data collection choices. Determining data collection methods in qualitative research is an important decision (Merriam & Tisdell, 2016). Researchers should consider both the sample population and the purpose for collecting the information that is being generated when making decisions about data collection methods (Merriam & Tisdell, 2016). The most typical sources of data in qualitative research are interviews, observations, and documents (Gay et al., 2015; Merriam & Tisdell, 2016;

Mertler, 2016). In this study, observing teachers would not have been an effective method for generating data about teachers' perceptions. In this section, I provide the rationale for choosing a survey to gather data from teachers, a focus group to gather data from principals, and documents to gather data demonstrating teachers' and principals' perceptions about PjBL.

Qualitative survey. Conducting interviews with teachers would have been the most productive method of generating rich, in-depth data. Collecting data using individual interviews is appropriate when a researcher wants to collect in-depth data from participants that would not be able to be generated through observation of participants (Merriam & Tisdell, 2016), such as information about their experiences, "attitudes, interests, feelings, concerns, and values" (Gay et al., 2015, p. 338). Interviews allow researchers to use prompts to stimulate conversation and probe particular topics of interest (Gay et al., 2015), and when they are conducted in person, are likely to help researchers establish a strong rapport with the interview participants, a condition that can support a safe and trusting interview environment that promotes participant cooperation and openness (Leedy & Ormrod, 2016). However, because of my position of authority at the focus site, conducting interviews with teachers was not an option. Therefore, it was necessary to collect data from teachers using an online anonymous survey.

Typically, surveys are used to collect quantifiable data that are reported numerically (Merriam & Tisdell, 2016). However, surveys may include open-ended questions that allow for the collection of qualitative data (Gay et al., 2015; Merriam &

Tisdell, 2016; Mertler, 2016). These data may then be analyzed thematically using coding (Gay et al., 2015).

Focus group. Collecting data using focus group interviews is appropriate when a researcher wants to collect detailed data about a topic that can provide insight into that topic or another related topic (Hennink, 2014). Because data are collected from a group of participants at one time, it is a time-effective means of collecting a broad range of data (Hennink, 2014). In addition, because the format of the focus group interview is generally less structured than one-on-one interviews (Morgan, 2013), participants are more likely to focus on aspects of the topic that are most important to them (Hennink, 2014). In this way, researchers may gain useful insight into the topic they had not anticipated (Morgan, 2013). The multiple participant format of the focus group also promotes interaction among the participants in such a way that participants may be more inclined to provide rational for their responses (Hennink, 2014). When participants share in this way, researchers not only may gain an understanding about participants' perspectives but also the reasons for those perspectives (Morgan, 2013). Through these processes, participants work together to make sense of the topic or issue they are discussing (Nel, Romm, & Tlale, 2015). Using a focus group interview in this study allowed me to benefit in these same ways.

Not all focus groups are equally effective. The most effective focus group interviews occur among participants who share common characteristics and an interest in the topic of the focus group discussion (Morgan, 2013). Less structured interviews are especially effective when a researcher wants to collect data about participants'

perspectives because, in less structured interview formats, the participants tend to explore the discussion topics in ways that make sense to them (Morgan, 2013). In this study, I designed the focus group interview to be less structured and the focus group interview participants all were principals who promoted PjBL and thus shared a common background. For these reasons, I anticipated that the focus group interview would promote insightful discussion and generate valuable data.

The focus group interview format is not without drawbacks. For example, because multiple people are being interviewed at once, there is only a limited time available for each person to share his or her thoughts, which limits the depth of data that can be collected about participants' personal perspectives or experiences (Morgan, 2013). The multiple participant interview format also may limit the depth of data that can be collected if participants are hesitant to share their personal experiences in front of others (Merriam & Tisdell, 2016). Despite these drawbacks, focus group interviews are an effective means of collecting data to supplement data collected using other methods and can contribute to a researcher's full understanding of a topic (Merriam & Tisdell, 2016).

The topic of this study was not highly personal or culturally sensitive. I did not anticipate that principals who agreed to participate in this study would be hesitant to share their perceptions. Also, because I was not relying on the focus group interviews as the sole source of data for this study but rather to supplement the data I collected from teachers and the documents, the use of a focus group interview to collect data from principals in this study made sense.

Documents. Documents used as sources of data in qualitative research are items that exist as part of the natural research environment (Merriam & Tisdell, 2016). Documents can exist in physical or virtual settings and may include public records, personal documents, popular culture documents, and virtual documents (Fraenkel et al., 2012). Researchers often collect data using documents because they typically are readily available, essentially objective, and stable, and are a nonintrusive method for collecting descriptive information about the study topic that can be used in the same way as data collected using interviews or observations (Merriam & Tisdell, 2016). The analysis of data collected from documents also may have been considered easier to complete than the analysis of data collected using other methods. However, because documents typically exist before a study begins and are not intended to be sources of data for research (Mertler, 2016), they normally are not study-topic specific. For this reason, researchers can expect documents to contain large amounts of extraneous information and information that may not be easily understood or immediately applicable to the research (Merriam & Tisdell, 2016). The choice to collect data from documents in this study was a logical one because the documents would be easy to procure and because I anticipated that recorded statements teachers and principals have made about PjBL in faculty meetings and in personnel committee meetings would reflect their perceptions on PjBL and that these perceptions would be a good supplement to the data I collected using the survey and during the focus group interview for the purposes of answering the research questions posed for this study.

Procedures for Recruitment, Participation, and Data Collection

To collect data in this study, I used both human participants and document artifacts. In this section, I discuss procedures for recruitment, participation, and data collection for the human participants. For the document artifacts, I discuss procedures for accessing the data. No participants were recruited and no data were collected until I received the proper permissions from Walden University and the superintendent of the study site school district.

Human participants. To recruit teachers and principals, I used email as an initial form of contact. Because I had access to the teachers' and principals' email addresses via the teacher portal on the school website and my personal contacts, I did not require outside resources to access participants for this study. To encourage teachers and principals to read their respective invitations to participate in the study, I kept the emails brief.

I sent invitations to all 20 teachers who were under the supervision of Principal 1 and the 12 of 19 teachers who were under my supervision and who had not been implementing PjBL at all or had not been implementing it with fidelity. Because I did not know exactly which 16 of the 20 teachers under the supervision of Principal 2 had not been implementing PjBL at all or had not been implementing it with fidelity, I invited all 20 teachers under the supervision of Principal 2. Therefore, I sent invitations to participate in the study to a total of 52 teachers employed at the focus school during the 2017-2018 school year. After 1 week, I sent a reminder email thanking those who had already agreed to participate in the study and inviting others to consider participating.

The four teachers who did not fit the study's inclusion criteria (i.e., teachers who were implementing PjBL with fidelity) were not expected to contact me regarding participation in the study. Because I invited teachers to complete an anonymous survey, I was not able to screen teachers to ensure that only teachers who met the study criteria were accepted for participation in this study. It was necessary to assume that teachers were honest when they self-reported their eligibility to participate in the study.

When I sent the e-mail invitations to participate in the study, I included the informed consents as attachments. The informed consent included all the details about the study. Specifically, in the informed consent, I explained the purpose of the study, the procedures for participating, the voluntary nature of the study, and the risks and benefits of participating in the study. I also explained how I ensured participant privacy would be maintained. Finally, I provided teachers with contact information for the university representative who served as an additional point of contact for participants should they have had questions or concerns about the study, and I provided principals with contact information for both myself and for the university representative.

The focus group took place on the grounds of the focus school in a conference room that ensured privacy. The focus group took place after the close of the official work day. Principal 3 participated via telephone. Teachers could complete the survey online from any location that was convenient for them and in which they had access to the Internet.

Before participating in this study, all participants had to agree to the terms of the study outlined in the informed consent. A copy of the informed consent was attached to

the digital invitation to participate in the study; however, I also provided copies of the informed consent to principals at the time of the focus group and to teachers when they navigated to the online survey. Principals had to sign a hard copy of the consent form before they were allowed to participate in the focus group and teachers had agree to the terms of the consent form by clicking the *I Consent* button on the survey landing page before they were able to access the survey.

Data were collected over the course of approximately 3 weeks. I anticipated that the focus group would last approximately 60 minutes and that it would take teachers 30-45 minutes to complete the survey depending on the depth of their responses. The focus group actually lasted exactly 47 minutes. Although I originally planned to digitally record the focus group and principals agreed to be recorded when they signed their respective consent forms, they changed their minds when the focus group began. I honored their requests not to be digitally recorded and instead documented their responses manually.

Participants were free to exit the study at any time if they decided they no longer wished to participate. No debriefing process was implemented. However, the expectation was that principals would remain for the entirety of the focus group and that teachers would complete the survey once they had started it. In addition, principals were asked to participate in member checking. During member checking, researchers ask participants to provide feedback on their initial interpretation of the data (Mertler, 2016). To conduct member checking, I emailed my preliminary findings to the principals. Based on the principals' feedback, it was possible that I would make adjustments to my findings to improve their accuracy.

Document artifacts. To supplement the data, I collected from teachers and principals, I collected document artifacts, specifically faculty meeting minutes and personnel committee meetings. Topics discussed in faculty meetings are related to the daily administrative management of the school, and topics discussed in personnel committee meetings may be related to any concern any district employee has and wishes to bring before school principals and the superintendent. Accessing these document artifacts was easy. I had complete access to the faculty meeting minutes via the teacher portal on the school website and was able to retrieve nine documents from each the 2015-2016 school year and the 2016-2017 school year for a total of 18 documents. I requested copies of the personnel committee meetings from the personnel committee chair who emailed me two sets of personnel committee meetings minutes from each of the same two school years for a total of four documents.

Data Analysis Plan

Some methodologists and researchers have stated that different types of research designs warrant different types of data analysis (Creswell, 2014). However, the majority of strategies for analyzing qualitative data are inductive in nature and based on processes for organizing, describing, and interpreting the data (Lichtman, 2013; Mertler, 2016). During the inductive analysis process, a researcher reduces the volume of collected data (Richards, 2015) so that it can be presented in a manageable way, typically using themes (Lichtman, 2013; Mertler, 2016). The reduction of data into themes helps the researcher make sense of the data (Creswell, 2014). To help make sense of the data I collected in this study and present them in a manageable way, I coded the data in two cycles. For the

first cycle of coding, I used the initial coding method, and for the second cycle of coding, I used the axial coding method (see Saldaña, 2009).

Description of initial and axial coding in the literature. Initial coding, sometimes referred to as open coding, is a useful process for examining and comparing data (Saldaña, 2009) by applying a coding scheme to the data (Mertler, 2016). Initial coding is not a "specific formulaic method" (Saldaña, 2009, p. 81) for coding data but rather an open-ended process that provides researchers, especially novice researchers, a starting point for becoming familiar with the data. The process of open coding is an inductive process in which the codes emerge from the data (Fraenkel et al., 2012). The process of open coding is essentially the opposite of selective coding, a process in which the codes are determined before the actual analysis and coding of the data begins (Fraenkel et al., 2012). Axial coding is an extension of initial coding and is useful for categorizing the individually coded data according to shared characteristics (Saldaña, 2009). Categorized data can then be conceptualized thematically for presentation (Mertler, 2016; Saldaña, 2009).

During the initial coding process, the data are broken down into distinct and meaningful units based on the exact data or the context of the data (Mertler, 2016; Saldaña, 2009). This means that a code may be based on a specific characteristic of the data (Saldaña, 2009) or a topic overtly contained in the data or that a code may be generated based on a concept interpreted from the data (Richards, 2015). Codes may be applied to individual words, phrases (Mertler, 2016), sentences, or paragraphs (Fraenkel et al., 2012).

During the axial coding process, coded text is brought together in categories that express the underlying characteristics or attributes of the data coded during the initial coding process (Leedy & Ormrod, 2016; Saldaña, 2009). Often, a code generated during open coding becomes a core category for axial coding (Leedy & Ormrod, 2016). The categories are then considered conceptually (i.e., thematically) in a way that demonstrates a pattern and helps explain the conditions of the phenomenon under study (Merriam & Tisdell, 2016; Saldaña, 2009). During axial coding, data are continuously compared, a process that results in continuous reorganization of the categories within the themes and of the themes themselves (Saldaña, 2009). The process of constantly comparing data and reorganizing categories and themes during data analysis is inductive in nature and one of three methods appropriate for analyzing data in generic qualitative studies (Percy et al., 2015). Using this process allows the researcher to organize a large quantity of data into a meaningful way that provides insight into the topic being studied.

To summarize, initial and axial coding are appropriate processes to use for data analysis in qualitative studies. Initial coding is open ended and does not restrict the researcher to a specific way of coding data or a specific focus for the codes, and the outcome of the axial coding process is a conceptual understanding of a phenomenon under study (Saldaña, 2009). This means that initial coding is an appropriate process for organizing the data from all three data sources in this study and that axial coding, in conjunction with initial coding, is an appropriate means of translating the raw data into conceptually relevant data that can be used in a meaningful discussion to address the study's research questions.

Description of initial and axial coding applied in this study. In this study, initial coding was useful for organizing the data using a coding scheme, and the axial coding process was useful for describing the emerging ideas using categories and interpreting the categories using themes. To code the data, I printed out copies of the surveys and the focus group transcript with wide margins and double spaced text to allow myself room to write above and around the text. No viable data were extracted from the document artifacts; therefore, discussion of the documents is not included in the data analysis process.

As I read through the surveys and transcript, I began to label words and phrases that appeared to be distinct and meaningful as suggested by Mertler (2016) and Saldaña (2009). To ensure no relevant data were inadvertently omitted from the analyses, I followed a line-by-line coding protocol demonstrated by Saldaña. After reviewing the data three times, I considered the initial coding process complete.

To complete the axial coding process, I grouped identified codes into emerging categories or themes as appropriate and made notations on the printed surveys and transcripts. I continued to review the data and made adjustments to the organization of the data and the category titles as needed until I perceived that each category accurately expressed the underlying characteristics or attributes of the data coded during the initial coding process as suggested by Leedy and Ormrod (2016) and Saldaña (2009). At this point in the data analysis process, I used electronic copies of the surveys and transcripts in Word to check my work. On each survey and the transcript, I highlighted coded data according to the categories to which I determined the coded data belonged. Then, I sorted

the data according to color. In that way, I could review the data in chunks according to categories, which allowed me to better identify weaknesses in my analyses. After making additional corrections to the categories as needed, I then organize the categories into themes.

Before attempting to organize the categories into themes, I created a separate Word document onto which I copied only the category titles. Working with only the category titles made it easier for me to identify patterns among the categories. At that point, the category color coding schemes ceased to be relevant for the purpose of grouping the categories into themes. However, I kept the highlighting intact as a visual aid for when I refer back to the color-coded category document. By following that process, all data, including discrepant cases, were analyzed, and I was able to organize a large quantity of data in a meaningful way that provided insight into teachers' and principals' perceptions regarding the implementation of PjBL.

Once I completed the initial and axial coding, I recruited a colleague with coding experience to code five pages of the survey and transcript data. Creswell (2014) suggested that 80% agreement between coders is evidence of good agreement. In this study, I used the same parameter for determining agreement. Both the categories and themes identified by the second coder and myself were similar in nature. Differences in categories were generally a matter of word choice. For example, the second coder referred to teachers' beliefs in ability to implement PjBL as confidence whereas I referred to that concept as self-efficacy. Also, whereas I had developed subthemes, the second coder did not. I attributed this condition to the fact that the second coder did not code all

the available data but rather only a sample of the data. I concluded that my codes, categories, and themes appropriately represented the essence of the collected data.

Trustworthiness

Researchers who conduct qualitative studies typically do not use the same sampling, data collection, and data analyses methods used by researchers conducting quantitative studies (Guba & Lincoln, 1981; Trochim & Donnelly, 2008). Researchers who conduct qualitative data also approach their research from different perspectives of reality (Merriam & Tisdell, 2016). For these reasons, qualitative research should not be evaluated according to the parameters of validity and reliability used to judge quantitative research (Guba & Lincoln, 1981; Merriam & Tisdell, 2016; Trochim & Donnelly, 2008). Rather, qualitative research is best evaluated based on the use of ethical procedures employed during the study (Merriam & Tisdell, 2016) and whether the conclusions researchers draw from the study are credible, confirmable, dependable, and transferable (Guba & Lincoln, 1981; Trochim & Donnelly, 2008), concepts long accepted in the field of qualitative research (Denzin & Lincoln, 2018). By demonstrating credibility, confirmability, dependability, and transferability in this study, I was able to provide evidence that the conclusions I drew are meaningful, demonstrate a deep understanding of the topic, and may be useful.

