2014

A Case Study of Teachers' and Administrators' Experiences Integrating Project-Based Learning

Gastrid Harrigan
Walden University

Walden University

COLLEGE OF EDUCATION

This is to certify that the doctoral study by

Gastrid Harrigan

has been found to be complete and satisfactory in all respects,
and that any and all revisions required by
the review committee have been made.

Review Committee
Dr. Heather Miller, Committee Chairperson, Education Faculty
Dr. Andrea Thompson, Committee Member, Education Faculty
Dr. Karen Hunt, University Reviewer, Education Faculty

Chief Academic Officer

Eric Riedel, Ph.D.

Walden University
2014

Abstract

A Case Study of Teachers' and Administrators' Experiences Integrating Project-Based Learning

by

Gastrid Harrigan

MEd, Florida Atlantic University, 2006

BSEE, Florida Atlantic University, 2002

Doctoral Study Submitted in Partial Fulfillment

of the Requirements for the Degree of

Doctor of Education

Walden University

November 2014

Abstract

Implementation of project-based learning (PBL) has contributed to increases in students' retention of concepts, engagement, and academic success. The problem for this study is that teachers' and administrators' experiences and perceptions have not been sought regarding the integration of PBL in the classroom at the school district. The purpose of this qualitative instrumental case study was to gain a deeper insight into the experiences of teachers and administrators implementing PBL. Centered on the theory of constructivism, the research questions focused on 10 teachers' and 5 administrators' experiences integrating PBL. Face-to-face interviews with participants and 10 classroom observations were conducted. Inductive coding and thematic analysis were used with the collected data. Results indicated that teachers perceived several benefits with PBL such as improved students' retention and engagement, academic success, and 21st-century skills and a few challenges such as time consuming lesson planning and delivery, and lack of resources and materials. Observations showed improvement in students' behavior and engagement. Administrators also indicated similar benefits, agreed that there was lack of resources, and perceived challenges to be teachers' lack of willingness and openness to implement PBL. Recommendations were that schools or district develop accountability measures, best strategies, and curriculum alignment for standards-based PBL. Findings may contribute to positive social change by bringing greater awareness to local educators of the benefits and challenges surrounding implementing PBL. School administrators can foster a school culture and environment for student learning in which teachers are supported and lesson planning and collaboration are prioritized.

A Case Study of Teachers' and Administrators' Experiences Integrating Project-Based Learning

by

Gastrid Harrigan

MEd, Florida Atlantic University, 2006

BSEE, Florida Atlantic University, 2002

Doctoral Study Submitted in Partial Fulfillment

of the Requirements for the Degree of

Doctor of Education

Walden University

November 2014

Dedication

It is with honor that I dedicate this dissertation to my mother and father, Wilfrid and Examene Harrigan. I can never thank you enough for instilling in me the value of education and for your eternal love and support. I would not have been able to complete this journey without you in my life and continual prayers. Your inspirations and sacrifices will never be forgotten. God has blessed me with wonderful parents. I will always love you.

Finally, I dedicate this dissertation to the loves of my life, Deborah and my unborn son. You are the air I breathe. Thank you for been so patient with me during this past year. I love you. May God forever bless and keep you.

Acknowledgments

First and foremost, giving honor to my Lord and Savior Jesus Christ, I could not have completed this dissertation without His love and guidance.

A special thank you is extended to the 10 teachers and five administrators who so graciously opened their classrooms and share their stories for this study. Thank you for giving insight into integrating project-based learning in the classroom. Your experiences will make a difference in some teachers or administrators' lives.

I would also like to thank my committee chair, Dr. Heather Miller, for your guidance, insight, and patience showed to me throughout this journey. Thanks to my committee members, Dr. Andrea Thompson and Dr. Karen Hunt, for all their comments and revisions to help me improve my dissertation.

I would like to acknowledge my brothers, Alfred, Smith, Woodolph, and Rodney for all of their love and support.

Table of Contents

List of Tables

Section 1: Introduction to the Study

Introduction

At the start of each school day in the United States, teachers and students are greeted with pressing challenges. Over the past century, many learning theories, models, reforms, and laws have evolved to improve the U.S. education system (Barton & Coley, 2009; Educational Testing Services [ETS], 2007; No Child Left Behind [NCLB], 2002). These theories and policies have had some success in improving students' learning, increasing student engagement and graduation rates, and decreasing the achievement gaps and the dropout rates (Almeida, Johnson, & Steinberg, 2006; Barton & Coley, 2009; ETS, 2007; NCLB, 2002; Princiotta & Reyna, 2009; Stillwell, 2010). Various researchers (Almeida et al., 2006; Greene & Winters, 2006; Harada, Kirio, & Yamamoto, 2008; Wurdinger, Haar, Hugg, & Bezon, 2007) have reported new ways of educating and providing services to students that may increase graduation rates, reduce dropout rates, and increase academic engagement.

Low expectations and a lack of academic engagement contribute to students dropping out of school (Almeida et al., 2006). Therefore, the primary focus of learning theories, models, reforms, and laws have been to engage, educate, and teach students in order to prepare and spark passion for learning to develop basic skills and competencies to succeed in the 21st century (McGrath, 2004; Moylan, 2008). The key to achieving these goals are mastering the 21st century basic skill set of critical thinking and problem solving; creativity and innovation; collaboration, teamwork and leadership; cross-cultural understanding; communications and information fluency; computing, information and

communication technology fluency; career and learning self-reliance and competencies to empower students to compete in the global job market. Thus, it is imperative that educators are challenged to explore new teaching strategies to educate and engage students.

In a national survey conducted in 25 different schools throughout many large cities, suburbs, and small towns in the United States with high dropout rates, Wurdinger et al. (2007) showed that 88% of students who dropped out of school had passing grades, and approximately 50% of them left because they were bored. Based on the analysis of the 2006 High School Survey of Student Engagement, Yazzie-Mintz (2007) found that 67% of students were bored in class, and 39% stated the material was not relevant to them. Within the classroom, students are not sufficiently challenged and engaged in their academic content. The public school system, then, cannot afford to have a significant amount of students disengaged, unsuccessful, left behind, and likely to drop out (Almeida et al., 2006; Murphy, 2006; Princiotta & Reyna, 2009; Wurdinger et al., 2007).

When asked what excited them or engaged them to learn and to focus in school, students indicated that they were more excited and engaged when doing projects and learning from teaching methods that allowed them to work, discuss, and debate with peers. In project-based learning (PBL), students have opportunities to work with other students while doing hands-on activities (Wurdinger et al., 2007). This teaching method taps into students' interests because it enables them to produce or create projects that result in meaningful learning experiences (Wurdinger et al., 2007) and can integrate technologies to further enrich the classroom learning environments (Bitter et al., 1997).

In this study, I sought to add to the literature needed to understand the experiences and perceptions of teachers and administrators integrating PBL in the classroom in an urban school district in the southern part of the state of Florida. I provided a thick description of the effectiveness, or lack thereof, of PBL to engage and enhance students' learning and retention of materials. I interviewed and observed selected teachers and administrators to examine their experiences incorporating PBL in the classroom. Additionally, participants shared their perceptions on how they thought PBL engaged and motivated students in the learning process. Based on teachers' and administrators' perspectives, this study may help the educational community and policy makers to examine and investigate PBL as an alternative teaching strategy that may improve students' learning, academic engagement, and motivation. New insight and knowledge gained through this study can improve instruction, teaching, and learning. Further research on PBL and student-centered pedagogy can be found in Section 2.

Problem Statement

The problem under investigation was the need for greater understanding of teachers' and administrators' experiences and perceptions of integrating PBL in the classroom in this southern Florida school district. Research is needed to grasp the experiences and perceptions of teachers and administrators integrating PBL in the classroom. Moreover, research is needed to examine the effects of PBL on students' motivation, engagement, learning, and concept retention.