Credibility refers to the extent to which the study results are deemed believable (Mertler, 2016). The perceptions of participants are critical in qualitative research because it is the participants' constructed realities that a researcher strives to understand (Trochim & Donnelly, 2008). Based on this insight, it is logical that credibility be

established in conjunction with the participant in some way (Trochim & Donnelly, 2008). One process for establishing credibility in conjunction with participants is to conduct member checking. Member checking is often misunderstood as the process of checking the correctness of transcribed interview data with participants. However, member checking, in its intended form, refers to the sharing of initial findings (i.e., analyzed data) with study participants for the purpose of seeking their feedback regarding the accuracy of the researcher's interpretations of the data (Merriam & Tisdell, 2016; Mertler, 2016). In this study, I established credibility by conducting member checking and making adjustments to the data based on feedback from principals' as appropriate.

The credibility of study findings can be improved by triangulating the data (Lincoln & Guba, 1985; Mertler, 2016). Triangulation of data occurs when a researcher uses multiple sources and methods of data collection (Gay et al., 2015; Hancock & Algozzine, 2017; Mertler, 2016). Through the process of merging these varying data, the researcher is able to corroborate them and thus demonstrate the data are credible (Merriam & Tisdell, 2016). In this study, I triangulated the data by collecting data from teachers using an online anonymous qualitative survey and principals using a focus group.

Confirmability refers to the extent to which other researchers can corroborate study findings (Trochim & Donnelly, 2008). Although qualitative research is inherently subjective and reflective of the particular participant group under study, providing a detailed description of the instruments used for data collection as well as the participant selection and data analyses processes used in the study can help enhance confirmability

in a study (Trochim & Donnelly, 2008). In addition, qualitative study results can be confirmed using a second coder to demonstrate coder consistency (Richards, 2015). Using this process, two coders analyze the same data set and then search for agreement in the applied coding schemes (Merriam, 2002; Richards, 2015). Agreement between coders represents a means by which a researcher can confirm study findings. In this study, I used results of coder consistency testing to demonstrate the confirmability of the study findings.

Dependability refers to the stability of the data (Mertler, 2016; Trochim & Donnelly, 2008) and the extent that findings can be considered consistent with the data generated for the study (Merriam & Tisdell, 2016). Stability of the data can be demonstrated by communicating with the study's audience any changes that occurred during the process of conducting the study that might have had an effect on the study findings (Mertler, 2016; Trochim & Donnelly, 2008). Consistency between the generated data and the study findings can be demonstrated by exposing any potential researcher biases and the steps taken by the researcher to minimize the effect of those biases (Merriam & Tisdell, 2016). Consistency between the generated data and the study findings also can be demonstrated by showing that well-developed data collection instruments were used to generate the study data (Saldaña, 2009). Additionally, because "triangulated conclusions are more stable than any of the individual vantage points from which they were triangulated" (Creswell, 2014, p. 107), triangulation of data can be used to demonstrate consistency between the generated data and the study finding and thus to show the dependability of the study results.

Prior to the start of this study, I had the opportunity to address study dependability through discussion of potential biases and the demonstration of the data collection instruments as well-developed and well-aligned for the study's research questions. Also, I triangulated my data by collecting them from multiple sources and using multiple collection processes. Finally, after the data collection and analysis processes were complete, I described departures from the original plans for data collection and analysis, further demonstrating study dependability.

Although the purpose of qualitative data is not to generate findings that can be generalized to other populations, transferability refers to the possibility that the study results may have value in other settings (Trochim & Donnelly, 2008). Another aspect of this transferability is the extent a reader can connect with the setting of the study (Mertler, 2016). By connecting with the setting of a study, individual researchers are better able to determine the applicability of the study results in their own unique settings (Trochim & Donnelly, 2008). To ensure that readers can connect with the setting of the study, researchers can provide conceptualized descriptions of the setting (Mertler, 2016) using rich details and descriptions (Leedy & Ormrod, 2016) and expose any potential researcher biases that could influence the relationship between the researcher and the study participants or affect the interpretation of the study data (Fraenkel et al., 2012). In this study, I developed the transferability of the study findings by providing a rich, thick description of the study setting and participants to the extent that I was able to do so without risk to participant confidentiality.

Ethical Procedures

It is essential in a research study to maintain the ethical protection of participants. Throughout this study, I used ethical procedures to ensure that all participants' rights were protected and that they were all treated with sensitivity and respect. The protection of participants prior to their engagement in this study was supported in a variety of ways.

First, I did not recruit any participants or collect any data before I received approval to conduct my research from Walden University's Institutional Review Board (#07-06-18-0245246, expiration July 5, 2019) and the study site. Previously, the district superintendent and the three principals at the focus school expressed verbal support for this study.

Second, no participants should have felt pressured to participate in the study. As discussed previously, data were collected from teachers anonymously, and the principals from whom I collected data were my peers. If participants did not wish to participate in the study, they did not have to participate, and participants were free to withdraw at any time. Therefore, I did not consider my employment at the focus school a conflict of interest with regard to participant recruitment in this study.

Third, the identities of participants were not exposed. I knew the identities of the principals who participated in my study because I interviewed them face to face in the focus group, and it was possible that I could discern the identities of teacher participants based on their survey responses, although that situation never occurred. It was apparent to the principals that I would know their identities, and I informed teachers of that unlikely scenario in the informed consent. Also, I informed all participants that (a) their responses

would not be used in any way that risks exposing their identities in the final research report, (b) they would not be treated any differently whether or not they choose to participate in this study, (c) the study was voluntary, and (d) they were free to withdrawal at any time. For these reasons, I did not consider my employment at the focus school a conflict of interest with regard to participant confidentiality in this study.

Fourth, I did not collect any data from participants until they provided written consent indicating that they understood the expectations for participation in the study. A copy of the informed consent was attached to the digital invitation to participate in the study. Participants were free to print a copy of the form for their records; however, I also provided copies of the informed consent to principals at the time of the focus group and to teachers when they navigated to the online survey. Principals were required to sign a hard copy of the consent form before they were allowed to participate in the focus group. The one principal who participated in the focus group via conference call emailed me a scanned copy of the consent form. Teachers were required to agree to the terms of the consent form by clicking the *I Consent* button on the survey landing page before they were able to access the survey. Ensuring that (a) all aspects of this study adhered to appropriate standards of ethical research through university and study site approval, (b) my role at the study site did not affect the voluntary nature of this study, and (c) participants were informed about the study process provided protection of participants prior to their active involvement in this study.

Participants also were protected during their active involvement in the study. During the focus group, principals responded to questions related to the implementation

of PjBL, a method that had not been fully embraced by all teachers at the focus school. For that reason, it was possible that the principals may have had strong perceptions regarding that topic and as a result become upset during the interview. Although the participants in this study are adults and professionals and this scenario was unlikely, because it was possible, I recruited the help of the school psychologist who agreed to be available to speak to any principal who got upset or experienced distress during the interview. Although the school psychologist would not have access to any of the collected data at any time, she would gain knowledge of the principals' identities if any of them dis require counseling services as a result of participation in this study. For this reason, the school psychologist signed a letter of confidentiality. No principals required referral to the counselor during this study.

Ensuring that safeguards were put in place in the event of adverse outcomes from participation in the study provided protection for principals during their active involvement in this study. Although I could not intervene for teachers who may have become upset while completing the survey, it was logical to assume that if any teacher, as an educated adult, became upset by the action of completing the survey, that teacher would discontinue completing the survey.

Participants also were protected after their active involvement in this study ended. All data collected from teachers were collected anonymously and data collected from principals were deidentified. Principals were referred to by arbitrary participant numbers and no master list of participant names and numbers was kept. All digital data and associated study files were stored on a password protected computer in my home office,

and all hard copy data and associated study files were stored in a locked filing cabinet in the same location. All data and associated files will be destroyed after 5 years to comply with Walden University's requirements for the handling of data. All digital data and associated study files will be deleted from my computer, and all hard copy data and associated study files will be shredded. The handling of data in this manner ensured that the identities of teachers remain anonymous and the identities of principals will remain confidential, thereby providing protection of participants after their active involvement in this study ends.

Summary

The purpose of this study was to better understand why teachers at the focus school were not implementing PjBL in their classrooms or were not implementing it with fidelity and to generate potential solutions for improving teacher implementation of PjBL. To facilitate this exploration, I conducted a generic qualitative study including 28 teachers and three principals. Teachers and principals received invitations to participate in the study via email. I collected data from a variety of sources using multiple methods. Specifically, I collected data about teachers' perceptions using an online anonymous qualitative survey, and I collected data about principals' perceptions using a focus group. To help organize, describe, and interpret the data, I coded them using the initial and axial coding methods. To ensure the trustworthiness of the study findings, I demonstrated that my study findings are credible, confirmable, dependable, and transferable. The use of member checking, triangulation, a second coder, and clear communication of the study setting and processes helped in this regard. Throughout this study, I used ethical

procedures to ensure that all participants' rights were protected and that they were all treated with sensitivity and respect. Results of the data analysis conducted for this study are presented in Chapter 4.

Chapter 4: Results

The purpose of this study was to better understand why teachers at the focus school were not implementing PjBL in their classrooms or were not implementing it with fidelity and to generate potential solutions for improving teacher implementation of PjBL. I conducted a generic qualitative study to accomplish that exploration. Two main research questions were posed in this study. Those main research questions reflect the study purpose. Research Question 1 was, "Why do teachers in the focus school not implement PjBL in their classrooms or not implement it with fidelity?"

Research Question 1 also had three subquestions relating to teachers' perceptions of their capacity to implement PjBL in their classrooms, the value or detriment of implementing PjBL in the classroom, and the influence of others on their implementation of PjBL in the classroom, respectively. Research Question 2 was, "How may teacher implementation of PjBL with fidelity be encouraged and supported in classrooms?"

Chapter 4 includes a presentation of the study results. First, however, I revisit the study setting and review the data collection and analysis processes. Evidence of trustworthiness also is revisited in the chapter. The chapter ends with a summary.

Setting

During data collection, no personal or organizational conditions at the study site were noted that could have influenced participants or their experiences and thus affected interpretation of the study results. Descriptive data for the 28 teacher participants are presented in Table 1.

Table 1

*Descriptive Data for Teacher Participants (*N = *28)*

Characteristics	*n*	%
Years working as an educator		
1 < 5	6	21.4
5 < 10	4	14.3
10 < 15	6	21.4
15 < 20	4	14.3
20 <	8	28.6
Grade level taught		
Grade 9	8	28.6
Grade 10	3	10.7
Grade 11	6	21.4
Grade 12	11	39.3
Subject taught		
Language arts	9	32.1
Math	5	17.9
Science	7	25.0
Social studies	7	25.0
Years familiar with PjBL		
< 1	1	3.6
1 < 5	14	50.0
5 < 10	9	32.1
10 < 15	3	10.7
15 < 20		
20 <	1	3.6
Years of training in PjBL		
0	6	21.4
1-5	8	28.6
5-10	8	28.6
10-15	3	10.7
15-20	1	3.6
20+	2	7.1

Note. Percentages may not total 100% due to rounding.

Overall, the general characteristics of teachers who participated in this study were unremarkable. Teachers who participated in the study varied with regard to their years of teaching experience. Although the greatest number of teachers who participated in the survey had 20 or more years of teaching experience (n = 8), no one level of work experience was particularly under- or overrepresented among the participants. Teachers in Grade 9 (n = 8) and Grade 12 (n = 11) participated at higher rates than teachers in Grade 10 (n = 3) and Grade 11 (n = 6); however, perceptions of teachers in all four grades at the school were represented in the data. Teachers of math were the least represented in the data (n = 5), and teachers of language arts were the most represented in the data (n = 9).

When compared to the general characteristics of teachers who participated in this study, the characteristics pertaining to PjBL were more noticeably varied. No teachers had been familiar with PjBL for more than 15 but less than 20 years, only one teacher had been familiar with PjBL for less than 1 year, only one teacher had been familiar with PjBL for more than 20 years, and only three teachers had been familiar with PjBL for more than 10 but less than 15 years. In comparison to the group of teachers who had been familiar with PjBL for more than 10 but less than 15 years, three times the number of teachers (n = 9) had been familiar with PjBL for more than 5 but less than 10 years, and almost five times the number of teachers (n = 14) had been familiar with PjBL for more than 1 but less than 5 years. Those data showed that all of the teachers who participated in this study had at least some familiarity with PjBL although the majority of teachers (53.6%) had been familiar with PjBL for less than 5 years.

With regard to years of training in PjBL, the majority of teachers (n = 22, 78.6%) had 10 or fewer years of training in PjBL. The remaining teachers (n = 6), who made up slightly over one fifth of the participating teachers (21.4%), had 10 or more years of training in PjBL. The same number of teachers (n = 6) also reported having no training in PjBL.

During the focus group, the three principals also shared general background information about their work experience as well as specific information about their experiences with PjBL. The principals reported having worked as principals for 10, 11, and 15 years and having worked as principals at the focus school in particular for 10, 11, and 8 years, respectively. Two of the principals reported having been familiar with PjBL for approximately six years, and one principal reported having been familiar with PjBL for 20 years. All three principals reported having attended at least one professional development workshop on PjBL at the focus school. One principal reported attending a PjBL workshop at the focus school's local educational cooperative, and one principal reported reading journal articles and watching YouTube videos on PjBL.

Data Collection

I collected data for this study from teachers using a survey and from principals using a focus group. My original intention was to include 24 teachers in the study. However, on the day I closed the online survey, five teachers completed the survey bringing the total number of teacher participants to 28. All three principals invited to participate in the study agreed to participate. However, because of scheduling conflicts, Principal 3 participated via telephone. The call was placed on speaker phone so that

Principal 3 could hear Principal 1, Principal 2, and me, and vice versa. There were no complications with that process.

Data collection via the online survey occurred as planned. Teachers who participated in this study completed an online survey; therefore, they were able to participate in the data collection process from any location from which they had access to the Internet and either a computer or mobile device. I anticipated that teachers would take 30-45 minutes to complete the survey depending on the depth of their responses. Data from SurveyMonkey showed that all 28 participants completed all items on the survey. Time for completion ranged from just over 4 minutes to almost 35 minutes. The average time teachers spent completing the survey was almost 11 minutes. Data were collected from teachers digitally using the online survey over the course of 3 weeks.

Data collection using the focus group did not occur exactly as originally planned. The focus group did take place after the close of the official work day in a conference room on the grounds of the focus school. However, Principal 3 participated in the focus group via telephone from an undisclosed location. Also, although I anticipated the focus group would last approximately 60 minutes, it actually lasted exactly 47 minutes. Additionally, although the letter of consent I included with the invitation for principals to participate in the study stated that I would digitally record the interviews, at the time of the focus group, the principals asked not to be recorded. I accommodated their request by collecting data by hand.

Data Analysis

The process I used to move inductively from coded units to larger representations including categories and themes occurred as described extensively in the Data Analysis Plan in Chapter 3. All discrepant data were considered in the data analysis process and included in the discussion of the data in some way although the specific datum may not have been included in any specific theme. A total of 107 codes were generated to the code the data. Those codes were organized into 12 categories that became subthemes of the five primary themes identified in the data. The five themes and 12 subthemes were

Theme 1. Teacher knowledge of PjBL varies

- Subtheme 1A. Knowledge about the PjBl structure
- Subtheme 1B. Knowledge about student learning

Theme 2. Teacher perceptions about the value of PjBL vary

- Subtheme 2A. Teachers have positive attitudes toward PjBL
- Subtheme 2B. Teachers have negative attitudes toward PjBL

Theme 3. Teacher confidence for implementing PjBL varies

Theme 4. Teacher motivation to implement PjBL

- Subtheme 4A. Teachers are motivated to implement PjBL by positive outcomes for students
- Subtheme 4B. Teachers are motivated to implement PjBL by others
- Subtheme 4C. Teachers are motivated to implement PjBL by the structure of PjBL

Theme 5. Support for teachers implementing PjBL

- Subtheme 5A. Teachers receive support for implementing PjBL at the focus school
- Subtheme 5B. Teachers need support to implement PjBL

A full list of the codes, categories/subthemes, and themes is presented in Appendix E. These themes and subthemes are discussed in the next section.