Educators are facing problems with improving educational experiences for low performing at-risk students (Almeida et al., 2006). Schools and school districts are under

pressure to improve students' achievement by reaching students considered at risk or in danger of failing (Stillwell, 2010). School districts are facing these challenges by paying attention to state standards and accountability requirements, in addition to federal mandates addressed in NCLB (2002), now Race to the Top (McGuinn, 2012). Schools and school districts across Florida have been implementing instructional programs and strategies hoping to enhance and improve the curriculum to ensure students of all ability levels are successful (Almeida et al., 2006).

Some students do not retain enough content knowledge when the content is presented through traditional lecture and note-taking teaching methods. The lack of content retention and understanding contribute to low test scores across the district, state, and national level in core classes (Aud et al., 2010; National Center for Education Statistics, 2009). In addition, standardized and benchmark test scores have been consistently low for socioeconomically disadvantaged students in the district and state (Florida Department of Education, 2012). However, teachers have resisted modifying their teaching strategies to integrate PBL because standardized tests do not assess skills acquired through PBL, and teachers lack the time, effort, and the cost to use PBL (Cherney, 2008; Wirkala & Kuhn, 2011; Wurdinger et al., 2007). Jones (2007) alluded to the benefits of PBL because it motivates students to explore and to learn. PBL empowers students to undergo an in-depth investigation and analysis of the real-world problem or topic to enhance their understanding of the content (Wirkala & Kuhn, 2011; Wurdinger et al., 2007). The PBL process of learning has the potential to create relevant and rigorous learning (Harada et al., 2008).

The results from this case study have contributed to the body of knowledge on school-based educators' experiences and perceptions for incorporating PBL in the classroom. The lessons learned from the case study provide school leaders with a greater understanding on how to integrate PBL into the classroom to challenge students, especially socioeconomically disadvantaged students.

Nature of the Study

In this study, I focused on teachers' and administrators' experiences integrating PBL in the classroom. To examine this phenomenon, I used a qualitative case study approach. The aim was to examine the phenomenon from various perspectives to provide insight into the issue or to draw greater meaning (Simmons, 2009; Stake, 2008). A qualitative instrumental case study provided an extensive inquiry of the issue under investigation.

This qualitative instrumental case study took place in an urban school district in southern Florida. I interviewed administrators and observed and interviewed teachers to document their lived experiences and perceptions on how they integrated PBL in the classroom. Participants received predetermined and open-ended interview questions for teachers (Appendix A) or administrators (Appendix B) before the interview to generate rich discussions on their experiences of integrating PBL. Likewise, observations were conducted using Janesick's (2004) observational protocol (Appendix C) while teachers facilitated PBL lessons. Detailed descriptions of the methodologies and data analysis procedures used are found in Section 3.

Research Question

The objective of this study was to examine the experiences of teachers and administrators as they implement PBL in southeastern part of the United States. The case study design provided frameworks to achieve goals that examine the effectiveness of PBL and to motivate, engage, and improve students' content retention. Specifically, this research study was a qualitative instrumental case study using semistructured interviews and observations as its primary data collection; therefore, participants' perceptions and experiences were the focus of the study. Hence, I chose a case study design to provide a rich description of participants' experiences, thoughts, and actions (Mabry, 2008). Using a qualitative research method provided flexibility to contribute in a participatory and constructivist approach of research. Moreover, observations allowed me to document participants' experiences implementing PBL (Boeije, 2010). Open-ended research questions provided for an in-depth inquiry into the integration of PBL in the classroom (Rubin & Rubin, 2005). The qualitative case study served as a portal to explore instructional strategy changes within my local school district.

The following research questions guided this case study:

Research Question 1 (RQ1): What are the experiences and perceptions of teachers at a southern Florida school district regarding integrating PBL in the classroom?

Research Question 2 (RQ2): What are the perceptions of administrators at a southern Florida school district regarding integrating PBL in the classroom?

Purpose of the Study

The purpose of this qualitative instrumental case study was to explore and to gain a deeper understanding about the experiences and perceptions of the teachers and administrators integrating PBL in a southern Florida school district through interviews and observations. With a focus on the perspectives and experiences of the teachers and administrators, I investigated whether PBL had any effects on students' motivation, engagement, and concept retention in the classroom. Teachers and administrators participated in face-to-face, open-ended, semistructured, audio-taped interviews. I also observed teachers implementing PBL. The interview questions were open-ended, which provided teachers and administrators an opportunity to share personal lived experiences.

Conceptual Framework

During the 20th century, Dewey (1938) and Vygotsky (1987) alluded to the benefits of experiential learning and hands-on practices, and their relationship to the social environment as a critical component to educate students. Both Vygotsky and Dewey had common ideas pertaining to the relationship of activity, learning, and development as they relate to the roles activity and social environment play in the educational setting. To explore these ideas and determine if PBL engages and motivates students, I examined experiences and perspectives of the teachers and administrators integrating PBL in the classroom.

Dewey (1938) supported the concept of learning by doing. This concept provided the foundation for the development of the theory of constructivism (Glassman, 2001; Sutinen, 2008; Vygotsky, 1987). Constructivist theory is a theory of knowledge that

states individuals construct knowledge and meaning from their prior knowledge, experiences, beliefs, and application (Boghossian, 2006; Cakir, 2008; Loyens, Rikers, & Schmidt, 2007). According to this theory, learning occurs in an active and engaging environment. Furthermore, the principles of constructivism are comprised of core elements and beliefs (Boghossian, 2006; Hernandez-Ramos & De La Paz 2009; Kahveci & Ay, 2008; Lambert et al., 2002; Loyens et al., 2007). These beliefs are as follows: (a) knowledge and beliefs are formed within the learner; (b) learners personally imbue experiences with meaning; (c) learning activities should cause learners to gain access to their experiences, knowledge, and beliefs; (d) culture, race, and economic status affect students learning individually and collectively; (e) learning is a social activity that is enhanced by shared inquiry; (f) reflection and metacognition are essential aspects of constructing knowledge and meaning; (g) learners play a critical role in assessing their own learning; and (h) the outcomes of the learning process are varied and often unpredictable (Kahveci & Ay, 2008; Loyens et al., 2007). Through this process, students are able to construct meaning and learning by doing.

Both Dewey (1938) and Vygotsky (1987) stressed the importance of experiential learning, which became the bedrock for the development of constructivist theory. These concepts and theories led to the theoretical foundations of PBL (Baumgartner & Zabin, 2008; Hernandez-Ramos & De la Paz, 2009; Moylan, 2008; Ravitz, 2010). PBL is a teaching method where teachers guide students through a problem solving process that includes hands-on activities and the creation of a project (Wurdinger et al., 2007). This teaching process tends to be more engaging than the traditional teaching method because

it allows students to create projects that result in meaningful learning experiences (Wurdinger et al., 2007).

Essentially, PBL is a highly engaging and motivating teaching method or inquiry process. PBL allows students to undergo an in-depth investigation and analysis of the real world problem or topic (Clark, 2006; David, 2008). PBL motivates students to explore and learn (Jones, 2007). This method potentially may create relevant and rigorous learning (Baumgartner & Zabin, 2008; Harada et al., 2008). Based on research over the past decade (Baumgartner & Zabin, 2008; Bell, 2010; Cook, 2009; Hernandez-Ramos & De la Paz, 2009; Mioduser & Betzer, 2007; Moylan, 2008; Ravitz, 2010; Yuen, 2009), PBL has been demonstrated to be as effective as lecture-based instruction, if not better, in helping students attain academic success. PBL has the ability to enhance students' learning (Jones, 2007). PBL is able to engage student on a deeper cognitive level than traditional teaching methods. As discussed further in Section 2, it is through this conceptual lens that this study was conducted.

Operational Definition of Terms

This section includes defined terms used throughout the following sections.