Results

In this section, the results are presented organized by the five themes that were generated as the result of data analysis. The subthemes for Themes 1, 2, 4, and 5 also are identified. When appropriate, specific examples from the data are included. The results also are discussed in relation to the research questions.

Theme 1: Teacher Knowledge of PjBL Varies

Results of data analysis showed that teacher knowledge of PjBL varies. At least once while completing the survey, seven of the 28 teachers who participated in this study (25%) said they did not know enough about PjBL learning to respond to a survey item. For example, when describing their understanding of PjBL, Teacher 9 said, “Not much;” Teacher 10 said, “Minimal;” and Teacher 22 said, “Don’t really understand it fully.” In addition, when asked about the benefits of implementing PjBL, Teacher 6 said, “Not for sure because I am not knowledgeable enough to draw those conclusions.” Furthermore, all three principals and 11 teachers (39.3%) stated that teachers needed more training. For example, Teacher 1 said, “I don't feel like I am adequately trained in PjBL to implement it on my own,” and Teacher 8 said, “Further training would be helpful.” Such comments could be interpreted to mean that teachers’ knowledge of PjBL was inadequate. However,

one teacher reported having "strong" knowledge of PjBL. Teachers who did demonstrate knowledge of PjBL demonstrated knowledge of both the PjBL structure and about the influence of PjBL on student learning.

Subtheme 1A. Knowledge about the PjBL structure. Teachers' responses to survey items indicated that they were knowledgeable about the PjBL structure. For example, one teacher reported understanding that PjBL may include the integration of technology into the learning process. That teacher said, "more technology is involved." That response supports the claim that teachers were knowledgeable about the PjBL structure.

Teachers also reported knowing that PjBL is student driven (n = 3), a structure that requires the teacher to function as a facilitator (n = 5) rather than lecturer (n = 3). Teachers who reported knowing that PjBL is student driven said, students "research and learn through their own pace," "have more input for their learning," "should be allowed to take the lead," and "take some control of their education." Teachers who reported knowing that PjBL is a structure that requires the teacher to function as a facilitator rather than a lecturer said, "teachers as facilitators," teachers "shift from content-deliverer to facilitator," "the instructor is a facilitator rather than just feeding the information and expecting the memory (short term learning)," the teacher "takes a backseat by simply being the facilitator of the project," "it allows teachers the flexibility to become facilitators more than lecturers," and "it allows the teacher to do more than lecture." These responses support the claim that teachers were knowledgeable about the PjBL structure.

Teachers also reported knowing that PjBL is a hands-on learning approach (n = 5) that requires students to complete a graded (n = 3) project (n = 8) based on a practical or real-world problem (n = 10). Teachers who reported knowing that PjBL is a hands-on learning approach said "PjBL is hands-on learning," "PjBL is a style of teaching in which students learn through active hands on [learning]," "students are able to have a hands-on approach to any lesson going on in a class," and PjBL "gives student's hands-on opportunity to explore a topic." Teachers who reported knowing that PjBL requires students to complete a graded project said, "PjBL as I understand it is students being given a project to complete that is relevant to them but contains core standards that the students need," students demonstrate knowledge "through some sort of project," "the end result [of PjBL] is a project which produces physical evidence," "a project to evaluate," and "allowing them to do hands on projects." Teachers who reported knowing that PjBL requires students to address a practical or real-world problem said "PjBL is a style of teaching in which students learn . . . [by addressing] real world problems," "students faced with real world problems engage to find solutions," students explore "real life problems that connect to the content," "PjBL teaches students to problem solve," and PjBL "teaches students to problem solve." These responses support the claim that teachers were knowledgeable about the PjBL structure.

Subtheme 1B. Knowledge about the influence of PjBL on student learning. Teachers' responses to survey items indicated that they were knowledgeable about the influence of PjBL on student learning. Teachers reported knowing that students participating in PjBL activities are engaged in their own learning (n = 1) and work

independently (n = 1) but also that PjBL affords students the opportunity to engage in cooperative learning (n = 9). The teacher who reported knowing that students participating in PjBL activities are engaged in their own learning referred to "student engagement." The teacher who reported knowing that students participating in PjBL activities work independently said students develop skills "independently." Teachers who reported knowing that PjBL affords students the opportunity to engage in cooperative learning referred to "compromise," "putting students in groups," "collaboration," and "collaborative work with students," and said students "have an opportunity to work with others," work "together in a group to figure out the hows and whys to complete the task," and opportunities for "learning to work together, learning from each other," and "students are given a goal, or direction, then in groupings, together come up with a goal and project towards that goal." These responses support the claim that teachers were knowledgeable the influence of PjBL on student learning.

Teachers also reported knowing that PjBL also affords students the opportunity to engage in higher order and critical thinking (n = 1), problem solve (n = 4), and apply knowledge that they are acquiring (n = 4). The teacher who reported knowing that PjBL affords students the opportunity to engage in higher order and critical thinking (n = 1) said "PjBL allows students to . . . use critical thinking skills." Teachers who reported knowing that PjBL affords students the opportunity to problem solve said students "engage to find solutions" to problems, students "work through problems," "PjBL teaches students to problem solve," and students become "problem solvers." Teachers who reported knowing that PjBL affords students the opportunity to apply knowledge

that they are acquiring said "PjBL is applied learning," PjBL "allows for a more well-rounded opportunity to learn a skill," "PjBL allows students to . . . show understanding of previously learned concepts," "PjBL is applied learning allowing students to see their work come alive in a relevant way," and PjBL promotes "learning and successes in their future for application in all areas for any given situation." Teachers also suggested that through PjBL, "students learn more deeply" and are provided opportunities for "long-term learning" and skill development (n = 3). These responses support the claim that teachers were knowledgeable about the influence of PjBL on student learning.

Summary of Theme 1. Results of data analysis showed that teacher knowledge of PjBL varied among the teachers who participated in this study. Although one teacher implied she was very knowledgeable about PjBL, the majority of teachers and all three principals implied that teachers are not adequately knowledgeable about PjBL. Teachers did demonstrate knowledge about the PjBL structure and the influence of PjBL on student learning.

Theme 2. Teacher Perceptions of the Value of PjBL Vary

Results of data analysis showed that teacher perceptions of the value of PjBL vary. Overall, as shown in Subthemes 2A and 2B, teacher responses indicated that teachers had either a positive or negative attitude toward PjBL. However, when asked about the benefits of PjBL, one teacher said, "It depends on [the] approach of the instructions and the instructor." That one teacher was the only one of the total 28 teachers who could be considered to have neither a positive nor negative attitude toward PjBL.

Subtheme 2A. Teachers have positive attitudes toward PjBL. Teachers' responses to survey items indicated that some teachers had a positive attitude toward PjBL. For example, of the 28 teachers who participated in the study, eight teachers (28.6%) reported having used PjBL in their classrooms, and three teachers (10.7%) reported that their use of PjBL had increased.

Teachers who reported having used PjBL in their classrooms said "in two of four preps, PBL is used often and willingly," "I already use PBL in my classroom," "I implement PjBL quite a bit in my classroom," "I have two projects that use PjBL," "my students already do some PjBL," "I . . . implemented [PjBL] in the classroom," and "I'm ready and have already been working on this for many years." Teachers who reported that their use of PjBL had increased said, "undertaking PjBL more," "I have added more projects to my classes," and "I plan to have a project flowing throughout the entire year." These responses support the claim that teachers have positive attitudes toward PjBL.

In addition, four teachers (14.3%) stated that PjBL was beneficial, and one teacher, whose responses overall were positive, reported having "strong feelings" about using PjBL. Teachers who reported that PjBL was beneficial said, "I have experienced teachers who used PjBL and found it to be more beneficial than the teachers who used lectures or text book memorization," "I have friends who have both taught at and led PjBL schools and definitely believe in some of the benefits it has to offer," "I think that implementation could be beneficial with appropriate training," I "definitely believe in some of the benefits it [PjBL] has to offer," and "I have always seen PjBL as having a

beneficial place in the classroom." These responses support the claim that teachers have positive attitudes toward PjBL.

Student learning. Of the 28 teachers who participated in this study, 19 teachers (67.9%) made statements about the positive benefits of PjBL on student learning in general (i.e., without identifying any specific type of learning). Teachers reported that because PjBL is not focused on lectures (n = 3) and teachers act as facilitators (n = 3), learning is more student driven (n = 5) and hands on (n = 4), prompting students to become more involved in their own learning process (n = 9) and, therefore, learn better (n = 4). With regard to improved learning through PjBL, Teacher 10 said that students are "more likely to learn the material," and Teacher 13 said that students' "understanding of [the] subject is higher." In addition, Teacher 19 said that using PjBL helps "students maintain knowledge [the] best." Other teachers said that when using PjBL, "students learn more," and "the benefits of PjBL would be that students would seem to be more engaged in the lesson and learning which would be more exciting for the students." These responses support the claim that PjBL has positive benefits on student learning in general.

Teachers specifically noted student opportunities for applying new knowledge (n = 1), practical and real-life learning (n = 4), and long-term learning (n = 1). The teacher who noted student opportunities for applying new knowledge said that students using PjBL "can more easily apply concepts." The teachers who noted student opportunities for practical and real-life learning referred to PjBL as "real world . . . learning" and said PjBL has "real-world application," "students learn more deeply by exploring real life problems," and PjBL allows students to complete "projects that relate to the material

being learned." The teacher who noted student opportunities for long-term learning said PjBL allows for "long-term learning." These examples show that teachers gave specific examples of how PjBL benefits students.

One teacher reported that PjBL helps build teacher-student relationships. That teacher said PjBL promotes "relationship building through instruction." One teacher reported that PjBL helps prepare students for the workplace. That teacher said, "I feel that PjBL is a great way to get our student ready for the workplace." One teacher reported that PjBL helps prepare students for both college and the workplace. That teacher said "We are recognizing the need for students to be employable, not just college ready. PBL benefits both paths." Furthermore, teachers reported that students enjoy learning using PjBL (n = 2). Specifically, Teacher 11 said that "students love hands-on PjBL," and Teacher 18 said that PjBL "gives the students a sense of accomplishment and pride." These examples show that teachers gave specific examples of how PjBL benefits students.

Student skills. Of the 28 teachers who participated in this study, 13 teachers (46.4%) made statements related to improved student skills through PjBL. Specific skills teachers reported included cooperative learning (n = 8), creative thinking (n = 4), critical thinking (n = 1), problem solving (n = 4), and communicating (n = 3). Teachers who reported PjBL helps improve cooperative learning referred to "compromise," "putting students in groups," "collaboration," and "collaborative work with students," and said students "have an opportunity to work with others," work "together in a group to figure out the hows and whys to complete the task," and opportunities for "learning to work

together, learning from each other," and "students are given a goal, or direction, then in groupings, together come up with a goal and project towards that goal." Teachers who reported PjBL helps students improve their creative thinking skills said PjBL promotes "creativity," "PBjL allows students to have creative liberty," students embrace "creative thinking." The teacher who reported PjBL helps improve critical thinking skills said PjBL encourages students to "utilize higher order thinking skills." Teachers who reported PjBL helps students improve their problem-solving skills said students using PjBL are "problem-solving" and "becoming problem solvers," "PjBL breathes life into my classroom as students are solving problems," and PjBL "allow[s] my students to research real life problems and situations and find solutions to these problems." Two of the teachers who reported PjBL helps students improve their communication skills referred to "communication skills" and the third said "communication skills are brought back through the project with face to face contact and teamwork." These responses support the claim that teachers have positive attitudes regarding PjBL and student learning of skills.

In addition, teachers reported that PjBL helps students acquire skills needed to conduct research (n = 2) and to use technology (n = 1) and other resources (n = 1). Teachers who reported that PjBL helps students acquire skills needed to conduct research said "I see that PBjL allows students to . . . work on . . . research skills," and PjBL "requires students to research." The teacher who reported that PjBL helps students acquire skills needed to use technology said PjBL allows for "technology integration," The teacher who reported PjBL helps students acquire skills needed to other resources

said “students must learn to . . . utilize resources.” These responses support the claim that teachers have positive attitudes regarding PjBL and student learning of skills.

Teachers also said that PjBL helps students become accountable for themselves (*n* = 1) in part by learning to manage their time (*n* = 1) and become leaders (*n* = 1). The teacher who reported PjBL helps students become accountable for themselves said PjBL “creates accountability.” The teacher who reported PjBL helps students manage their time said “I see that PjBL allows students to . . . work on time management.” The teacher who reported PjBL helps students become leaders said it was possible to see “the leadership it [PjBL] creates in my students.” These responses support the claim that teachers have positive attitudes regarding PjBL and student learning of skills.

Flexibility. Close to one fifth (*n* = 5) of the teachers who participated in this study made statements related to the flexibility afforded by PjBL. Teacher 1 said, “It [PjBL] allows teachers the flexibility to become facilitators more than lecturers.” Other teachers were less direct in their statements but also conveyed the idea that PjBL allows for flexibility in both the teaching and learning processes. For example, three teachers referred to the ability to address diverse learning styles using PjBL. Those teachers said PjBL “reaches the nontraditional learner,” and “in my opinion PjBL is effective for different learning styles.” One teacher also said that PjBL allowed students to “learn through their own pace.” These responses support the claim that teachers have positive attitudes regarding the flexibility afforded by PjBL.

Subtheme 2B. Teachers have negative attitudes toward PjBL. Teachers’ responses to survey items indicated that almost 90% of the teachers (*n* = 25) had negative

attitudes toward at least some aspect of PjBL. Principals' (n = 2) also perceived that teachers had negative attitudes toward PjBL. Some teachers generally expressed negativity about PjBL (i.e., did not identify any specific negative aspect of PjBL). For example, Teacher 20 said, "[I] still don't think it's a good method, at least not for my subject" in part because "too much [is] left to chance." Negativity toward PjBL also was evident in teachers' specific comments about the challenges of implementing PjBL and its capacity to help students learn, as described in the subsequent three sections.

Challenging for teachers. Of the 28 teachers who participated in this study, 75% (n = 21) either directly or indirectly described PjBL as a challenge for teachers. Two of the three principals who participated in this study suggested that teachers are in general resistant to change thereby implying that implementing PjBL could be a challenge for teachers who might resist implementing the strategy. Those principals said "I know that some [teachers] are resistant to change," and "I think that for our teachers there is a fear to try new teaching style." Three teachers specifically said that transitioning from the traditional lecture method of teaching to the student-centered PjBL approach in which teachers act as facilitators may be challenging for teachers. Those teachers referred to the need to work together "with little resistance" and the need to improve his/her "comfort level in doing it [implementing PjBL]." They also said the transition to PjBL was a "difficult shift for many teachers," and "I do think it is an important concept to spread at our high school--which is much more aligned with traditional practices and resistant to changes such as PjBL learning." These responses either directly or indirectly support the claim that teachers described PjBL as a challenge for teachers.

Responses from other teachers (*n* = 23) were focused on challenges associated with managing the implementation of PjBL. Of those teachers, five reported that classroom management could be challenging for teachers implementing PjBL. Teacher 4 said that "PjBL takes a great deal of classroom management," and Teacher 18 said that "knowing exactly how to manage the project as a whole" could be a challenge. Other challenges to which teachers referred included "planning and classroom management" and "identifying a proper project." Two teachers suggested that poor management of the implementation process could lead to the poor implementation of PjBL activities. One of those teachers referred to "not facilitating [PjBL] properly" and the other said it was "easy to be done poorly." These responses either directly or indirectly support the claim that managing the implementation of PjBL was a challenging for teachers.