Constructivist theory or Constructivism: A theory of knowledge that states an individual construct knowledge and meaning from previous knowledge, experiences, beliefs and its application (Cook, 2009; Hernandez -Ramos & De la Paz, 2009; Loyens et al., 2007).

Concept retention: For the purposes of this study, concept retention is defined as a student recall of newly acquired content knowledge (Cherney, 2008; Heafner & Friedman, 2008).

Instrumental case study: A qualitative research strategy that examines a particular case to provide in-depth insight into an issue or phenomenon (Creswell, 2008; Stake, 2008).

Project-based learning: An instructional teaching method that allows teachers to guide students through a problem solving process (Baumgartner & Zabin, 2008; Wurdinger et al., 2007).

Assumptions

There were several assumptions made in this study. Participants who met selection criteria for voluntary participation agreed to be interviewed by completing the consent form. I assumed that teachers and administrators were truthfully stating their perspectives and experiences with PBL in interviews as compared to other methods of collecting data. Fostering a friendly and trusting interview atmosphere with participants, I assumed that participants were comfortable in sharing their experiences and perceptions. Lastly, I assumed that the information gathered from face-to-face interviews provided an advantage that could not be accessed through a questionnaire or survey by giving participants an opportunity to elaborate on their feedback.

Limitations

Limitations to this study may have existed. Although I reassured participants that their identity would be protected, some participants may have answered questions in

ways that they thought they should rather than how they really felt. Despite my efforts, teachers and administrators may not have openly and honestly shared their experiences and perceptions because of my presence (Creswell, 2009). Because the study was limited to the experiences of teachers and administrators integrating PBL in a southern Florida school district, the qualitative research design could have posed further limitations. Moreover, I did not take into account students' and parents' experiences or perceptions.

Scope and Delimitations

The scope of the instrumental case study included administrators and teachers from the largest school districts in southern Florida. The district is exceptional because available materials and resources are unmatched in comparison to other districts. The delimitation of this study was administrators and teachers at K-12 school settings who have implemented PBL in the classroom. The case study results cannot be generalized due to sample size. If the study were similar in scope and nature, the results may inform other settings. The demographics of schools within this school system differ from other districts. Hence, it may or may not be possible to transfer the results of this study to other schools within the district and the state.

Significance of the Study

This case study is significant for educators and policy makers. First, the outcome of this instrumental case study could provide greater understanding about the experiences of the teachers and administrators implementing PBL in the classroom. Second, the study is significant to educators who teach in K-12 school settings because they examine the experiences and perceptions of other educators who have integrated PBL as a

determining factor for integration. It is also significant to local educators in the district as it showed fellow educators in the same district the perceptions of colleagues who have implemented project-based learning. Third, this study could provide educative information to the educational community of a research practice that examines the implementation and delivery of PBL. Fourth, policy makers could find this study's results significant for curricula and graduation rates as they relates to how school-based educators perceive the significance of PBL to engage, motivate, and enhance students' concept retention. Lastly, this study is significant to social change because discovery and validation of this instructional strategy (PBL) may have an effect on how to improve low performing, disengaged, and at-risk students' concept retention, learning gains, achievement, and ultimately increase in graduation rates and college readiness.

Transition Statement

Section 1 of this qualitative research study included an introduction, purpose statement, problem statement, nature of the study, conceptual framework, research questions, significance of the study, and social implications. In this qualitative case study, I concentrated on teachers' and administrators' experiences integrating PBL in a school district and, ultimately, how PBL engages, motivates, and increases students' understanding of content. Additionally, I presented an introduction of PBL as an alternative teaching method to improve students' learning, concept retention, and engagement.

Section 2 includes a review of the literature related to constructivism, problem based learning, inquiry-based learning, PBL, benefits and challenges of implementing

PBL, and case study design. Also, I synthesize and explore the relevant research and literature related to PBL effectiveness as a teaching strategy to improve curriculum standards and students learning and engagement.

Section 3 includes the research design and procedures. Also, this section includes an explanation of the sample size of the study, data collection and analysis procedures, and research questions. In Section 4, I discuss the findings of the study. In Section 5, I discuss the results of the experiences and perceptions of teachers and administrators integrating PBL and recommendations for further study.

Section 2: Review of the Literature

In this section, I synthesize the relevant literature related to this research study. The research was collected from textbooks, professional books, published studies, meta-analyses, and peer-reviewed journals. The strategy was to search and examine traditional and electronic literature on PBL. The following databases were searched for full-text, peer-reviewed scholarly articles: Educational Resources Information Center (ERIC), Education Research Complete, SAGE, ProQuest Central, EBSCOhost, and Teacher Reference Center. In each of these databases, these keywords were used: *project-based learning, PBL, mathematics, problem-based learning, social learning, intrinsic, extrinsic, motivation, engagement, constructivism*, *student learning,* and *memory.*

Based on the findings from this research, this literature review provides an overview of PBL methods of instruction and the effect these methods have on student achievement, concept retention, motivation, and engagement. The review includes an analysis of the key concepts of constructivist theory, problem-based learning, inquiry-based learning, PBL, and the conceptual framework. Additionally, the historical context of PBL and its benefits and challenges to implement are explored. Then, I explore strengths, weaknesses, and gaps in the literature while addressing the research questions outlined in Section 1. Ultimately, the literature review provides a framework to understand and address the local phenomenon of the experiences and perceptions of teachers and administrators integrating PBL in the classroom and its effects on students' motivation, engagement, and content retention.

Constructivism

The foundation of PBL is linked to the theory of constructivism. Constructivist theory is the foremost learning theory in modern education (Boghossian, 2006; Kahveci & Ay, 2008). Constructivist theory is based on the premise that knowledge is socially constructed through highly structured activities and experiences around meaningful tasks (Cook, 2009; Hernandez-Ramos & De la Paz, 2009). The constructivist theory of learning has its roots in the work of Dewey (1933, 1938), Bruner (1961), Piaget (1954), and Vygotsky (1987). More recent reviews have been conducted by Glassman (2001); Cakir (2008); Baviskar, Hartle, and Whitney (2009); and Mikropoulos and Natsis (2011).

Constructivist theory has provided a foundation for pedagogical practices such as experiential learning, inquiry learning, discovery learning, and hands-on practices (Glassman, 2001; Sutinen, 2008). During the past century, Dewey (1938) and Vygotsky (1987) discussed the benefits of experiential learning, inquiry-based learning, and hands-on practices and their relationship to the social environment as critical components in educating students. Both Vygotsky and Dewey (1938) had common ideas pertaining to the relationship of activity, learning, and development as they relate to the roles of activity and social environment play in the educational setting. Specifically, Dewey (1938) suggested the separation between acquiring knowledge and applying it has a direct link to the distinction between knowing and doing. Dewey (1929) stated knowing and doing are embedded in the human desire for certainty. Students are engaged in the path to find certainty by applying prior knowledge while interacting with the social environment.

Dewey (1938) also supported the concept of learning by doing. This concept is foundational to the development of constructivism (Glassman, 2001; Sutinen, 2008; Vygotsky, 1987). According to constructivist theory, an individual constructs knowledge and meaning from his or her prior knowledge, experiences, beliefs, and their application (Boghossian, 2006; Loyens et al., 2007). As learners interact with the social environment to construct knowledge and meaning, they become the center of the teaching and learning process (Kahveci & Ay, 2008; Loyens et al., 2007). Harkness, D'Ambrosio, and Morrone (2007) stated students are able to retrieve and link prior knowledge and concepts. The linking and retrieval of prior knowledge enables students to do meaningful tasks and collaborate within their environment to construct their own knowledge and understanding. The teacher becomes the facilitator or guides the learning process and experiences. As learners use metacognitive skills to generate learning goals, create experiences, and construct knowledge and meaning, they become self-regulated learners (Harkness et al., 2007). Constructivist theorists indicate that learning occurs best in an active and engaging environment.

The principles of constructivism are made of core elements (Boghossian, 2006; Hernandez-Ramos & De La Paz 2009; Kahveci & Ay, 2008; Lambert et al., 2002; Loyens et al., 2007). First and foremost, the learner actively constructs knowledge (Boghossian, 2006). Learning is not a passive activity. The learner constructs knowledge when his or she actively attempts to interact in a meaningful context with the social environments through shared inquiry (Heafner & Friedman, 2008; Kahveci & Ay, 2008). These learning activities or shared inquiries cause learners to gain access to their

experiences, prior knowledge, and beliefs. Through reflection and metacognition, learners are not only able to construct knowledge, but they are able to extract meaning and make sense of the shared inquiry and experiences.

Through this process, students become self-regulated learners by building knowledge, meaning, and learning by doing (Loyens et al., 2007). According to Glassman (2001) and Sutinen (2008), Dewey viewed the learner as a free agent who achieved goals and objectives through his or her own interest in an activity; however, Vygotsky (1987) suggested the teacher ought to provide greater control by creating activity that leads the learner toward the mastery of standards. The teacher serves as the facilitator who guides students as they pursue learning, based on their own interest in activities or subject matters. The teacher designs lessons or activities that capitalize on students' interest to help them learn and deepen their understanding of the subject matter. Teacher-designed learning experiences promote a deeper understanding of the subject, rather than a short-lived or superficial memorization (Hernandez-Ramos & De La Paz, 2009).

Constructivist theory provides learners with the flexibility to choose a project or activity based on individual interests while the teacher ensures standard mastery (Jones, 2007). Vygotsky (1987) indicated the learner must be in the zone of proximal development in order to achieve standard mastery (Glassman, 2001; Gordon, 2008). The zone of proximal development is characterized by a teacher's guidance or instruction to the learner to accomplish a specific task successfully (Helle, Tynjala, & Olkinuora, 2006). This zone is the difference between the actual and potential development of the

learner (Glassman, 2001; Gordon, 2008; Helle et al., 2006). It is the distance between the actual developmental stage of the learner as measured by the level of work his or she is able to accomplish without assistance, and the potential level of development he or she is able to reach through the assistance of a teacher or interaction with peers (Cakir, 2008; Glassman, 2001; Helle et al., 2006). Cakir (2008), Glassman (2001), and Helle et al. (2006) further suggested that the interest of the learner and the teacher's guidance sustains the learner in the zone of proximal development. As the learner interacts with his or her social environment, he or she produces a product that is a representation of learning or standard mastery.

Constructivist theory is foundational to problem-based learning and PBL designed to engage learners in active, collaborative, reflective, and shared learning experiences (Correiro, Griffin, & Hart, 2008; Hernandez-Ramos & De La Paz, 2009; Loyens et al., 2007). Loyens et al. (2007) suggested that problem-based learning and PBL increases students' interest and motivation. Heafner and Friedman (2008) found that not only were students' interest and motivation increased, but they also experienced greater content retention than their counterparts in traditional teacher-directed approaches. There is value in the meaningful interactions and learning experiences with subject matter (or activity and linkage with prior knowledge) to construct new knowledge and deep understanding (Harkness et al., 2007; Hernandez-Ramos & De La Paz; Kahveci & Ay, 2008; Loyens et al., 2007; Sutinen, 2008). Problem-based learning and PBL increased students' metacognitive levels, which have a direct link to student's success and standard mastery. Various researchers (Harkness et al., 2007; Hernandez-Ramos & De La Paz; Kahveci &

Ay, 2008; Loyens et al., 2007; Sutinen, 2008) have used the constructivist approach as an instructional method to engage and help the learner construct knowledge in an active inquiry process and environment, known as problem-based learning. Aligning instructional delivery and methods to the core tenets of constructivist theory served as a conceptual framework for my qualitative research case study.

Problem-Based Learning

Since its inception, problem-based learning has been utilized in various disciplines to deepen students' understanding of a specific subject matter (Beringer, 2007; Gijbels, Dochy, Bossche, & Segers, 2005). However, problem-based learning has its origin in medical education. This learning method came about as a response to low enrollments and dissatisfaction with medical education in the 1960s (Beringer, 2007; Gijbels et al., 2005). Pease and Kuhn (2011) affirmed that problem-based learning is widely considered as the most desirable learning method. In this learning method, students are presented with a problem in which they have minimal preparatory study in the subject matter (Wirkala & Kuhn, 2011). The problem is real-life situated without one correct answer, and it cannot be solved with one formula. The problem forms the contextual framework for learning and arouses students' interest to solve the problem (Pease & Kuhn, 2011). As students attempt to solve the problem, Wirkala and Kuhn (2011) suggested that students acquire targeted knowledge, understanding, and problem solving skills.

This learning approach is sometimes referred to as inquiry-based learning or PBL because it challenges students to question themselves and find the answers (Barell, 2003).

Problem-based learning, as it is known today, is a learner-centered educational method or teaching strategy that uses problems or questions to teach students concepts (Beringer, 2007). Requiring students to extend their prior knowledge and understanding, and applying it to derive solutions are core benefits of integrating problem-based learning into the classroom setting (Wirkala & Kuhn, 2011).

Core Elements of Problem-Based Learning

Gijbels et al. (2005) suggested that problem-based learning consists of core elements. The first core element states that learning is student-centered. Teachers designed the learning environment to make it conducive and enjoyable for students in a real world context based on the curriculum outcomes and learner characteristics. The second core element establishes that teachers use authentic problems as the starting point for learning (Beringer, 2007). Third, problems encountered are used as tools to achieve the required knowledge and the problem solving skills necessary to solve the problem. Fourth, throughout the problem solving process, teachers become facilitators or guide the learning process. Fifth, learning occurs in small groups. Sixth, learners become self regulated as they acquire new knowledge.

Research conducted by Mitchell, Foulger, Wetzel, and Rathkey (2009) illustrates how the core elements are woven together when implemented. In this study, a teacher attempted to implement a problem-based learning approach in her class by incorporating grade level standards to guide students through the study of biomes. She quickly discovered that this learning method engaged and motivated her students, but they were not getting much done. She modified her class structure from totally free-ranging inquiry

to a teacher guided inquiry (Mitchell et al., 2009). Then students were able to assimilate new information and knowledge as they engaged in solving problems through the cycles of reflection that ultimately lead them to higher-order thinking skills (Gijbels et al., 2005). This process required her students to have collaborative discussions and use prior knowledge to analyze and understand the problem (Mitchell et al., 2009). Students then used their understanding to construct and derive possible solutions to the problem, summarize, and evaluate their learning experiences and performances (Hmelo-Silver & Barrows, 2008; Mitchell et al., 2009). Students learned and acquired self-directed learning skills with the ultimate goal of becoming self-regulated learners (Harkness et al., 2007). These core characteristics are the basis upon which teachers frame their instructional strategy when implementing problem-based learning.

In the problem-based approach, students are presented with a real-world problem or question that they must solve (Beringer, 2007; Scheuerell, 2008). In attempt to create interest, teachers present a locally based or situated problem or question that involves some form of mystery, relevant to the lives of students (Scheuerell, 2008). For instance, Scheuerell (2008) implemented problem-based learning lessons on the Great Migration of African Americans from the South to the North between 1916 and 1930 with his advanced placement U.S. history high school students. Scheuerell found that students were actively engaged, more motivated to learn, and participated in the lesson to find out why African Americans migrated during this period. He concluded that students found the lessons to be interesting, relevant, and locally based because the classes and school demographics were mostly made up of African Americans and located about 45 miles

away from where several thousand African Americans had migrated. According to Scheuerell, using problems as a teaching strategy greatly engaged and motivated students to learn more than they would have in a lecture based approach. Incorporating problem solving activities into a classroom may enable students to gain a greater understanding and retention of content materials (Bottge, Grant, Stephens, & Rueda, 2010).