More than one quarter of the teachers (*n* = 8) said that implementing PjBL required a substantial workload on the part of the teachers, which teachers (*n* = 6) also recognized was related to the degree of planning required to develop PjBL activities. For example, Teacher 13 said that PjBL projects are "time consuming to plan, especially with other teachers," and Teacher 18 said "the initial planning . . . requires more effort." Another teacher said that "assessments aren't easy to create." Teachers also reported that it was challenging to assess student projects (*n* = 3) to align PjBL activities with mandated standards of learning (*n* = 8) in part because some subjects do not lend themselves well to the structure of the PjBL model (*n* = 2). Teachers who reported that it was challenging to assess student projects said he/she was "unsure about grading." Teachers who reported it was challenging to align PjBL activities with mandated

standards of learning said “I have over 40 standards and it is tricky for me trying to fit them in a year.” Teacher 8 was not convinced that PjBL was correlated to student performance on test scores, and Teacher 17 was not sure that it is possible to measure the outcomes of PjBL. Teacher 8 said, “I’d also be concerned about the correlation between PjBL and standardized test scores,” and Teacher 17 said “how do we measure the benefits?” Another teacher said it was “difficult to align skills towards preparation for ACT and other exams.” Teachers who reported that some subjects do not lend themselves well to the structure of the PjBL model said “literature and syntax do not equate well to PjBL,” and PjBL “doesn't really fit with my subject matter.” These responses either directly or indirectly support the claim that the substantial workload associated with PjBL was a challenging for teachers.

In addition, teachers reported that lack of resources (n = 10) and expenses (n = 3) associated with implementing PjBL could be challenging for teachers. For example, teachers referred to lack of “time [and] resources” and said “the cost of purchasing some of the better plans or programs will be a factor,” and “a challenge that I may have this year when using PjBL might be lack of equipment for the total number of students in my class or a lack of space.” Also, Teacher 3 said that lack of space in the classroom was problematic, and Teacher 7 said, “We would need 1-to-1 technology for students for it [PjBL] to reach its optimum level.” These responses either directly or indirectly support the claim that teachers described PjBL as a challenge for teachers.

Challenging for students. Teachers (n = 13) reported that PjBL could be challenging for students. Teacher 10 said that PjBL could be challenging for students

because of their "lack of experience in using PjBL." Similarly, three teachers said that PjBL could be challenging for students because they lack the required skills to complete PjBL activities. In addition, Teacher 13 said that PjBL could be challenging for students because they "must have [a] thorough understand[ing] of [the] task." Other teachers (n = 13) reported that PjBL could be challenging for students because it often results in unequal workload for students. Furthermore, teachers indicated that PjBL poses challenges to students who may not have adequate social skills (n = 2) or work well independently (n = 3).

Teachers who reported that PjBL poses challenges to students who may not have adequate social skills said "drawbacks: difficult if antisocial," and "a drawback would be that sometimes students who are more introverted can have a harder time in participating in a PjBL environment.' Teachers who reported that PjBL poses challenges to students who may not work well independently said PjBL is challenging if there is an "inability to work independently" or the lack of "capability of some of the students to stay on track" and that "drawbacks come when there is lack of self-discipline on the part of the students." One teacher added that "lack of student experience with PjBL and group activities" could be problematic, and another said "I would think a drawback is some students could do less work and put forth less effort, having less of a role in the project." These responses either directly or indirectly support the claim that teachers described PjBL as a challenge for students.

Hinders student learning. Teachers (n = 7) reported that PjBL could hinder student learning. Teacher 4 reported that PjBL could hinder student learning for students

who miss work. That teacher said, “It seems that students who fall behind have a harder time catching up.” One teacher reported that PjBL could keep students from being prepared for college (*n* = 1). That teacher said PjBL “doesn’t necessarily prepare them for traditional college experiences either.” Another teacher was “not certain students will attain objective successfully.”

Generally speaking (i.e., without identifying any specific type of learning), teachers expressed concern that student learning could be weakened because of poor implementation of PjBL (*n* = 4) or inequity of student resources (*n* = 2). Teachers who expressed concern that student learning could be weakened because of poor implementation of PjBL said PjBL could “be done poorly (to the detriment of students)” and “drawbacks can be not facilitating properly which can lead to an out of control classroom that is way off topic.” Teachers who expressed concern that student learning could be weakened because of inequity of student resources said “a drawback is that all students don’t have access to the same resources” and “lack of materials and many students in poverty that may hinder outside work.” These responses either directly or indirectly support the claim that PjBL hinders student learning.

Other teachers were concerned that PjBL hindered student learning because students lacked engagement with key content (*n* = 2). Teacher 5 said “my fear is that it [PjBL] does not equate strongly in the English classroom” and specifically reported that the “missed opportunity in engaging in the cannon of English literature” could hinder students in settings in which PjBL was implemented. Another teacher said “sometimes with PjBL the topic or point of the project can get pushed to the side and the overall big

picture is lost." These responses either directly or indirectly support the claim PjBL hinders student learning.

Summary of Theme 2. Results of data analysis showed that teacher perceptions of the value of PjBL vary. Overall, teacher responses indicated that teachers had either a positive or negative attitude toward PjBL. Teachers had positive attitudes toward PjBL because it improves student learning, improves student skills, and allows for flexibility. Teachers had negative attitudes toward PjBL because it is challenging for teachers, challenging for students, and hinders student learning.

Theme 3. Teacher Confidence for Implementing PjBL Varies

Results of data analysis showed that teacher confidence for implementing PjBL varied among the teachers who participated in this study. Five teachers expressed high levels of confidence in their ability to implement PjBL. Teacher 3 reported being "very prepared," Teacher 4 reported being "well prepared," and Teacher 27 reported being "prepared." In addition, Teacher 23 stated that "I could easily implement PjBL in my classroom." Teacher 11 described his/her preparedness as a 9, on a scale of 1-10.

Six teachers expressed moderate levels of confidence in their ability to implement PjBL. For example, Teacher 2 reported being prepared but admitted "still need[ing] work," and Teacher 28 reported being "somewhat prepared." Teacher 7 expressed preparedness as a letter grade and said,

> If I was to give myself a grade in terms of preparedness, I would say a B+ if you asked me to design a project for the upcoming year; it would be a lesser grade if I was asked to design my entire curriculum around PjBL, though.

Teacher 5 quantified the concept of preparedness and reported being "at [a] 75/80% preparedness level." Similarly, on a scale of 1-10, Teacher 6 reported a preparedness level of 4.

Nine teachers expressed low levels of confidence in their ability to implement PjBL. For example, Teacher 1 reported that he or she was "not very prepared," Teachers 16 and 25 reported that they were "not prepared," and Teacher 20 reported having "very little preparation." Teacher 24 reported having a "very low level" of preparation, and Teacher 14 reported being a "novice." On a scale of 1-10, Teachers 10 and 26 reported a preparedness level of 0. Furthermore, all three principals also perceived that in general, teachers have low levels of confidence with regard to implementing PjBL. One of the principals specifically noted that fear of new teaching methods might contribute to teachers' low levels of confidence implementing PjBL.

To summarize, results of data analysis showed that teacher confidence for implementing PjBL varied among the teachers who participated in this study. Some teachers implied they had low levels of confidence for implementing PjBL. Some teachers implied they had a moderate level of confidence for implementing PjBL. Other teachers implied they had a high level of confidence for implementing PjBL.

Theme 4. Teachers are Motivated to Implement PjBL

Of the 28 teachers who participated in this study, only two teachers reported not being motivated to implement PjBL at all. One of those teachers said, "I'm not very motivated." The other reported not being "very motivated because students lack skill to work with PjBL" and stated that his or her implementation of PjBL had "not been

successful in the past." Two principals perceived that teachers were not motivated to implement PjBL. One of those principals suggested that teachers may lack motivation to implement PjBL because state and federal mandates for education change too often to keep up with using PjBL.

In comparison, a large majority of the teachers who participated in this study, almost 93%, either directly stated or indirectly suggested that they were at least to some degree motivated to implement PjBL or could be motivated to implement PjBL. Teachers who directly stated that they were motived to implement PjBL used language such as "very motivated" (n = 1), "already motivated" (n = 1), and "motivated" (n = 4). Four teachers indirectly suggested that they were motived to implement PjBL. Statements supporting that claim include, "My students already do some project based learning," "I'm ready and have already been working on this for many years," and "In two of four preps, PjBL is used often and willingly." Five teachers indirectly suggested that they could be motived to implement PjBL under the right conditions. Four of those teachers indicated the right condition was associated with knowledge about implementing PjBL. Statements supporting that claim include, "I'd love to implement it if I understood it fully," "I would like to learn how," "I'm motivated to find out more about it," and "Seems like a great idea but [I] still lack knowledge of how to implement it." Although Teacher 16 reported having "very little" motivation, and Teacher 6 said, "Need more information to answer this question," both Teachers 6 and 16 also implied that they could be motivated to implement PjBL under the right conditions. For example, when asked what would promote the ongoing or increased implementation of PjBL in your classroom,

Teacher 6 said, “More detailed research and in service to how to implement across the board,” and Teacher 16 said, “I need to understand the projects for math and to see other examples that have been successful.” These responses support the claim that teachers were at least to some degree motivated to implement PjBL or could be motivated to implement PjBL.

Of the teachers who participated in this study, 18 (64.3%) gave specific examples of motivating factors or conditions that motivate them to implement PjBL in their classrooms. Those factors and conditions fit well into three distinct subthemes. Those subthemes are teachers are motivated to implement PjBL by positive outcomes for students, teachers are motivated to implement PjBL by others, and teachers are motivated to implement PjBL by the structure of PjBL.

Subtheme 4A. Teachers are motivated to implement PjBL by positive outcomes for students. More than one third of teachers’ (35.7%) responses to survey items indicated that teachers were motivated to implement PjBL by positive outcomes for students. Three teachers made general statements about student outcomes using language such as “benefits” and “success.” Two teachers made statements about the types of experiences in which students engage in PjBL. Specifically, Teacher 26 said “I want my class to be student driven and student lead. If that means PjBL then I'm motivated to find out more about it.” Teacher 27 said he/she is motivated by “the ability to give vocational students a true, hands on approach to their learning.” One teacher specifically indicated that students were more engaged participating in PjBL when compared to traditional lecture classrooms. That teacher said “I am motivated by student engagement.” These

responses either directly or indirectly support the claim that teachers are motivated to implement PjBL by positive outcomes for students.

Another teacher reported being motivated by opportunities for students to improve their leadership skills. That teacher said, “I am motivated to implement more PjBL into my classes by seeing the leadership it creates in my students.” Three teachers reported being motivated by students’ adherence to the career pathways academy model and/or opportunities to prepare students for the workplace. Those teachers said “I’d like to implement PjBL to support the academy structure that we currently have in place,” “I see that colleges and the workplace need graduates who can think independently and work through problems,” and “I feel that PjBL is a great way to get our student ready for the workplace.” These responses support the claim that teachers are motivated to implement PjBL by positive outcomes for students.

Subtheme 4B. Teachers are motivated to implement PjBL by others. Almost one third of teachers’ (32.1%) responses to survey items indicated that teachers were motivated to implement PjBL because of others. Although Teacher 11 reported being motivated to implement PjBL by “others” in general (i.e., no one specific person), other teachers reported being motivated to implement PjBL by mentors (n = 1), superiors (n = 3), friends (n = 1), and other teachers (n = 5). The teacher who reported being motivated to implement PjBL by mentors said “I am motived by “great mentors.” Teachers who reported being motivated to implement PjBL by their superiors said “I am motivated by the ‘ISS director’” and “our lead teacher in our academy was highly trained in PjBL and she has had a great deal of influence on me.” The teacher who reported being motivated

to implement PjBL by friends said “I have friends who have both taught at and led PjBL schools and definitely believe in some of the benefits it has to offer.” Teachers who reported being motivated to implement PjBL by other teachers said “others have mentioned how much more engaged their class is in learning,” “seeing successful models from other schools makes me more motivated to attempt such projects in my own classroom,” and “my position has always required PBL. Others have given me more ideas on how to use it.” Two teachers described other teachers as teachers in their own school, two teachers described other teachers as teachers in different schools, and one teacher did not specific the location of the other teachers. In addition, Teacher 16 reported that teachers in the focus school could be sources of motivation with regard to implementing PjBL. That teacher said “Many other teachers are successful in their PjBL and would be resources for me.” These responses support the claim that teachers are motivated to implement PjBL by others.

Subtheme 4C. Teachers are motivated to implement PjBL by the structure of PjBL. Some teachers (n = 4) indicated they were motivated to implement PjBL because of aspects of the PjBL structure. For example, Teacher 19 reported being motivated by the opportunity to collaborate with other teachers. Teacher 19 said, “Planning and implementing a project with other staff and getting others ideas for the project is refreshing.” Teacher 7 reported being motivated by the enjoyment of developing student projects. Teacher 7 said, “I have really enjoyed projects in the past, and I do think it is an important concept to spread at our high school.” Teacher 16 reported that developing projects could be a motivating factor for him or her. Teacher 16 said, “History and

English do a good job with interdisciplinary projects." Teacher 4 reported being "motivated to implement PjBL because it works well with our block scheduling. Students have time to actually dig into a project without interruption." These responses support the claim that teachers were motivated to implement PjBL because of aspects of the PjBL structure.

Summary of Theme 4. The large majority of the teachers who participated in this study either directly stated or indirectly suggested that they were at least to some degree motivated to implement PjBL or could be motivated to implement PjBL. Teachers reported being motivation to implement PjBL in three distinct ways, which are represented by the subthemes for Theme 4. Teachers reported being motivated to implement PjBL by positive outcomes for students, others, the structure of PjBL.

Theme 5. Support for Teachers Implementing PjBL

The final theme that developed from the data analyzed for this study is support for teachers implementing PjBL. Results showed that teachers do receive support for implementing PjBL at the focus school. However, results also showed that teachers need additional support.

Subtheme 5A. Teachers Receive Support for Implementing PjBL at the Focus School. Close to three quarters of the teachers who participated in this study (71.4%) reported that they receive support at their school for implementing PjBL. Some teachers identified specific people who provide support. Those people were administrators (n = 9), lead teachers (n = 1), teachers (n = 4), and students (n = 2). Teachers who reported receiving support from administrators said "a good relationship

with . . . administration," "great administrative support," and "held expectations of our administration staff help because if the expectation is there, then we are given opportunity to explore." Teacher 7 said, "I believe I have positive relationships and would be supported in taking smaller-scale risks, such as a integrating a PjBL unit into my curriculum," and Teacher 14 identified "district-wide involvement" as a means of support for implementing PjBL in the focus school. The teacher who reported receiving support from lead teachers said "We have a couple of lead teachers that are trained in it and we have a few administrators that believe in it." Teachers who reported receiving support from teachers said "a good relationship with peers." One principal also perceived that teachers were sources of support for other teachers. That principal said,

> We have a teacher that came from . . . [another location] where she was trained in PJBL. She is passionate enough to become a little more in the process with the right support. We need to utilize her as much as possible in training.

These responses support the claim that teachers receive support for implementing PjBL at the focus school.

Two other areas of support were related to the structure of the PjBL itself. Those areas were scheduling (n = 1) and alignment with the career pathways academy model (n = 3). The teacher who reported scheduling as a source of support said, "Our block scheduling really supports the time needed to implement PjBL." Teachers who reported alignment with the career pathways academy model as a source of support said, "academy setting helps," "the academy model absolutely encourages PjBL," and "the academies, administration, content departments working together with little resistance."

Two additional areas of support were related to specific means necessary for implementing PjBL. Those areas were resources (n = 3) and time to collaborate (n = 1). One teacher who reported resources as a needed area of support for PjBL referred to "adequate funds," and another teacher said "having access to the computers at the school is one way that my school supports the implementation of PjBL in my classroom." The one teacher who reported both time to collaborate at a needed area of support for PjBL said "time for collaboration with colleagues; technology and other resources." Principal 1 also reported that the school's "team planning time provides collaboration time." These responses support the claim that teachers receive support for implementing PjBL at the focus school. These responses support the claim that teachers receive support for implementing PjBL at the focus school.