Benefits of Implementing Problem-Based Learning

The problem-based learning approach is designed to shape students to become active problem solvers by developing problem solving techniques, strategies, disciplinary knowledge, and skills (Beringer, 2007). Both Beringer (2007) and Scheuerell (2008) showed that students developed problem solving skills, developed critical or higher order thinking skills, learned to work collaboratively, and saw the relevance of materials to the curriculum. Students were able to analyze and reanalyze problems using the problem solving process to derive solutions. Then, they used their analytical skills to organize their findings. Through problem-based learning, students were able to operate on Bloom's Taxonomy highest cognitive domain (i.e., application, analysis, synthesis, and evaluation) (Moylan, 2008).

The problem-based learning approach empowers the learner to utilize the problem solving process to work in a self-directed manner, both individually and in-group, to solve problems (Beringer, 2007). Learners determined completion of the process by finding solutions to problems or by reaching their maximum point where teacher's assistance to solve the problem or find a solution was necessary. As previously stated, this point, according to Vygotsky (1987), is the zone of proximal development. This area

is located between what students are able to do alone and where they need assistance to complete work (Cakir, 2008). Teachers serve as facilitators by guiding, modeling, and promoting new skills (Cakir, 2008; Gijbels et al., 2005). Teachers perform these tasks through questioning, deeper reflection, and providing hints that focus students toward new information or content sources. This process becomes part of students' lifelong problem solving skills (Wurdinger et al., 2007). Implementing this strategy in the classroom empowers students to become and think as problem solvers.

Inquiry-Based Learning

Inquiry-based learning is a methodology that uses open-ended questions to investigate phenomena and has its roots in the time and teachings of Socrates (Gooding & Metz, 2008). Inquiry-based learning is viewed as a respectable instructional strategy in K– 12 educational settings (Bruck & Towns, 2011). The National Science Education Standards define inquiry as a multifaceted activity that involves posing questions, making observations, and examining various sources to plan investigations (National Research Council [NRC], 2000). It also uses tools to gather, analyze, and interpret data to provide answers, explanations, and communicate results (NRC, 2000). According to researchers, inquiry-based learning is a learning strategy or process that capitalizes on students' inquisitive natures (Correiro et al., 2008; Friedman & Heafner, 2007; Regassa & Morrison-Shetlar, 2007). Students are able to learn and examine a phenomenon or problem in many ways as real scientists do.

Inquiry-based learning as a teaching strategy enables students to grasp difficult and abstract concepts (Walker, McGill, Buikema, & Stevens, 2008). The inquiry process

involves asking relevant questions, researching information, making conclusions, and reflecting on possible solutions (Friedman & Heafner, 2007). In this process, students are able to make observations and to figure out how things work. Students are able to raise, investigate, and critique questions, problems, or phenomena (Bruck & Towns, 2011). Then, they are able to plan, design, and conduct their own investigations (Gooding & Metz, 2008). Through this learning strategy, students are able to explain and support answers to their inquiries, evaluate their explanations, think about other hypotheses, and share their results (Bruck & Towns, 2011). Hence, they are actively engaged in the learning process.

Inquiry-based learning is a continuum. In other words, inquiry-based learning in the classroom can take various forms. On one end, it can be a free-ranging inquiry; while at the other end, it is a highly structured teacher-directed inquiry (Bruck & Towns, 2011; Olson & Louchs-Horsley, 2000). Free-ranging or open inquiry is when the teacher does not guide students through exploration of the unexplained phenomenon or problem (NRC, 2000). In free-ranging inquiry, students are self-directed learners (Wurdinger et al., 2007). In a teacher-directed inquiry, however, teachers guide students through the exploration of the problem or phenomenon until they become self-directed learners (Wurdinger et al., 2007). While on this learning continuum, students are able to ask questions, investigate, create, discuss, and to reflect on every encountered problem or inquiry (Olson & Louchs-Horsley, 2000). Students are able to raise their own questions, critique alternative answers, and to conduct their own investigations (Gooding & Metz, 2008). This continuous learning process actively engages and enhances students'

knowledge through purposeful interaction and the utilization of prior knowledge in meaningful environments (Correiro et al., 2008; Olson & Louchs-Horsley, 2000). Because of continued social and investigative interactions, the learners' cognitive level will be enhanced, thus cultivating inquiry.

The inquiry-based learning tends to be a higher-level thinking process (Walker et al., 2008). This teaching strategy integrates hands-on and minds-on activities, making learning the responsibility of the learner by drawing on their interests (Correiro et al., 2008; Walker et al., 2008). Hands-on activities allow students to experience the concept through application of the materials, whereas minds-on activities are structure-learning opportunities that engage and cause students to think at a deeper level. While hands-on activities are an essential component of inquiry-based learning, they are not enough to engage students in the subject matter. Students must have minds-on activities experiences too (NRC, 2000). Walker et al. (2008) asserted that incorporating both minds-on and hands-on activities forces students to think critically. They help students to expand their thinking, evaluate, and to solve problems as real scientist would. Minds-on and hands-on activities serve as mechanisms that encourage students to think at higher cognitive levels.

Geier et al. (2008) showed that through teachers' inquiry-based science instruction implemented in the Michigan Schools System with 8th grade students, students who participated in inquiry-based learning significantly outperformed students in regular classes. Students in the inquiry-based classes developed greater critical thinking skills than their counterparts. Students scored high in all three sections of the science component of the Michigan Educational Assessment Program, which is the

statewide standardized assessment. Teachers revealed that students in the inquiry-based classes had a greater cognitive level of understanding and comprehension. Inquiry-oriented teaching methods tend to empower students to learn at higher cognitive levels and provide longer retention of knowledge and concepts (Cherney, 2008).

Project-Based Learning

PBL is a constructivist instructional learning pedagogy (Baumgartner & Zabin, 2008; Hernandez-Ramos & De la Paz, 2009; Mioduser & Betzer, 2007; Moylan, 2008; Ravitz, 2010). Rooted in Dewey's (1938) concept of learning by doing, it is a student-centered, student-driven, teacher facilitated approach to learning (Bell, 2010). PBL uses hands-on projects to engage students and teaches curriculum concepts in the classroom where students work individually or within a team to meet standard mastery.

Dewey (1938) and Vygotsky (1987) emphasized that the importance of experiential learning, learning by doing, and the development of constructivist theory. These concepts and theories provided the theoretical foundations for PBL (Baumgartner & Zabin, 2008; Hernandez-Ramos & De la Paz, 2009; Moylan, 2008; Ravitz, 2010). Although there are minor differences, PBL has common characteristics and evolves from problem-based learning and inquiry-based learning (Ravitz, 2010).

PBL is an instructional teaching method that allows teachers to guide students through a problem solving process to answer a driving question to solve a problem. The problem solving process fosters higher-order thinking skills and intellectual development that incorporates hands-on activities and creation of a project (Baumgartner & Zabin, 2008; Wurdinger et al., 2007). According to Brown and Abell (2007), the use of a driving

question creates the context for further investigation. When students are doing projects, they must determine how to solve problems, gather, organize, develop, and test hypotheses (Baumgartner & Zabin, 2008; Helle et al., 2006; Hernandez-Ramos & De la Paz, 2009). The results of these investigations help students answer the driving question. These practices foster a level of ownership on the part of students to the knowledge they derive and convert into critical thinking skills. Knowledge that students actively construct and discover provides a deeper understanding and tends to be more meaningful and long lasting (Baumgartner & Zabin, 2008; Hernandez-Ramos & De la Paz, 2009). Essentially, PBL situates learning in relevant and meaningful aspects of a student's life (Brown & Abell, 2007).

For some teachers and students, PBL is more effective than the traditional teaching method because learning strategies intertwine various learning styles or multiple intelligences (Filippatou & Kaldi, 2010). By using multiples intelligences, Wurdinger et al. (2007) stated PBL tends to be more engaging than the traditional teaching method because it allows students to create projects result in meaningful learning experiences. Teachers are able to focus on teaching and learning rather than memorization of concepts. PBL helps students connect new learning to experiences and prior knowledge to construct deeper meaning and understanding (Filippatou & Kaldi, 2010). Based on the Wurdinger et al. qualitative study, six of seven teachers interviewed stated that creating a project enhanced their students' problem solving skills, engagement, and learning experiences.

Fundamentally, PBL is a teaching method or inquiry process that is engaging and motivating (Bell, 2010). It is a learner-driven, customized, and collaborative learning

system that leads to transformational learning. This type of learning is intertwined with a collaborative inquiry, which is a pattern of inquiry that guides students to investigate why things work and why an event occurs (Wurdinger et al., 2007). It allows students to undergo an in-depth investigation and analysis of a real-world problem or topic (Clark, 2006). It motivates students to explore and learn (Jones, 2007). It further empowers teachers to create an environment conducive to teaching and learning.

PBL method or process has the potential to create relevant and rigorous learning (Baumgartner & Zabin, 2008; Harada et al., 2008). Recent studies (Baumgartner & Zabin, 2008; Bell, 2010; Cook, 2009; Hernandez-Ramos & De la Paz, 2009; Mioduser & Betzer, 2007; Moylan, 2008; Ravitz, 2010; Yuen, 2009) have indicated that PBL is as good, if not better, in engaging and motivating students, and helping students retain concepts to obtain academic success. It further shows that PBL has the ability to enhance students learning.

Benefits of Implementing Project-Based Learning

Enhance Motivation, Engagement, and Retention

In a 2007 survey of high school dropouts, Wurdinger et al. (2007) found that 88% had passing grades, and approximately 50% left school because they were bored. Further, in an analysis of the 2006 High School Survey of Student Engagement, Yazzie-Mintz (2007) found that about 67% of students were bored in class, and 39% stated the material was not relevant to them. When students were asked what excited and/or engaged them, the data showed they were most excited and engaged by teaching methods that allowed them to work, discuss, and debate with peers and do projects (Yazzie-Mintz, 2007).

Spires, Lee, Turner, and Johnson (2008), Wurdinger and Rudolph (2009), and Brown and Abell (2007) found that students are more motivated and engaged to do their assignments when it was involved in PBL. PBL taps into students' interests because it enables them to produce or create projects that result in meaningful learning experiences. It affords students the opportunity to work with others while doing hands-on activities.

Hernandez-Ramos and De la Paz (2009) and Ravitz (2008) suggested that PBL improves students' attitudes, motivation, and engagement. PBL leads to intrinsic motivation. Motivation is maintained through meaningful, real-world problems and projects (Bell, 2010). Bell indicated that when students are doing PBL, they are more motivated to come to school. Weller and Finkelstein (2011), who implemented PBL within their elementary school, stated that students who struggled academically developed more confidence and independence in sharing their ideas and participated eagerly with their classmates. When students successfully complete projects, it develops a sense of purpose within them that leads to greater effort, a desire for mastery, and resiliency. PBL is one of the methods of teaching across the United States that is motivating, inspiring, and improving schools and students to learn and change their attitude toward learning (Wurdinger et al., 2007). Hernandez-Ramos and De la Paz found evidence that students' attitudes toward learning history and social studies were significantly more positive when they participated in PBL activities as compared to traditional methods. PBL, therefore, is a teaching method that enhances students' attitudes, engagement, and motivation to complete schoolwork.

Research on PBL activities suggests that students are able to remember what they have learned longer and are able to apply it to new situations to construct knowledge (Mitchell et al., 2009; Ravitz, 2008; Wurdinger et al., 2007). In a highly controlled experimental study of PBL in a middle school population, Wirkala and Kuhn (2011) found students demonstrated better long-term retention and ability to apply new information if the instructional method actively engaged them and enabled them to put new concept to use. Specifically, the problem solving process embedded in PBL causes students to think, organize, reflect, and derive with possible solutions to solve problems or topics. The real-world nature of PBL increases understanding of concepts and deepens students' learning.

Improve Higher-Order Thinking Skills

Researchers have also suggested that PBL develops and improves students' higher-order thinking skills, such as curiosity, problem solving, critical thinking, planning, reflection, and self-monitoring (Bell, 2010; Cook, 2009; Hernandez-Ramos & De la Paz, 2009; Mitchell et al., 2009; Yuen, 2009). At its core, PBL involves finding solutions to a problem. This curiosity to inquire, plan, and research possible solutions to a problem improves students' problem solving and critical thinking skills. As students acquire skills to complete projects, their problem solving and critical thinking skills will improve, leading them to produce a product. Parsons, Metzger, Askew, and Carswell (2011) researched a Title I elementary school and concluded that students who participated in PBL acquired factual knowledge and deeper understanding of content, improved critical thinking skills especially with low achieving students, and were better

able to transfer their learning to new situations. Through PBL, students demonstrated a deeper understanding of the knowledge, concepts, or standards learned.

Academic Success

Hernandez-Ramos and De la Paz (2009) and Wurdinger and Rudolph (2009) suggested that PBL had a significant positive effect on students' achievement or performance. When students are engaged in PBL, they tend to experience more success in the classroom. They retrieve more content information, giving them confidence to tackle more challenging assignments. Helle et al.'s (2006) research showed that students who participated in PBL mathematics increased their Standard Geometry test scores by 10%. What is also remarkable is that lower-achieving students benefited from the intervention as much as the average and higher performing students.

Miodiser and Betzer (2007) indicated that students in PBL performed significantly better in testing situations. Students in a PBL group showed an increase of 84% compared with 52% by the non-PBL group in their pre and posttests comparison. Others in similar studies (Eskrootchi & Oskrochi, 2010) have found that PBL significantly improved students' comprehension as compared to traditional methods. In a study of a public school system using PBL exclusively, Wurdinger, and Rudolph (2009) found that students had the necessary skills and knowledge to be successful beyond high school. In particular, students showed more confidence and have had greater desire to become lifelong learners. Wurdinger and Rudolph indicated academic performance and success are improved when using project-based learning in the classroom.

Twenty-First-Century Skills

Both educators and business leaders agree that a significant gap exists between knowledge and skills needed for success in life and in the current state of education in secondary schools (Moylan, 2008). Students and policy makers expressed and agreed that more must be done to prepare students for future jobs (Spires et al., 2008). PBL, according to Moylan (2008), has been acknowledged as a teaching method or approach for closing the gap between current students' learning and development of the necessary knowledge and skills needed to be successful in the 21st century. Business leaders and educators have identified seven critical key skill set, known as the 7-Cs, needed to be successful in the 21st century. They are critical thinking and problem solving; creativity and innovation; collaboration, teamwork and leadership; cross-cultural understanding; communications and information fluency; computing and information and communication technology fluency; and career and learning self-reliance (Moylan, 2008). Authentic implementation of PBL activities is one way students may master or obtain these skills set, the 7-Cs (Bell, 2010; Hung, Hwang, & Huang, 2012; Moylan, 2008).

In the current and future job market, students will enter the workforce where they will be evaluated based on their performance. Their evaluation will be based not only on their outcomes, but also on their ability to collaborate, negotiate, plan, and organize (Bell, 2010). According Hung et al. (2012), students who actively participate in PBL activities develop collaborating and organizational skills. Moylan (2008) also expressed that through PBL, students gain the 7-Cs, technical competence, and confidence for the world

of work. For some students, PBL prepares and actively develops the repertoire of skills needed to be successful in the 21st century.

Challenges of Implementing Project-Based Learning

There are several positive reasons for integrating PBL in the classroom. However, a few researchers have found some teachers who were reluctant to integrate PBL in the classroom. Some of the major challenges for using PBL in the classroom were time, effort, cost, fairness, assessment, lack of resources, and control (Cherney, 2008; Helle et al., 2006; Parsons et al., 2011; Wirkala & Kuhn, 2011; Wurdinger et al., 2007).