Subtheme 5B. Teachers Need Support to Implement PjBL. Although 20 of the 28 (71.4%) teachers who participated in this study reported that they received support at the focus school, 24 of the 28 teachers (85.7%) indicated that they needed additional support to successfully implement PjBL in their classrooms. Teacher 8 spoke in general about being able to implement PjBL "with appropriate support." Similarly, two of the principals agreed that teachers in general need support to successfully implement PjBL. Those principals said "we had several veteran teachers that needed a lot of support" and "we did not have that [support] for the other academy teachers." These responses support the claim that teachers need support for implementing PjBL.

One teacher and two principals also agreed that teachers in general need guidance to successfully implement PjBL. The teacher who reported that teachers in general need

guidance to successfully implement PjBL said, “with appropriate guidance of desired direction [the implementation of PjBL is] not a problem.” Principals who reported that teachers in general need guidance to successfully implement PjBL said teachers need “opportunities to practice on their own with a knowledgeable instructor who can produce accountability through guidance” and that that academies needed to “provide opportunities [for teachers] to practice with the guidance of the professional.” Four teachers specifically identified examples of successful implementation of PjBL as the guidance needed to support their own implementation of PjBL. Those teachers referred to “classroom examples in my content,” “more information on what kind I can do in my class,” and “clear, comprehensive examples of curricula/projects.” Teacher 16 said, “I need to understand the projects for math and to see other examples that have been successful. Relevant projects not just a project.” Teacher 7 and Principal 1 specifically identified observation as the guidance needed to support teacher implementation of PjBL. Teacher 7 referred to teachers observing other teachers who have successfully implemented PjBL and said “visiting/observing highly-successful PjBL schools.” Principal 1 referred to teachers being observed by those with experience in PjBL and said the academies needed to “provide opportunities [for teachers] to implement while being observed by a professional who can provide feedback.” These responses support the claim that teachers need support in the form of guidance for implementing PjBL.

Other teachers reported that resources (n = 9) were needed to support their implementation of PjBL. Particular resources teachers identified were money to buy supplies (n = 9), “updated technology” (n = 1), more technology (n = 1), community

involvement (n = 2), and appropriate "cross curricular projects" (n = 1). Teachers who identified supplies as a needed resource for implementing PjBL referred to "monetary/personal support" and "financial support," and said "additional financial investment for purchase of consumables would be the best support." The one teacher who identified the need for more technology specifically reported the need for "more Chrome book availability for in classroom research." Teachers who identified community involvement as a needed resource for implementing PjBL referred to "support of community businesses" and "community involvement." These responses support the claim that teachers need support in the form of resources for implementing PjBL.

Two teachers also reported that time was a valuable and needed resource for implementing PjBL. Those teachers specifically reported needing time to plan with other departments and time to allow students to work on their projects. Teacher 5 said he/she needed "time and planning and planning time." Teacher 12 specifically identified "students having the freedom to come to my classroom during free time to work or collaborate" as a valuable resource. One teacher also reported that consistent implementation of PjBL throughout the school district was needed to support teacher implementation of PjBL. That teacher said what was needed was "consistent use throughout school system beginning in elementary or jr [junior] high." Principals 1 and 2 agreed that academy expectations for implementing PjBL differ. These responses support the claim that teachers need support in the form of resources for implementing PjBL.

The most commonly cited needed support was associated with improving knowledge of PjBL and how to properly implement it. For example, Teachers 6 and 25

reported that they wanted to learn more about PjBL. Teacher 6 said he/she wanted "more detailed research and in service to how to implement across the board," and Teacher 25 said he/she wanted "professional development specific to my teaching area." Eleven teachers reported that they specifically needed additional training or professional development. Teachers who reported they specifically needed additional training or professional development referred to "training" and "professional development" and said the needed "more education across the board for teachers and administrators," and "some PD [professional development] about how it works, benefits of it. Data on how well it works." Teacher 23 said "I believe that having more training in PjBL would benefit many teachers in being able to implement this method in our classrooms." All three principals not only agreed that teachers needed more training but reported that follow-up to training would be helpful as well. Principal 1 said "we need a more intense training with follow up" and "train, train, train, and follow-up." Principal 2 said, "provide your staff PD [professional development] on PBL prior to the program being implemented and use at least one year implementing it in stages with your staff to build their confidence." Principal 3 said, "we need teachers training teachers, teachers observing teachers who implement this program correctly, and way more follow-up meetings." Teacher 27 suggested that training for principals would ultimately help them provide better support for their staff. These responses support the claim that teachers need support in the form of training for implementing PjBL.

Summary of Theme 5. Results showed that teachers receive support for implementing PjBL at the focus school. However, results also showed that teachers need additional support. Principals agreed that teachers need additional support.

Findings in Relation to the Research Questions

The purpose of collecting and analyzing data in this study was to answer the study's research questions. There were two main research questions. Research Question 1 also had three subquestions. Rather than repeating here the detailed data presented in the Results section, the discussion in this section is presented conceptually based on the themes that were generated through the data analysis process.

Research Question 1. Research Question 1 was, Why do teachers in the focus school not implement PjBL in their classrooms or not implement it with fidelity? The data showed that teachers may not implement PjBL or may not implement it with fidelity for a variety of reasons. First, some teachers at the focus school may not implement PjBL or may not implement it with fidelity because they are not knowledgeable about PjBL as indicated by teacher responses that made up Theme 1. Second, some teachers may not implement PjBL or may not implement it with fidelity because they have a negative attitude toward PjBL as indicated by teacher responses that made up Subtheme 2B. Teachers reported they perceived PjBL to be challenging for teachers, challenging for students, and a hindrance to student learning. Third, some teachers may not implement PjBL or may not implement it with fidelity because they do not feel confident in their ability to do so as indicated by teacher responses included in Theme 3. Some teachers expressed only a moderate level of confidence for implementing PjBL, and some teachers

expressed a low level of confidence for implementing PjBL. Fourth, some teachers may not implement PjBL or may not implement it with fidelity because they are not motivated to do so as indicated by teacher responses included in Theme 4. Teachers reported that students did not possess the skills needed to work in PjBL settings and that previous attempts to implement PjBL had been unsuccessful. Finally, some teachers may not implement PjBL or may not implement it with fidelity because they do not have the needed supports as indicated by teachers' responses included in Theme 5. Teachers reported that they needed more resources and training.

Research Question 1a. Research Question 1a was, What are teachers' perceptions regarding their capacity to implement PjBL in their classrooms? As shown in Theme 3, teachers expressed mixed feelings about their capacity to implement PjBL in their classrooms. When compared to teachers who indicated they were highly (n = 5) or moderately (n = 6) prepared to implement PjBL in their classrooms, more teachers indicated they were not prepared (n = 9) to implement PjBL.

Research Question 1b. Research Question 1b was, What are teachers' perceptions regarding the value or detriment of implementing PjBL in the classroom? The majority of teachers (57.1%) generally expressed positive attitudes toward PjBL. Teachers indicated that PjBL was beneficial for student learning and that it helped students improve a variety of skills that contribute to success in educational settings, including cooperative learning, creative thinking, critical thinking, problem solving, and communicating. Teachers also reported that PjBL allowed teachers flexibility. Teachers

who expressed negative attitudes toward PjBL cited that the method was challenging for teachers, was challenging for students, and hinders student learning.

Research Question 1c. Research Question 1c was, What are teachers' perceptions regarding the influence of others on their implementation of PjBL in the classroom? Teachers reported being positively influenced to implement PjBL by others in general. However, teachers also indicated they were influenced to implement PjBL by mentors, superiors, friends, and other teachers.

Research Question 2. Research Question 2 was, How may teacher implementation of PjBL with fidelity be encouraged and supported in classrooms? Teachers and principals agreed that teachers need support to implement PjBL with fidelity. The needed support most commonly cited by teachers and principals was teacher training. Teachers also reported that needing (a) examples of successful implementation of PjBL; (b) opportunities to observe teachers who have successfully implemented PjBL; and (c) resources, including time, money to buy supplies, updated technology, and community involvement.

Evidence of Trustworthiness

As discussed in Chapter 3, researchers demonstrate study credibility, confirmability, dependability, and transferability to provide evidence that the conclusions they draw are meaningful, demonstrate a deep understanding of the topic, and may be useful. For these same reasons, I considered and planned ways to demonstrate credibility, confirmability, dependability, and transferability in this study. In this section, I review the outcomes of those plans.

Credibility

To establish credibility in this study, I planned to conduct member checking and make adjustments to the data based on feedback from principals' as appropriate. Because teachers completed the survey anonymously, I did not know which teachers completed the survey. Therefore, it was not possible for me to contact teachers for purposes of member checking. After completing my data analysis and writing up the Results and Answering the Research Questions sections of this study, I emailed the principals and asked them to provide feedback on the discussions presented in those sections. The principals did not indicate any needed changes to the discussion of the results or research questions. In addition to conducting member checking with the principals, I also included actual participant quotes in my presentation of results. By conducting member checking with the principals and including actual participant quotes in my presentation of results, I was able to establish the credibility of this study.

Confirmability

To establish confirmability in this study, I planned to triangulate the data by collecting data from teachers using an online anonymous qualitative survey and from principals using a focus group. I also collected data from faculty meeting minutes and personnel committee meetings minutes from 2015-2016 and 2016-2017 school years to search for statements made by teachers and principals that conveyed their perceptions about PjBL. The collection of data from teachers and principals was successful. However, no useful findings from review of the faculty meeting minutes and personnel committee meetings minutes. Data are considered to be triangulated when a researcher

uses multiple sources and methods of data collection to collect data for analysis (Gay et al., 2015; Hancock & Algozzine, 2017; Mertler, 2016). Because I collected data from both teachers and principals and used both surveys and a focus group, I still triangulated my data and thus was able to establish confirmability of my study. Also, I confirmed my findings using a second coder.

Dependability

To establish dependability in this study, I planned to (a) discuss potential biases, (b) demonstrate that the data collection instruments were well-developed and well-aligned for the study's research questions, (c) triangulate my data by collecting them from multiple sources and using multiple collection processes, and (d) describe departures from the original plans for data collection and analysis after the data collection and analysis processes were complete. Prior to conducting the study, I discussed potential biases. I also demonstrated that the data collection instruments were well-developed and well-aligned for the study's research questions. This process was accomplished by developing a table to show the alignment between the (a) survey and focus group items, (b) concepts from the conceptual framework or general literature, and (c) research questions. As discussed with regard to confirmability, I triangulated my data. Also, in this and previous sections, I have described departures from my original plans for collecting and analyzing data. Though these actions, I have established dependability in this study.

Transferability

To establish transferability in this study, I planned to provide a rich, thick description of the study setting and participants to the extent that I was able to do so

without risk to participant confidentiality. I thoroughly described the study setting in the Background section of Chapter 1. I described in detail the characteristics of the study participants in the Setting section of Chapter 4. By including rich thick descriptions of the study setting and participants, I have established the potential for transferability of my study findings.

Summary

Sufficient data were collected to fully answer the two main research questions and three subquestions developed for this study. Research Question 1 was, Why do teachers in the focus school not implement PjBL in their classrooms or not implement it with fidelity? The data showed that teachers may not implement PjBL or may not implement it with fidelity because (a) they are not knowledgeable about PjBL, (b) they have a negative attitude toward PjBL, (c) they do not feel confident in their ability to implement PjBL, (d) they are not motivated to implement PjBL, and/or (e) they do not have the needed supports to implement PjBL.

Research Question 1a was, What are teachers' perceptions regarding their capacity to implement PjBL in their classrooms? Teachers expressed mixed feelings about their capacity to implement PjBL in their classrooms. More teachers indicated they were not prepared to implement PjBL when compared to teachers who indicated they were highly or moderately prepared to implement PjBL in their classrooms.

Research Question 1b was, What are teachers' perceptions regarding the value or detriment of implementing PjBL in the classroom? The majority of teachers generally

expressed positive attitudes toward PjBL. However, some teachers expressed negative attitudes toward PjBL.

Research Question 1c was, What are teachers' perceptions regarding the influence of others on their implementation of PjBL in the classroom? Teachers reported being positively influenced to implement PjBL by others in general. However, teachers also indicated they were influenced to implement PjBL by mentors, superiors, friends, and other teachers.

Research Question 2 was, How may teacher implementation of PjBL with fidelity be encouraged and supported in classrooms? Teachers and principals agreed that teachers need support in order to implement PjBL with fidelity. The needed support most commonly cited by teachers and principals was teacher training.

In Chapter 5, the key findings of the study are reviewed. Findings are then interpreted with regard to the extent that they confirm, disconfirm, or extend knowledge in the discipline. The data also are considered with regard to the conceptual framework.

Chapter 5: Discussion, Conclusions, and Recommendations

The purpose of this study was to better understand why teachers at the focus school were not implementing PjBL in their classrooms or were not implementing it with fidelity and to generate potential solutions for improving teacher implementation of PjBL. I conducted a generic qualitative study to accomplish that exploration. Data about teachers' (n = 28) perceptions regarding the implementation of PjBL in the focus school were collected using a qualitative survey, and data about principals' (n = 3) perceptions regarding the implementation of PjBL in the focus school were collected using a focus group. I used initial and axial coding to analyze the data.

In Chapter 4, I discuss data analyzed in this study according to the themes they yielded and the research questions they answered. Key findings from the thematic analysis were (a) teacher knowledge of PjBL varies: some teachers were knowledgeable and others were not knowledgeable; (b) teacher perceptions of the value of PjBL vary: some teachers had positive attitudes toward PjBL and others had negative attitudes toward PjBL; (c) teacher confidence for implementing PjBL varies: teacher levels of confidence were high, moderate, or low; and (d) teachers are motivated to implement PjBL: motivations for implementing PjBL were positive outcomes for students, the structure of PjBL, and others. One additional theme was support for teachers implementing PjBL: teachers both received support and needed support.

Key findings that developed when answering Research Question 1 were that teachers may not implement PjBL or implement it with fidelity because they (a) are not knowledgeable about PjBL, (b) have a negative attitude toward PjBL, (c) do not feel

confident in their ability to do so, (d) are not motivated to do so, and (e) do not have the needed supports. Other findings that developed when answering Research Questions 1a, 1b, 1c, and 2 overlapped with key findings expressed in the themes. Those findings were that teachers at the focus school expressed mixed feelings about their capacity to implement PjBL in their classrooms, teachers had both positive and negative feelings about PjBL, teachers were influenced by others to implement PjBL, and teachers need support in the form of training they receive, respectively.

Interpretation of the Findings

In this section, I discuss the key concepts of the five themes: (a) knowledge of PjBL, (b) value of PjBL, (c) confidence for implementing PjBL, (d) motivation to implement PjBL, and (e) support for teachers implementing PjBL. Within the discussions of those themes, I also address how each thematic concept may be a contributor to teacher lack of implementation of PjBL and lack of implementation of it with fidelity, as suggested in the previous discussion of Research Question 1. For each concept, I consider how the findings confirm, disconfirm, or extend knowledge in the discipline-specific literature and how the theoretical framework provides insight into the findings as appropriate.

Knowledge of PjBL

Results of this study indicated that teacher knowledge about PjBL varies. Some teachers in this study indicated they were knowledgeable about the structure of PjBL and its benefits for students. This finding is supported in the literature. For example, Tamim

and Grant (2013) found that teachers defined PjBL in terms of the processes used to implement PjBL in their classrooms and its benefits for learning.

However, some teachers in this study also indicated that they did not fully understand how to implement PjBL in their classrooms. That finding is indirectly supported in the literature which suggests that lack of training is among the most noted reasons teachers find the implementation of PjBL challenging (Capraro et al., 2016; Cook & Weaver, 2015; Han, Yalvac, et al., 2015). The assumption in that claim is that teachers need training because they do not understand how to implement PjBL in their classrooms.

In addition, findings in this study suggested that teachers' lack of knowledge of PjBL kept them from implementing PjBL or implementing it with fidelity. That finding is supported by the literature. Specifically, the literature suggests that (a) teacher understanding of project-based learning (AEE, 2012; Condliffe, 2016; Hovey & Ferguson, 2014; Rogers et al., 2011; Tamim & Grant, 2013; WFHF, 2013), (b) teacher understanding of how to implement PjBL (Pecore, 2013), and (c) teacher knowledge of concepts that support the implementation of PjBL (Bradley-Levine et al., 2010; Capraro et al., 2016; Condliffe, 2016; Cook & Weaver, 2015; Han, Yalvac, et al., 2015; Hovey & Ferguson, 2014) can affect the ways in which and the extent to which teachers implement PjBL.

The theory of planned behavior can be used to better understand the ways in which and the extent to which teachers implement PjBL. According to Ajzen (2012), "activation of knowledge structures or goals can influence not only judgments or achievements but can also have a direct effect on behavior" (p. 453). Typically, the

influence of knowledge on behavior functions through automatic responses to knowledge-specific stimuli (Ajzen, 2012). In such situations, people unconsciously form attitudes based on their knowledge about a specific topic, entity, or experience (Ajzen, 2012). The application of this concept to the findings in this study produces a scenario in which teachers' knowledge about PjBL unconsciously affects their attitudes towards PjBL. Therefore, if teachers are not knowledgeable about PjBL, they unconsciously will form negative attitudes toward PjBL. Those negative attitudes toward PjBL in turn negatively influence teachers' behavioral intent to implement PjBL or implement it with fidelity, which ultimately influences their actual implementation of PjBL or their implementation of it with fidelity. In this way, teachers' lack of knowledge about PjBL could keep them from implementing PjBL or from implementing it with fidelity.

Value of PjBL

Results of this study indicated that teachers' perceptions about the value of PjBL differ. Some teachers had positive attitudes toward PjBL, and some teachers had negative attitudes toward PjBL. In addition, teachers identified benefits of PjBL, drawbacks of PjBL, and challenges of PjBL. I discuss those concepts and support for those concepts in the literature in the following sections, respectively.

Positive and negative attitudes toward PjBL. Some teachers had positive attitudes toward PjBL, but others had negative attitudes toward PjBL. This finding is supported by the literature (e.g., Vega & Brown, 2013), specifically literature related to teacher experience, which has shown that teachers with greatest levels of experience were

more likely to implement PjBL (Hovey & Ferguson, 2014). Research conducted by Maskit (2011) may help explain why that is the case.

In Maskit's (2011) study of 520 teachers, the researcher found that teachers' attitudes toward new pedagogies in general varied based on their stage of professional development. Teachers in the earlier stages of their professional development tended to be more positive about pedagogical changes when compared to teachers in the later stages of their professional development (Maskit, 2011). Specifically, between the induction and competency building stages, teachers' cognitive and affective attitudes toward pedagogical changes not only increased but also reached the highest levels of teachers' careers (Maskit, 2011). Between the competency building stage and the career wind down stage, teachers' cognitive and affective attitudes toward pedagogical changes decreased steadily, ending lower than they started during the induction stage (Maskit, 2011). Those results indicate that less experienced teachers may be more willing to learn about using PjBL than more experienced ones.

It is possible, then, that teacher perceptions about the value of PjBL varied in this study because teachers' years of experience as educators varied. Of the 28 teachers who participated in this study, six teachers had at least 1 year of experience but less than 5 years of experience, four teachers had at least 5 years of experience but less than 10 years of experience, six teachers had at least 10 years of experience but less than 15 years of experience, four teachers had at least 15 years of experience but less than 20 years of experience, and eight teachers had 20 or more years of experience. The range of teaching experience demonstrated by the teachers at the focus school suggests that teachers were

in a variety of stages of professional development at the time of this study. Considering the findings from Maskit's (2011) study then, it is not surprising that teachers in this study demonstrated differing perceptions with regard to the value of PjBL.

The theory of planned behavior also can be used to gain insight into the differing attitudes teachers have toward PjBL. As previously stated in Chapter 2, Ajzen (2012) posited that people subconsciously apply knowledge about a specific topic, entity, or experience to the development of their attitudes toward those topics, entities, or experiences. If this is the case, teachers in this study logically would have differing attitudes toward PjBL because they had varied levels of knowledge about PjBL.

Benefits of implementing PjBL. Teachers in this study perceived PjBL to be beneficial. Those teachers cited specific reasons for their perceptions. Those reasons, along with evidence of support from the literature, are presented in Table 2. Findings from other studies do not support the findings from this study with regard to the benefits of PjBL. For example, Johnson and Delawsky (2013) did not find PjBL to be beneficial with regard to student engagement. Instead, Johnson and Delawsky found that when compared to students who do not learn in PjBL environments, students who do learn in PjBL environments have the same or lower levels of behavioral engagement. However, the researchers did acknowledge that the timing of their introduction of PjBL to their students was not ideal because they introduced it in the latter half of the semester, when research shows student engagement typically wanes regardless of the teaching strategies used. Hasni and Potvin (2015) also did not find any effect on student engagement among Canadian students studying science and technology when they participated in student-

centered learning that included student projects (i.e., PjBL). However, because the students indicated they preferred to learn in environments that were student centered, the researchers posited that their findings maybe have been the result of students' dislike for the subject matter rather than the PjBL environment.

Table 2

Teacher Perceived Benefits of PjBL and Evidence of Support in the Literature

Teacher perceived benefits of PjBL	Support in the literature
Supports student learning	Capraro et al. (2016) Cervantes et al. (2015) Chen et al. (2015) Cogger and Miley (2012) Duke et al. (2017) Erdogan et al. (2016) Halvorsen et al. (2012) Han, Capraro, and Capraro (2015) Harris et al. (2015) Hasni et al. (2016) Johnson and Delawsky (2013) Morales et al. (2013) Summers and Dickinson (2012) Tamim and Grant (2013) Walker et al. (2016) WFHF (2013) AIR (2016)
Allows students to engage in real-world activities	Bradley-Levine et al. (2010) Chen et al. (2015) DeWaters et al. (2014)
Allows students to be creative	Munakata and Vaidya (2015) Remijan (2016) Tamim and Grant (2013)
Improves student engagement	Dole et al. (2017) Hall and Miro (2016) Holmes and Hwang (2016)
Improves student motivation	La Porte (2016) Marle et al. (2014) Morales et al. (2013) Morrison et al. (2015)
Promotes student engagement	Hill (2014) Tamim and Grant (2013)
Promotes collaboration	Ryder et al. (2012)
Promotes communication	Yew and Schmidt (2012)

(continued)

Teacher perceived benefits of PjBL	Support in the literature
Promotes leadership	Morales et al. (2013) Ryder et al. (2012) Sahin and Top (2015) Tamim and Grant (2013)
Promotes higher level learning	La Porte (2016) Morales et al. (2013)
Promotes critical thinking	Holmes and Hwang (2016) Mosier et al. (2016)
Promotes problem solving	Morales et al. (2013) Morrison et al. (2015)
Promotes social skills	AIR (2016) Cho and Brown (2013) Creghan and Adair-Creghan (2015) Lee et al. (2015)\ Morales et al. (2013) Morrison et al. (2015) Sahin and Top (2015)
Promotes independent learning	Mosier et al. (2016)
Promotes use of technology and technology skills	Sahin and Top (2015) Schwalm and Tylek (2012)
Projects are relevant	Hill (2014) Morrison et al. (2015) Tamim and Grant (2013)
Reaches the nontraditonal learner	Creghan and Adair-Creghan (2015) Hovey and Ferguson (2014)
Prepares students for college and careers	Summers and Dickinson (2012)

Drawbacks of implementing PjBL. Teachers in this study perceived there were drawbacks to implementing PjBL. Those teachers cited specific reasons for their perceptions. The reasons teachers cited for which I found support in the literature, are presented in Table 3. In addition, teachers in this study perceived that PjBL (a) did not prepare students for college, (b) made it difficult for students to catch up on work when

they missed class, and (c) created unequal workloads for students. These insights from teachers at the focus school extend the knowledge in the teaching discipline with regard to the drawbacks of PjBL.

Table 3

Teacher-Perceived Drawbacks of PjBL and Evidence of Support in the Literature

Teachers' perceived drawbacks of PjBL	Support in the literature
Student learning weakened	Capraro et al. (2016) Han, Capraro, and Capraro (2015)
Inequity of student resources	Campbell (2012) Han, Capraro, and Capraro (2016)
Students lack skills required to do PjBL	Aslan and Reigeluth (2016) Bradley-Levine et al. (2010) Vega and Brown (2013)
Students lack experience with learning strategy	Edmunds et al. (2017) Johnson and Delawsky (2013)

Challenges of implementing PjBL. Teachers in this study perceived there were challenges to implementing PjBL. Those teachers cited specific reasons for their perceptions. The reasons teachers cited for which I found support in the literature, are presented in Table 4. In addition, teachers in this study perceived that PjBL was challenging because it was costly for them to implement and because project assessment was challenging. These insights from teachers at the focus school extend the knowledge in the teaching discipline with regard to the challenges of PjBL.

Table 4

Teacher-Perceived Challenges of PjBL and Evidence of Support in the Literature

Teacher perceived challenges of PjBL	Support in the literature
Teachers' lack of knowledge about PjBL*	AEE (2012) Condliffe (2016) Hovey and Ferguson (2014) Tamim and Grant (2013) WFHF (2013)
Teachers' lack of skills needed to implement PjBL	Bradley-Levine et al. (2010) Capraro et al. (2016) Condliffe (2016) Cook and Weaver (2015) Han, Yalvac, et al. (2015) Hovey and Ferguson (2014)
Lack of support*	Aslan and Reigeluth (2016) Bradley-Levine et al. (2010) Vega and Brown (2013)
Teacher transition from lecturer to facilitator	Aslan and Reigeluth (2016) Bradley-Levine et al. (2010) Pecore (2013)
Teacher resistance to change / new pedagogies*	Maskit (2011)
Workload / lack of time for teachers	Albritton and Stacks (2016) Aslan and Reigeluth (2016)
Planning	Bradley-Levine et al. (2010)
Classroom management	Bradley-Levine et al. (2010)
Alignment challenging (standards)	Aslan and Reigeluth (2016)
Lack of (adequate) resources	Bradley-Levine et al. (2010) Hill (2014) Rye et al. (2013)
Lack of training*	Bradley-Levine et al. (2010)

Note. Items marked with an asterisks (*) indicate perceived challenges of PjBL that also were noted by principals.

Confidence Implementing PjBL

Some teachers in this study indicated they had low levels of confidence in their ability to plan and implement PjBL in their classrooms. This finding is supported in the literature, which indicated that teachers may lack the self-efficacy and confidence needed to implement PjBL with fidelity (e.g., Aslan & Reigeluth, 2016; Hixson et al., 2012). Teachers who lack self-efficacy with regard to implementing PjBL specifically have reported being concerned about their ability to recognize when different students had demonstrated mastery of a concept after the students had completed their projects (Aslan & Reigeluth, 2016; Hixson et al., 2012). Teachers in this study also indicated they were unsure about how to assess students when using PjBL. Some teachers in this study indicated they had moderate and high levels of confidence in their ability to plan and implement PjBL in their classrooms. This finding is supported in the literature. Results of Bradley-Levine et al.'s (2010) study showed that teachers can be confident in their ability to implement PjBL.

Teachers in this study also indicated that they could implement PjBL if they had the appropriate training, which suggests that training could be a source of confidence for teachers. The idea that professional development can be an effective pathway to teacher confidence implementing PjBL is supported in the literature. When Bradley-Levine et al. (2010) surveyed 250 various-level educators implementing PjBL, they found that 69.9% reported increased levels of confidence in their ability to design PjBL experiences for students, and 63.5% reported increased levels of confidence in their ability to implement PjBL in their classrooms after participating in professional development. Those data

show that teachers are capable of achieving high levels of confidence planning and implementing PjBL.

That training can help improve teacher confidence is further supported in the literature and by theory. According to Tschannen-Moran and McMaster (2009), training on new teaching strategies that includes demonstration, opportunities to practice a behavior, and in particular coaching, can significantly improve teachers' implementation of PjBL because training of that nature provides teachers with mastery experiences. Bandura (1977) explained that practice can support mastery experiences (i.e., performance accomplishments), because when a person has the opportunity to practice an activity or practice a behavior needed to accomplish a task, that person is more likely to gain the skills he or she needs to accomplish that task. If, through practice, that person gains the skills he or she needs to accomplish a task, that person will be more likely to attempt to accomplish that task and to ultimately accomplish that task (Bandura, 1977). When a person is successful in accomplishing a task, that mastery experience becomes evidence that that person is capable of completing a specific task and thus increases that person's self-efficacy in his or her ability to accomplish that task again (Bandura, 1977). Coaching can serve as a means of helping teachers practice and master the implementation of new pedagogies (Tschannen-Moran & McMaster, 2009). It is through these processes that training that includes coaching, and opportunities to practice planning and implanting PjBL could lead to improved teacher confidence in planning and implementing PjBL.

In addition to promoting mastery experiences, including demonstrations in teacher training on new teaching strategies can improve teachers' confidence in implementing those strategies (Tschannen-Moran & McMaster, 2009). According to Bandura (1977), opportunities to observe others successfully complete a task (i.e., vicarious experiences) can increase a person's self-efficacy for accomplishing a task because other people's accomplishments demonstrate that the particular task can successfully be accomplished. If a person believes a task can be accomplished, that person is more likely to attempt to accomplish that task (Bandura, 1977). It is through this process that training that includes demonstrations of how to successfully plan PjBL activities and implement PjBL could lead to improved teacher confidence in planning and implementing PjBL.

In addition to promoting mastery experiences, including coaching in teacher training on new teaching strategies can improve teachers' confidence in implementing those strategies (Tschannen-Moran & McMaster, 2009). Coaching experiences provide individual opportunities for coaches to provide their trainees with verbal support or persuasion (Tschannen-Moran & McMaster, 2009). Verbal persuasion, or social persuasion as Bandura (1977) referred to it, is an effective means of improving a person's self-efficacy in their ability to accomplish a task because if a person believes that someone else thinks they are capable of accomplishing a particular task, that person will be more likely to believe that he or she is capable of accomplishing that task. If a person believes he or she is capable of accomplishing a particular task, that person is more likely to attempt to accomplish that task (Bandura, 1977).

In different language but conveying similar ideas, Ajzen (2012) explained that a person's control beliefs (i.e., the person's beliefs about his or her capacity to perform a particular behavior) can affect the person's beliefs about his or her control over a particular behavior. If a person does not believe that he or she has control over a behavior, that person will not develop behavioral intent with regard to that particular behavior, and ultimately, that person will not engage in that particular behavior (Ajzen, 2012). In this way, social persuasion through coaching in training could lead to improved teacher confidence in planning and implementing PjBL. However, the effect of social persuasion, or perceived behavioral control, may be mitigated by a person's outcome beliefs (Bandura, 1977) or attitude toward the behavior (Ajzen, 2012). If a person does not believe that engaging in a particular activity or behavior will result in a particular outcome, that person will not be likely to engage in that activity or behavior regardless of the person's belief in his or her capacity to accomplish that outcome (Ajzen & Fishbein, 1972; Bandura, 1977).

Motivation to Implement PjBL

Some teachers in this study indicated they were motivated to implement PjBL; however, other teachers indicated they were not motivated to implement PjBL. These findings are supported in the literature. In Maskit's (2011) study of 520 teachers, the researcher found that teachers' motivational attitudes toward new pedagogies in general varied based on their stage of professional development. Teachers in the earlier stages of their professional development tended to be more motivated to implement new pedagogies when compared to teachers in the later stages of their professional

development (Maskit, 2011). Specifically, between the induction and competency building stages, teachers' motivation to implement new pedagogies not only increased but also reached the highest levels of teachers' careers (Maskit, 2011). Between the competency building stage and the career wind down stage, teachers' motivation to implement new pedagogies decreased steadily, ending lower than they started during the induction stage (Maskit, 2011).