Wurdinger et al. (2007) and Yuen (2009) indicated teachers believed it took more time and effort to plan, implement, and assess PBL activities. The amount of planning time it took to construct projects left very little time for anything else. Cherney (2008) also agreed with Wurdinger et al. that planning PBL takes considerable time and effort and added there is limited class time to implement PBL, thus posing an obstacle for educators. Parsons et al. (2011) wrote that elementary teachers echo similar frustration with limited teaching time. Teacher planning and class time would have to be expanded or modified to be conducive to implementing PBL.

Some teachers found becoming a facilitator a challenge. They are uncomfortable or even resistant to letting go of their control (Mitchell et al., 2009). The role reversal of teachers becoming facilitators or guiding students while students take control of their learning and work was problematic for some teachers (Wurdinger & Rudolph, 2009). In this environment, teachers change their traditional roles and take on an active ways of supporting and scaffolding students' activities (Viilo, Seitamaa-Kakkarainen, &

Kakkarainen, 2011). Yuen (2009) found that teachers reported difficulty letting go of their control in the classroom and allowing students to work on their own. Clark (2006) added that this type of project work or role reversal is a learning or developmental process for both the teacher and student. In essence, students become drivers of their learning as self-regulated learners.

Assessment of projects also has been a major obstacle for adapting to the PBL approach. Novice teachers in particular have found it difficult to assess students' learning and mastery of standards (Mitchell et al., 2009). Although students are required to produce a product to demonstrate their learning, it is challenging some teachers to incorporate reflection and feedback as part of the assessment process. Teachers often lack the expertise on how to integrate reflection and feedback into a projects rubric and grade, causing them to shy away from PBL.

Educators referred to lack of materials and resources available for them to creatively engage students in the classroom. Furthermore, teachers pointed to lack of materials and resources as an obstacle to incorporating PBL in the classroom (Cherney, 2008; Wurdinger et al., 2007). Beringer (2007) also pointed out that the range of projects and methods of inquiry heavily depends on available resources. Students are limited to the number and type of projects they can produce based on materials and resources accessible to them. Educational leaders and even lawmakers would have to reallocate existing limited materials and resources to implement PBL.

Policy makers have not fully embraced all components of PBL due to a traditional way of assessing students through standardized tests. PBL requires an environment that is

conducive to school reform and seeks to educate the whole child. It would require structural and cultural changes in addition to changes in instructional practices and testing (Ravitz, 2010). These types or magnitude of changes could only take place with policymakers' involvement in reforming school instructional practices and methods.

Although various researchers (Filippatou & Kaldi, 2010; Pease & Kuhn, 2011; Wirkala & Kuhn, 2011; Wurdinger et al., 2007) indicated that PBL enhances students' engagement, comprehension and application of standards, metacognitive, and problem solving skills, it will take a change in policy in how students are assessed and teachers are evaluated to derive with full implementation of PBL across U.S. school systems. This type of change in policy may be significant to have wide impact of how schools do business to improve student's achievement (Ravitz, 2010). It also requires commitment and reallocating of existing limited materials and resources to implement PBL. Pease and Kuhn (2011) affirmed that the cost of change and revamping the curriculum to implement PBL is a huge commitment and requires significant amount of funds. The cost of implementing PBL may be steep and less attractive to lawmakers, hence, they may be less agreeable to changing the current system (Wirkala & Kuhn, 2011).

Critics of Constructivist-Based Teaching Pedagogy

Critics of constructivist-based teaching pedagogy have argued that minimally guided teaching strategies such as problem-based learning, inquiry-based learning, and PBL are not effective (Kirschner, Sweller, & Clark, 2006; Mayer, 2004). Kirschner et al. (2006) researched short and long term memory skills in students and reported that empirical research studies suggest that expert problem solvers rely on memory processes

to solve problems. The authors indicated that instructional methods that do not depend on these memory processes are not likely to be effective. The authors explained that there is no body of literature to support these teaching approaches. In fact, they suggested that several studies support direct, strong guidance during the instruction of beginning to intermediate learners (Kirschner et al., 2006).

Constructivist-based teaching pedagogy, according to Kirschner et al. (2006), does not take into account students cognitive structure and development. Students' cognitive development requires direct instruction to construct knowledge and understanding of the particular subject matter. Teachers have to guide students through the learning process in order for them to piece together meaningful knowledge. Hence, constructivist-based instructional strategies are less effective than instructional strategies that provide greater guidance (Wirkala & Kuhn, 2011).

Several researchers have indicated that the lecture method is superior (Struyven, Dochy, & Janssens, 2008) or at least comparable (Van Dijk, Van Den Berg, & Van Keulen, 2001) to constructivist-based methods. In a study of students' perceptions of lecture-based method, Covill (2011) reported that students stated they believed they learn a great deal and retention of materials will be long lasting. Through lecturing, students felt the instructor facilitates critical thinking and engagement into the learning process. They did not learn materials from classmates or assigned readings. Students reported they were dependent on the instructor for their learning. However, this is precisely what proponents of constructivist-based learning consider negative characteristics of lecture.

Lecture based method does not help students to become self-regulated learners. They are passively involved in their learning.

Kirschner et al. (2006), a long-time opponent of constructivist-based teaching pedagogy, suggested constructivists accurately describe students construct knowledge and create meaning. Covill (2011) further reported that although students like and found lecture method to be engaging, they might not be fully aware of the effectiveness and benefits of active learning approaches and instead a teaching style that matches their preconceived notion of what learning is. Struyven et al. (2008) argued that regardless of students' perceptions, they would be more motivated to learn and believe they learn more if they perceive an instructional approach to be more positive. Certainly, students' perceptions of instruction do not affect their learning (Corvill, 2011).

Literature Related to the Research Method

Qualitative research affords the researcher an alternative means to produce findings that are not based on statistical or quantification procedures. A research paradigm focuses on inductive, interpretive methods. It is applied to daily life operations and it is socially situated (Hatch, 2002). It is an essential way to explore, gain knowledge, and understanding of social or complex human phenomenon as it relates to the meaning that individuals assign (Boeije, 2010; Creswell, 2007; Denzin & Lincoln, 2008).

This research study was designed to bring greater clarity to multifaceted social phenomena that cannot be reduced to exact, statistical numbers, and relationships (Hatch, 2002). Qualitative research method was the best option because of its emphasis on the relationship between the researcher and phenomenon under study, social reality of the

real world, and the circumstantial limits that affect the inquiry (Denzin & Lincoln, 2008). Moreover, qualitative research involves inquiring into the meaning individuals attribute to social or human experiences (Alasuutari, Bickman & Brannen, 2008). It is working and documenting teachers and administrators to understand their experiences and provide detailed accounts of PBL impacts on students' learning and grasping of concepts. Although I originally wanted to conduct a quantitative study, it cannot accurately portray the lived experiences and perceptions of individual teachers and staff (Boeije, 2010). Quantitative results are presented in forms of mathematical models, statistics tables and graphs, and numbers; whereas, qualitative results are presented in the form of words and pictures, providing a vivid description on teachers' and administrators' experiences in integrating PBL in the classroom. Hence, qualitative research seems to be the best approach to answer questions of how human experiences and meaning are created while documenting experiences of school staff in integrating PBL in the classroom (Denzin & Lincoln, 2008; Stake, 2008).