It is possible, then, that teachers' motivation to implement PjBL varied in this study because teachers' years of experience as an educator varied. As indicated previously, of the 28 teachers who participated in this study, six teachers had at least 1 year of experience but less than 5 years of experience, four teachers had at least 5 years of experience but less than 10 years of experience, six teachers had at least 10 years of experience but less than 15 years of experience, four teachers had at least 15 years of experience but less than 20 years of experience, and eight teachers had 20 or more years of experience. The range of teaching experience demonstrated by the teachers at the focus school suggests that teachers were in a variety of stages of professional development at the time of this study. Considering the findings from Maskit's (2011) study then, it is not surprising that teachers in this study demonstrated differing levels of motivation with regard to implementing PjBL.

That teachers in this study demonstrated differing levels of motivation with regard to implementing PjBL also is not surprising when considered through the lens of Deci and Ryan's (2000) self-determination theory. According to Deci and Ryan, people are motivated to engage in a particular behavior if those people perceive relatedness in that

behavior. In this study, some teachers had negative attitudes toward PjBL, which indicated they did not find value in using PjBL. In other words, teachers did not believe PjBL was related to the work they did educating students. It is possible then, that teachers in this study who had negative attitudes toward PjBL did not believe PjBL was related to their job function and thus were not motivated to implement PjBL.

People also are motivated to engage in behaviors they feel capable of carrying out (Deci & Ryan, 2000). This phenomenon is captured in Bandura's (1977) concept of self-efficacy and Ajzen's (2012) concept of perceived behavioral control. In both cases, people are more likely to engage in behaviors and attempt tasks they believe they can accomplish (Ajzen & Fishbein, 1972; Bandura, 1977). In this study, teachers did not feel they were prepared to implement PjBL. It is possible then, that because teachers in this study did not feel prepared to implement PjBL, they were not motivated to implement it.

In addition, as indicated previously, people are not likely to engage in behaviors or attempt to accomplish a task if they do not perceive they have actual control over the accomplishment of the task (Ajzen & Fishbein, 1972; Bandura, 1977; Deci & Ryan, 2000), regardless of their belief in their own personal capacity to accomplish the task autonomously (Ajzen, 2012; Bandura, 1977). In this study, some teachers reported they lacked the resources they needed to implement PjBL. It is possible, then, that some teachers may have perceived themselves personally capable of implementing PjBL but did not try to implement it because they lacked the needed resources and thus did not perceive they had actual control over its successful implementation. In this way, teachers at the focus school may have lacked the motivation to implement PjBL.

Support for Implementing PjBL

The data in this study indicated that teachers and principals perceived that teachers lacked the needed support to implement PjBL. The most noted support needed was training although teachers also asked for guidance and mentorship. Results of other studies have shown similar outcomes. In some cases, teachers reported wanting access to more in-house professional development opportunities (Bradley-Levine et al., 2010; Hovey & Ferguson, 2014). In other cases, teachers reported wanting to attend more workshops outside of their work settings (Bradley-Levine et al., 2010).

Teachers in this study also perceived that training could help prepare them to implement PjBL and implement it with fidelity. This finding is supported by the literature which shows training can be an effective means of transferring knowledge to educators (Bradley-Levine et al., 2010; Capraro et al., 2016; Pecore, 2013) and improving their levels of self-efficacy with regard to the implementation of PjBL (Bradley-Levine et al., 2010). Professional development for PjBL that is focused on pedagogy and excludes or minimizes related knowledge can restrict the effect of that professional development on teachers' implementation of PjBL in their classrooms (Cook & Weaver, 2015). However, training that combines information, demonstration, practice, and, in particular, coaching can significantly affect teacher implementation of a new teaching strategy (Tschannen-Moran & McMaster, 2009). In this study, teachers indicated they lacked knowledge but also that they wanted opportunities to (a) observe others implementing PjBL, (b) practice planning and implementing PjBL with topics that were subject appropriate for the classes they taught, and (c) guidance from mentors. These findings indicate that teachers in this

study not only are open to participating in training but that they understand the qualities of effective training.

As discussed in previous sections, it is likely that training that includes information, demonstration, practice, and coaching would help improve teacher implementation of PjBL at the study site. Increasing teachers' knowledge of PjBL could improve their attitudes towards PjBL and thus increase the chances that they would attempt to implement it. Opportunities to observe PjBL being planned and implemented effectively would serve as vicarious experiences for teachers; opportunities to practice effective planning and implementation of PjBL could lead to mastery experiences for teachers; and opportunities to work with a coach would provide teachers the opportunity to be socially persuaded that they are capable of implementing PjBL and capable of implementing it with fidelity. Those vicarious experiences, those performance accomplishments, and that social persuasion could help improve teachers' self-efficacy in their ability to implement PjBL and implement it with fidelity and thus promote their actual implementation of it and their implementation of it with fidelity.

Limitations of the Study

This study was limited in several ways. First, this study was limited by the use of a survey to collect qualitative data from participants. Using a survey to collect qualitative data meant that my ability to collect detailed data from each participant was dependent on their willingness to spend time typing responses to the survey items. Some teachers were generous with their time and provided detailed responses. For example, in response to

Survey Item 6, Please describe your understanding of project-based learning, Teacher 15 said,

> Students are given a goal, or direction, then in groupings, together come up with a goal and project towards that goal. Project based learning teaches students to problem solve and have more input for their learning with their failures and successes creating long-term learning and successes in their future for application in all areas for any given situation. The instructor is a facilitator rather than just feeding the information and expecting the memory (short term learning).

Teacher 18 also gave a detailed response to Survey Item 6. That teacher said,

> Project based learning is hands on learning where the teacher presents a problem and then takes a backseat by simply being the facilitator of the project. The teacher of course must guide the students but the students should be allowed to take the lead. This sometimes leads to reaching different subjects or ways to solve the real-life problem which is kind of the point.

However, many teachers gave short responses that provided little insight into their actual understanding of PjBL. For example, Teacher 13 said, “my understanding is strong,” Teacher 9 said, “not much,” Teacher 10 said, “minimal,” and Teacher 22 said, “don’t really understand it fully.” Many of the teachers who gave simple or general responses to Survey Item 6, also gave simple or general responses to other survey items, including Survey Item 16, which was, What additional support, if any, would promote the ongoing or increased implementation of PjBL in your classroom? For example, Teacher 9 said, “my job,” and Teacher 13 said, “N/A.”

Using a survey also was limiting because that data collection format made it impossible to ask follow-up questions or seek clarification from participants when their responses were minimal or unclear, respectively. For example, in response to Survey Item 11, In what ways are you motivated to implement PjBL in your classroom, Teacher 13 said, "already motivated." If I had had the opportunity to ask this question of Teacher 13 in person, I would have asked that teacher to explain the ways in which he or she was motivated to implement PjBL. Teacher 8 said, "I'd like to implement PjBL to support the academy structure that we currently have in place." If I had had the opportunity to ask this question of Teacher 8 in person, I would have asked that teacher to explain how he or she felt implementing PjBL could support the academy structure and how that was personally motivating. Ideally then, it would have been best to collect data from participants using one-on-one interviews and potentially a focus group. Despite being limited by the use of the survey for data collection, I was able to collect enough data to adequately answer the research questions posed for this study.

This study also was limited by my inability to triangulate the data using more than two sources of data and two methods of data collection. Because of my role as a principal in the study setting, I could not collect data from teachers using interviews and a focus group. Therefore, I was limited to collecting data from teachers using a survey. Also, I intended to further triangulate my data by collecting data using faculty meeting minutes and personnel committee meetings from the 2015-2016 and 2016-2017 school years to search for statements made by teachers and principals that expressed their perceptions about PjBL. However, no viable data were found in those documents. Despite being

limited by my inability to triangulate my data to the full extent I had intended, I was able to demonstrate the trustworthiness of my data and study findings in other ways, as described in the Evidence of Trustworthiness section in Chapter 4.

This study also was limited by my inability to record the focus group with the principals. Originally, the principals had agreed to be digitally recorded during the focus group. However, at the time of the focus group, the principals indicated they preferred not to be digitally recorded. To accommodate their request, I manually recorded the main ideas the principals expressed in response to the focus group prompts. Because I was concentrating on recording data, I was not able to focus as deeply on what the principals were saying as I would have liked, and thus I did not necessarily ask follow-up questions the way I may have if I had not been manually recording the focus group. Despite this limitation in the data collection process, I was able to collect valuable data from the principals that added depth to my understanding of teachers' lack of implementation of PjBL and their lack of implementation of PjBL with fidelity.

Recommendations

By conducting this study, I collected valuable data about teachers' perceptions regarding the implementation of PjBL and teachers' and principals' perceptions regarding the best means for supporting teachers' efforts to implement PjBL with fidelity. However, as indicted in the Limitations of the Study section, some teachers who participated in this study provided only simple or general responses when asked about their knowledge of PjBL (Survey Item 6), their motivations for implementing PjBL (Survey Item 11), and the support and training they needed to implement PjBL (Survey

Item 16). More data about teachers' perceptions in these areas could be helpful to ensure that the data are applied to solutions in a way that will yield the greatest results.

According to Ajzen (2012), knowledge can affect attitude and directly influence behavior. Therefore, it is imperative that additional data be collected about the specific knowledge teachers are lacking with regard to PjBL. Similarly, because motivation plays a critical role in behavior (Ajzen, 2012; Deci & Ryan, 1985, 2000, 2008), it is imperative that additional data be collected about the best ways to utilize motivating forces of teacher implementation of PjBL. In addition, because training is most likely to help improve teachers' implementation of new pedagogies (Tschannen-Moran & McMaster, 2009), PjBL in particular, if teachers also possess the skills for transferring new knowledge to the educators' respective teaching environments (Bradley-Levine et al., 2010), it is important to understand the level of teacher skill in that regard. When gathering these additional data on these topics, I recommend interviews be used so that immediate follow-up to weak or unclear teacher responses may occur.

Implications

The critical implication of this study is the potential for social change through improved teacher implementation of PjBL and improved implementation of PjBL with fidelity at the focus school, which ultimately could lead to improved student learning and outcomes. Data from this study showed that some teachers at the focus school lack knowledge about PjBL, have low levels of self-efficacy with regard to implementing PjBL, and have negative attitudes toward PjBL. Through well-developed training and other supports, those conditions could be changed.

Training could help improve teachers' attitudes toward PjBL. Training could be developed that begins with basic knowledge about the PjBL process. Teachers also could be exposed to research that shows the positive effects of PjBL for both students and teachers. According to Ajzen (2012), knowledge can affect attitude and directly influence behavior. Therefore, by improving teacher knowledge about PjBL, it would be possible to improve their attitudes toward PjBL, which would further improve the likelihood that they would implement PjBL and implement it with fidelity.

In addition to improving teachers' attitudes toward PjBL, training could help improve teachers' perceived behavioral control, or sense of self-efficacy, with regard to implementing PjBL. Improved knowledge about how to implement PjBL combined with subject-appropriate examples provided by colleagues who have successfully implemented PjBL in their classrooms could act as vicarious experiences for teachers. According to Bandura (1977), when people are vicariously exposed to successful task completion by others, those people are more likely to attempt to complete that same task themselves. With regard to teachers at the focus school, if teachers, with improved knowledge through training, are then exposed to subject-appropriate examples provided by colleagues who have successfully implemented PjBL in their classrooms, those teachers should be more likely to try to implement PjBL themselves.

Teachers' sense of self-efficacy, and thus perceived behavioral control, also could be improved by providing them opportunities to practice developing and implementing PjBL. According to Bandura (1977), when people master a task, that mastery experience motivates them to try to accomplish that task again. If teachers at the focus school are

provided opportunities to practice developing and implementing PjBL, they will be more likely to be successful, in which case they would gain a mastery experience that would further increase their self-efficacy for implementing PjBL and in turn increase the chances that would actually implement PjBL and implement it with fidelity.

To further improve the likelihood that teachers will implement PjBL and implement it with fidelity, the focus school could appoint champions to promote PjBL. For teachers who are motivated by other teachers, considered important others according to Ajzen's (2012) theory of planned behavior, having PjBL champions who are teachers could be a strong motivator. In a similar fashion, a mentor program could be beneficial for motivating teachers to implement PjBL and implement it with fidelity if those teachers are motivated by important others. Improving teachers' motivation to implement PjBL and implement it with fidelity could improve teachers' actual implementation of PjBL and implementation of PjBL with fidelity.

Furthermore, part of the function of the PjBL champions and mentors would be to encourage other teachers in their own capacity to implement PjBL. According to Bandura (1977), people's belief in their own capacity to accomplish a task can be increased through social persuasion. In this regard, social persuasion, received through PjBL campions and mentors, could help improve teachers' levels of self-efficacy for implementing PjBL and in turn increase the chances that would actually implement PjBL and implement it with fidelity. Because the data showed that some teachers already are knowledgeable about PjBL, have positive attitudes toward PjBL, and are motivated to

implement PjBL, finding teachers in the school to act as a champion and mentors should not be challenging.

Data from this study indicated that principals also could benefit from training. Of the three principals, two had minimal training; the one principal who indicated he did have some training in PjBL said that he learned about the strategy from one of the teachers in the school, from watching You Tube videos, and reading journals. None of the principals indicated they had observed PjBL in settings in which the strategy was well-employed and successful. Because principals are responsible for helping their teachers be successful, it is imperative that principals not only understand what is entailed in implementing PjBL but also the best ways to support teachers' efforts to implement PjBL and implement it with fidelity. Although data in this study indicated that teachers need more support in the form of training and resources, by observing PjBL in action in schools where PjBL has successfully been implemented and by talking to principals at those schools, principals in the focus school could learn how best to implement training and provide resources and other supports for their teachers. It is likely that if the principals knew how to better support their teachers, teachers would be better able and more willing to implement PjBL and implement it with fidelity.

Conclusion

Student-focused learning is not a new concept in the teaching discipline (Aslan & Reigeluth, 2016), and many educators have turned to PjBL as a means of transforming their classrooms into student-centered learning environments (GlobalSchoolNet.org, 2006). However, many teachers do not implement PjBL because they (a) do not have a

full understanding of what PjBL is (Condliffe, 2016), (b) do not know how to implement it (Pecore, 2013), or find the process challenging (Aslan & Reigeluth, 2016). Data in this study showed that teachers at the focus school also were not implementing PjBL or not implementing it with fidelity for these same reasons. Teachers indicated a need for more support, especially guidance, mentorship opportunities, and training.

The literature has shown that teacher training of new pedagogies can be successful when that training combines information, demonstration, practice, and, especially, coaching. As I stated in the previous section, I believe that such training should be developed at the focus school. The principals who participated in this study appeared to be strong supporters of additional training, and the teachers appeared to want training, provided that the training was appropriate. I suggested that training be developed at the focus school considering (a) the best practices expressed in the literature; (b) theories on self-efficacy, planned behavior, and motivation; and (c) the specific needs expressed by the teachers in this study. Because I realize that the development of effective training requires in-depth knowledge of one's audience, I also suggested that additional information be gathered from the teachers at the focus school. However, I believe that the data I collected in this study provides a good starting point for developing teacher training on PjBL. Additional information could be used in combination with feedback from initial training efforts to further improve and refine the training as needed.

If training is developed that provides teachers with knowledge about PjBL, helps improve their attitudes towards PjBL, and improves their self-efficacy with regard to

their capacity to implement PjBL, it is likely that teachers at the focus school will be more willing to implement PjBL and implement it with fidelity. If teacher implementation of PjBL can be improved, social change could be achieved in the form of improved student outcomes. In particular, PjBL could lead to improved levels of learning and cognition (Duke et al., 2017; Hasni et al., 2016), critical thinking skills (Holmes & Hwang, 2016; Mosier et al., 2016), problem solving skills (Morales et al., 2013; Morrison et al., 2015), 21st century technology skills (Sahin & Top, 2015), self-esteem (Morales et al., 2013), self-confidence (Marle et al., 2014), student engagement (Dole et al., 2017; Hall & Miro, 2016), and motivation to learn (Morales et al., 2013; Morrison et al., 2015). Students also could improve their personal (AIR, 2016; (Creghan & Adair-Creghan, 2015), social (Morales et al., 2013; Morrison et al., 2015), and leadership skills (Lee et al., 2015). In the competitive work environment of the 21st century, students need an edge to be successful. As a principal at the focus school, I feel obligated to ensure that my students receive that edge through teacher implementation of PjBL.

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Appendix A: PjBL Project Design Rubric

Essential Project Design Element	**Lacks Features of Effective PBL** *The project has one or more of the following problems in each area:*	**Needs Further Development** *The project includes some features of effective PBL but has some weaknesses:*	**Includes Features of Effective PBL** *The project has the following strengths:*
Key Knowledge, Understanding & Success Skills	▶ Student learning goals are not clear and specific; the project is not focused on standards. ▶ The project does not explicitly target, assess, or scaffold the development of 21st century skills.	▶ The project is focused on standards-derived knowledge and understanding, but it may target too few, too many, or less important goals. ▶ 21st century skills are targeted, but there may be too many to be adequately taught and assessed.	▶ The project is focused on teaching students specific and important knowledge, understanding, and skills derived from standards and central to academic subject areas. ▶ Important 21st century skills are explicitly targeted to be taught and assessed, such as critical thinking/problem solving, collaboration, and self-management.
Challenging Problem or Question	▶ The project is not focused on a central problem or question (it may be more like a unit with several tasks); or the problem or question is too easily solved or answered to justify a project. ▶ The central problem or question is not framed by a driving question for the project, or it is seriously flawed, for example: ▪ it has a single or simple answer. ▪ it is not engaging to students (it sounds too complex or "academic" like it came from a textbook or appeals only to a teacher).	▶ The project is focused on a central problem or question, but the level of challenge might be inappropriate for the intended students. ▶ The driving question relates to the project but does not capture its central problem or question (it may be more like a theme). ▶ The driving question meets some of the criteria (in the Includes Features column) for an effective driving question, but lacks others.	▶ The project is focused on a central problem or question, at the appropriate level of challenge. ▶ The central problem or question is framed by a driving question for the project, which is: ▪ open-ended; it will allow students to develop more than one reasonable answer. ▪ understandable and inspiring to students. ▪ aligned with learning goals; to answer it, students will need to gain the intended knowledge, understanding, and skills.

Sustained Inquiry	▶ The "project" is more like an activity or "hands-on" task, rather than an extended process of inquiry. ▶ There is no process for students to generate questions to guide inquiry.	▶ Inquiry is limited (it may be brief and only occur once or twice in the project; information-gathering is the main task; deeper questions are not asked). ▶ Students generate questions, but while some might be addressed, they are not used to guide inquiry and do not affect the path of the project.	▶ Inquiry is sustained over time and academically rigorous (students pose questions, gather & interpret data, develop and evaluate solutions or build evidence for answers, and ask further questions). ▶ Inquiry is driven by student-generated questions throughout the project.
Authenticity	▶ The project resembles traditional "schoolwork;" it lacks a real-world context, tasks and tools, does not make a real affect on the world or speak to students' personal interests.	▶ The project has some authentic features, but they may be limited or feel contrived.	▶ The project has an authentic context, involves real-world tasks, tools, and quality standards, makes a real affect on the world, and/or speaks to students' personal concerns, interests, or identities.
Student Voice & Choice	▶ Students are not given opportunities to express voice and choice affecting the content or process of the project. ▶ Students are expected to work too much on their own, without adequate guidance from the teacher and/or before they are capable.	▶ Students are given limited opportunities to express voice and choice, generally in less important matters (deciding how to divide tasks within a team or which website to use for research). ▶ Students work independently from the teacher to some extent, but they could do more on their own.	▶ Students have opportunities to express voice and choice on important matters (questions asked, texts and resources used, people to work with, products to be created, use of time, organization of tasks). ▶ Students have opportunities to take significant responsibility and work as independently from the teacher as is appropriate, with guidance.

Reflection	▶ Students and the teacher do not engage in reflection about what and how students learn or about the project's design and management.	▶ Students and teachers engage in some reflection during the project and after its culmination, but not regularly or in depth.	▶ Students and teachers engage in thoughtful, comprehensive reflection both during the project and after its culmination, about what and how students learn and the project's design and management.
Critique & Revision	▶ Students get only limited or irregular feedback about their products and workin-progress, and only from teachers, not peers. ▶ Students do not know how or are not required to use feedback to revise and improve their work.	▶ Students are provided with opportunities to give and receive feedback about the quality of products and work-in-progress, but they may be unstructured or only occur once. ▶ Students look at or listen to feedback about the quality of their work, but do not substantially revise and improve it.	▶ Students are provided with regular, structured opportunities to give and receive feedback about the quality of their products and work-in-progress from peers, teachers, and if appropriate from others beyond the classroom. ▶ Students use feedback about their work to revise and improve it.
Public Product	▶ Students do not make their work public by presenting it to an audience or offering it to people beyond the classroom.	▶ Student work is made public only to classmates and the teacher. ▶ Students present products, but are not asked to explain how they worked and what they learned.	▶ Student work is made public by presenting or offering it to people beyond the classroom. ▶ Students are asked to publicly explain the reasoning behind choices they made, their inquiry process, how they worked, what they learned, etc.

Note. Adapted from "Project Based Teaching Rubric," by the Buck Institute of Education, 2017 (http://www.bie.org/object/document/project_based_teaching_rubric). Copyright 2017. Reprinted with permission.

Appendix B: Confidential Qualitative Survey for Teachers

Background Items:

1. For how many years have you worked as an educator?

< 1	1 < 5	5 < 10	10 < 15	15 < 20	20 <

2. What grade level(s) do you teach?

9th	10th	11th	12th	Other: _____

3. What subject(s) do you teach?

Language Arts	Math	Science	Social Studies	Other: _____

4. For how many years have you been familiar with project based learning, either directly or indirectly?

< 1	1 < 5	5 < 10	10 < 15	15 < 20	20 <

5. Approximately how many hours of training have you received in project based learning?

0	1 - 5	5 - 10	10 - 15	15 - 20	20+

PjBL Items:

6. Please describe your understanding of project based learning.

7. With regard to teachers, please describe what you perceive to be the benefits or drawbacks of implementing PjBL.

8. With regard to students, please describe what you perceive to be the benefits or drawbacks of implementing PjBL.

9. How, if at all, has your perception of PjBL changed over the last 2 years? What prompted that change in perception?

10. Please describe your level of preparedness to implement PjBL in your classroom.

11. In what ways are you motivated to implement PjBL in your classroom?

12. In what ways have others influenced your decision to implement PjBL in your classroom?

13. Please identify challenges to your implementation of PjBL in your classroom.

14. Please identify other factors that may impact your implementation of PjBL in your classroom.

15. Please identify conditions at the school that you perceive support your implementation of PjBL in your classroom.

16. What additional support, if any, would promote the ongoing or increased implementation of PjBL in your classroom?

Appendix C: Focus Group Interview Protocol for Principals

Focus Group Interview Protocol for Principals

Dialogue: Hello. Thank you for agreeing to be involved in this focus group today. Your time and feedback are valuable and will contribute to a better understanding of why teachers at the focus school are not implementing PjBL in their classrooms or are not implementing it fully and how teacher implementation of PjBL can be supported. Previously, I provided you with a letter of consent that included information about this study and the expectations for your participation in this interview. I also informed you that this focus group interview would be recorded. Do any of you have any questions about this study or your participation at this time? (If yes, answer the participants' questions. If any of the participants no longer wish to participate in the study based on the responses to the participant's questions, thank the participant for participating and excuse the participant from the study. If the participants do not have any questions, continue with the dialog.) Great. But before we begin, I would like to discuss the structure of the focus group. The purpose of interviewing you all as a group is to facilitate discussion among you. I will provide prompts to get the discussion going and moderate the discussion, but interaction among you is encouraged. I do ask that everyone is respectful of one another's perceptions and considerate of others when they are speaking. At this time, I will randomly assign you a participant number between 1 and 3. Assigning you numbers will allow me to keep the recorded data deidentified. I ask that before you begin speaking, you identify yourself by the participant number you were assigned. If you forget, I will speak your number for you.

Background Items:

If you are willing, I ask that you share with the group a little background information:

1. Please share the number of years you have worked as a principal.
2. Please share the number of years you have worked as a principal at this school.
3. Please share the number of years you have been familiar with project based learning, either directly or indirectly.
4. Please describe the training you received in project based learning.

PjBL Items:

5. What is the first thing that comes to mind when you think of PjBL?
6. In what ways has the implementation of PjBL failed in this school?

7. What factors can you identify that have contributed to teachers' failure to implement PjBL or implement it fully in this school?

8. What role do you perceive teacher characteristics have played in the implementation process with regard to PjBL at this school?

9. If you were giving a principal advice about implementing PjBL at another school, what would you tell that principal?

10. What supports are in place at the school now that are effective?

11. What supports could reasonably be added to those that exist now to help improve teacher implementation of PjBL at the school?

Appendix D: Survey and Focus Group Items, Key Concepts, and Research Questions

Survey item	Concepts from the conceptual framework or general literature	Potential research question(s) addressed
	One-on-one interview	
8. Please describe your understanding of PjBL as a student-centered approach to student learning.	• Attitude	Research Question 1 Research Question 1b
9. With regard to teachers, please describe what you perceive to be the benefits or drawbacks of implementing PjBL.	• Attitude • Motivation	Research Question 1b
10. With regard to students, please describe what you perceive to be the benefits or drawbacks of implementing PjBL.	• Attitude • Motivation	Research Question 1b
11. How, if at all, has your perception of PjBL changed over the last 2 years? What prompted that change in perception?	• Attitude	Research Question 1b
12. Please describe your level of preparedness to implement PjBL in your classroom.	• Perceived behavioral control • Self-efficacy	Research Question 1a
13. In what ways are you motivated to implement PjBL in your classroom?	• Motivation • Subjective norm • Perceived behavioral control • Self-efficacy	Research Questions 1a and 1c

(continued)

Survey item	Concepts from the conceptual framework or general literature	Potential research question(s) addressed
	One-on-one interview	
14. In what ways have others influenced your decision to implement PjBL in your classroom?	• Motivation • Subjective norm • Perceived behavioral control • Self-efficacy	Research Questions 1a and 1c
15. Please identify challenges to your implementation of PjBL in your classroom.	• Teacher understanding/knowledge of project-based learning • Time	Research Question 1
16. Please identify other factors that may affect your implementation of PjBL in your classroom.	• Stage of professional development • Type of professional development • Teacher characteristics • Conflicts of interest	Research Question 1
17. Please identify conditions at the school that you perceive support your implementation of PjBL in your classroom.	• Type of professional development	Research Question 1
18. What additional support, if any, would promote the ongoing or increased implementation of PjBL in your classroom?	• Teacher understanding of PjBL • Teacher knowledge of PjBL • Type of professional development • Time • Technology	Research Question 2

(continued)

Interview item	Concepts from the conceptual framework or general literature	Potential research question(s) addressed
	Focus group interview	
5. What is the first thing that comes to mind when you think of teacher implementation of PjBL?	• Attitude • Motivation • Subjective norm • Perceived behavioral control • Self-efficacy • Challenges • Supports	Research Questions 1, 1a, 1b, 1c, and 2
6. In what ways has the implementation of PjBL failed in this school?	• Challenges • Lack of supports	Research Question 1
7. What factors can you identify that have contributed to teachers' failure to implement PjBL or implement it fully in this school?	• Challenges • Lack of supports	Research Question 1
8. What role do you perceive teacher characteristics have played in the implementation process with regard to PjBL at this school?	• Attitude • Motivation • Subjective norm • Perceived behavioral control • Self-efficacy	Research Question 1

(continued)

Interview item	Concepts from the conceptual framework or general literature	Potential research question(s) addressed
	Focus group interview	
9. If you were giving a principal advice about implementing PjBL at another school, what would you tell that principal?	• Attitude • Motivation • Subjective norm • Perceived behavioral control • Self-efficacy • Challenges • Supports	Research Questions 1, 1a, 1b, 1c, and 2
10. What supports are in place at the school now that are effective?	• Supports	Research Question 2
11. What supports could reasonably be added to those that exist now to help improve teacher implementation of PjBL at the school?	• Supports	Research Question 2

Appendix E: List of Data Codes, Categories/Subthemes, and Themes

Theme 1. Teacher Knowledge of PjBL Varies

Subtheme 1A. Knowledge About the PjBL Structure

- Teachers are facilitators
- Not lecture based
- Based on a problem
- Requires a project
- Core standards
- Practical, real life problems/learning
- Hands-on learning
- Student driven learning
- Technology integration

Subtheme 1B. Knowledge About the Influence of PjBL on Student Learning

- Developing skills in general)
- Opportunities for problem solving
- Opportunity for cooperative learning
- Students learn to work independently
- Opportunities for higher order/critical thinking skills
- Students involved/engaged in their own learning
- Application of knowledge
- Student understanding improved
- Opportunity for long-term learning

Theme 2. Teacher Perceptions of the Value of PjBL Vary

Subtheme 2A. Teachers Have Positive Attitudes Toward PjBL

- PjBL is beneficial
- Have used PjBL
- Use has increased
- Strong feelings
- Teachers are facilitators
- Less lecture
- Teacher/student relationship building
- Students involved/engaged in their own learning
- Student understanding improved
- Practical, real life learning
- Opportunity for long-term learning
- Application of knowledge
- Student driven learning
- Students learn to work independently

- Students enjoy learning
- Hands-on learning
- Preparation for work and college
- Opportunity for cooperative learning
- Students develop relationships
- Opportunities for creative thinking
- Opportunities to gain communication skills
- Opportunities for problem solving
- Opportunities for higher order/critical thinking skills
- Technology integration
- Student research
- Use resources
- Student accountability
- Opportunity to learn time management skills
- Leadership
- Workplace preparation
- Flexibility
- Addresses diverse learning styles
- Students learn at own pace
- Teacher/student relationship building

Subtheme 2B. Teachers Have Negative Attitudes Toward PjBL

- Teachers have a negative attitude toward PjBL
- Unsure of how to measure benefits
- Too much left to chance
- Not a good method
- Unsure of correlation to test scores
- Unequal workload for students
- Lack of skill sets required to do PjBL
- Student social skills a challenge
- Working independently a challenge
- Must understand the task thoroughly
- Lack of experience with learning strategy
- Assessment
- Student learning weakened
- Lack of engagement with key content
- Inequity of student resources
- Catching up on missed work challenging
- Lack of preparation for college
- Workload/time for teachers
- Planning
- Classroom management

- Student attitudes
- Alignment challenging (standards)
- Project assessment challenging
- Resources
- Expense
- Can be poorly implemented
- Teacher transition challenging

Theme 3. Teacher Confidence for Implementing PjBL Varies

- Well-Prepared to implement PjBL
- Need to improve to implement PjBL
- Unprepared to implement PjBL
- Lack confidence
- Need for training

Theme 4. Teachers are Motivated to Implement PjBL

Subtheme 4A. Teachers are Motivated to Implement PjBL by Positive Outcomes for Students

- Benefits
- Success
- Engagement
- Leadership
- Workplace preparation
- Student driven learning
- Hands-on learning
- Career pathways academy model

Subtheme 4B. Teachers are Motivated to Implement PjBL by Others

- Others
- Superiors
- Mentors
- Teachers in my school
- Teachers in other schools

Subtheme 4C. Teachers are Motivated to Implement PjBL by the Structure of PjBL

- Scheduling
-
- Projects
- Allows for collaboration with other teachers
- Research showing benefits of PjBL

Theme 5. Support for Teachers Implementing PjBL

Subtheme 5A. Teachers Receive Support for Implementing PjBL at the Focus School

- Scheduling
- Career pathways academy model
- Lead Teachers
- Administrators
- District wide involvement
- Teachers
- Students
- Time to collaborate

Subtheme 5B. Teachers Need Support to Implement PjBL

- Lack of training
- Training/professional development
- Training improves teacher perceptions of PjBL
- Want to learn more
- Resources
- Time for teachers to collaborate with other teachers
- Extra time for students to work on projects
- District wide implementation
- Academy expectations for implementation differ