Grounded theory, narrative analysis, ethnography, phenomenology, participatory research, and case study are some of the qualitative approaches described by Boeije (2010), Creswell (2007), and Merriam and Associates (2002). In qualitative research, a researcher gathers data by examining documents, observing behaviors, and interviewing participants. Then the researcher reviews and organizes all the data into patterns, categories and themes (Creswell, 2007). Although, the various traditions within qualitative research are similar, they differ slightly in some aspects. Phenomenology is a qualitative research approach that focuses on describing the essence or meaning for

several people based on lived experiences on a phenomenon or concept (Creswell, 2007). Researchers bracket, organize, and analyze experiences of different individuals to identify the essence of a phenomenon (Merriam & Associates, 2002). Ethnography is a qualitative design where the researcher describes and interprets the beliefs, values, attitudes, and language of a particular group of people (Creswell, 2007). Narrative analysis, according to Merriam and Associates (2002), is a research design that uses lived and told stories of individuals as data. It is a spoken or written text that gives a detailed account of an event, phenomenon, or action that is chronologically connected (Czarniawska, 2004). Lastly, grounded theory is a qualitative research design where the researcher inductively derives from data a theory or general explanation of a process, action, and interaction shaped by the views of a large number of participants (Creswell, 2007; Merriam & Associates, 2002). Glaser and Straus formulated a qualitative design in 1967 that held that theories should be grounded in the data collected from individuals (Boeije, 2010; Creswell, 2007; Merriam & Associates, 2002). After a critical review of the various approaches, a qualitative case study was determined to be the best method for this study. In a qualitative case study, the researcher explores or conducts a detailed inquiry into a particular issue, phenomenon, or case within a bounded system (Boeije, 2010; Creswell, 2007; Hatch, 2002; Merriam & Associates, 2002; Simons, 2009). In fact, case study research is a common way to conduct qualitative inquiry (Stake, 2008). Qualitative case studies provide a pathway for interpretation and understanding of human experiences, thoughts, actions, expressions, and behaviors (Boeije, 2010). In this

qualitative case study, I investigated and examined the lived experiences of teachers and administrators in integrating PBL in the classroom.

Summary

The literature review provided an overview of the effect of PBL methods of instruction on student achievement, concept retention, motivation, and engagement. In this section, I critically reviewed research and literature related to constructivist theory, problem-based learning, inquiry-based learning, and PBL. I demonstrated how an instructional strategy, PBL, might have had a significant impact on students' engagement and assisting students in retaining content materials (Cherney, 2008; Wurdinger et al., 2007). PBL strategies maximize and incorporate multiple facets of student intelligence. Students are thus able to learn more successfully by participating in meaningful, engaging, and investigative activities (Gooding & Metz, 2008; Wurdinger et al., 2007). It also showed how PBL helps students acquire problem solving and higher order thinking skills (Geier et al., 2008).

Jones (2007) and Wurdinger et al. (2007) indicated that PBL substantially improved students' learning abilities and enhanced their cognitive development through engagement with complex, authentic problems. It maximized students' interests by challenging students to investigate and solve problems to attain standards mastery while linking the material to real-world setting and applications (Bell, 2010; Wurdinger et al., 2007). Through this process, students develop a deeper understanding and comprehension of materials and standards (Hernandez-Ramos & De la Paz, 2009). PBL further leads

students to authentic learning, which according to Moylan (2008) enables students to acquire necessary skills to succeed in the 21st century.

Section 3 provides detailed outlines of the research design, setting, sampling process, procedures, hypothesis, instrumentation, materials, data analysis, and participants. It further specifies the reliability and validity of the study's methodology.

Section 3: Research Method

Introduction

In this section, I will present a detailed discussion of the research design and qualitative method used to conduct this study. Justification for using the instrumental case study to explore and examine the local problem, a need for greater understanding of teachers' and administrators' experiences and perceptions integrating PBL in the classroom, and the research questions will be presented. This section contains information on procedures for gaining access to participants, criteria and descriptions of participants, data collection techniques, analysis procedures, methods to reduce bias and error, and measures for ethical considerations.

Description of the Qualitative Tradition

The intent of this instrumental case study was to understand the lived experiences of teachers and administrators integrating PBL into the classroom. According to Stake (2008), the common way to conduct a qualitative study is through a case study. Therefore, to address the local problem, I used a qualitative instrumental case study. In a qualitative instrumental case study, the researcher focuses on a local problem to obtain a greater understanding of the phenomenon (Creswell, 2008).

A qualitative instrumental case study's primary goal is to examine a particular case to provide in-depth insight into an issue or to revise a general understanding (Creswell, 2008; Saldana, 2011; Stake, 2008). In a case study, the researcher conducts a critical**,** systematic inquiry into a related issue or phenomenon to generate a deeper understanding in order to add to the body of knowledge within that field of concentration

(Simons, 2009). Case study research falls within the constructivist research paradigm (Boeije, 2010; Hatch, 2002; Mabry, 2008; Stake, 2008). In this paradigm, researchers seek to foster an understanding of the participants' experiences, thoughts, actions, expressions, and behaviors (Boeije, 2010). Moreover, an instrumental case study provides a thick description of the narrative accounts of participants' reality and perceptions (Mabry, 2008).

According to Creswell (2007), Simons (2009), and Stark and Torrance (2005), the qualitative case study is an ongoing process that generates qualitative data gathered through a small number of participants from multiple data sources. The most common data sources for qualitative case study are interviews, observations, and review and analysis of related documents such as artifacts, training, and available resources (Simons, 2009; Stake, 2008; Stark & Torrance, 2005). Multiple data sources are gathered to provide a comprehensive and rich perspective of participants' viewpoints (Creswell, 2007; Mabry, 2008; Simons, 2009; Stark & Torrance, 2005). These sources can provide a thick description of a phenomenon, which leads to a detailed investigation of the data sources involving deductive and inductive analyses. The in-depth analysis of data that are collected will bring to light a series of general themes to be analyzed (Creswell, 2007; Simons, 2009). In this study, I used the qualitative instrumental case study to explore and examine teachers' and administrators' experiences with integrating PBL into the classroom.

Justification for Choice of Research Design

Researchers should critically examine various research methodologies to determine appropriate research designs that best fit their study (Denzin & Lincoln, 2008; Stake, 2008). A quantitative research design would not be able to highlight the lived experiences of participants with numerical data. The process of reducing lived experiences and perspectives to numbers would led to a loss of meaning (Mabry, 2008). Quantitative researchers traditionally test hypotheses of known variables, whereas the qualitative researcher explores a related issue or phenomenon (Creswell, 2008). In essence, quantitative research designs would be the less effective way to capture and document teachers' and administrators' experiences and perceptions of integrating PBL in the classroom (Boeije, 2010).

A grounded theory study is less appropriate to examine the lived experiences of teachers and administrators in PBL because it seeks to "generate or discover a theory" (Creswell, 2007, p. 63). The intent of this study was not to develop theories but to understand the lived experiences of participants incorporating PBL into the classroom. An ethnography study is not appropriate for this study because it involves the observation and the meaning of behaviors, values, and language among members of a culture-sharing group (Creswell, 2007). Hence, I decided to conduct a qualitative instrumental case study.

Little is known about teachers' and administrators' lived experiences of integrating PBL into the classroom. Consequently, qualitative data were collected and

analyzed to frame a deeper understanding of this broad topic (Cherney, 2008; Mitchell et al., 2009).

Research Question

In this instrumental case study, I addressed the following questions: What are the experiences and perceptions of teachers at a southern Florida school district regarding integrating PBL in the classroom? What are the perceptions of administrators at a southern Florida school district regarding integrating PBL in the classroom?

The methods of collecting data in this case study were through interviews and observations. According to Rubin and Rubin (2005), open-ended interview questions allow for a deeper understanding into the participants' experiences and perspectives of integrating PBL in the classroom. Observations, on the other hand, help researchers to document and reconstruct experiences (Boeije, 2010). Using a qualitative instrumental case study research method, I was able to gain an in-depth look and see different perspectives. The case study allowed me to discover various perspectives and critical connection among ideas and concepts.

Context of Study

I conducted this qualitative, instrumental case study in an urban school district in southern Florida. This school district is the sixth largest and the largest fully accredited K-12 and adult school system in the United States. This school district has over 255,000 students (Broward County Public Schools, 2013a). The school district applied and awarded grants to implement a technology initiative called Global Learning Initiative through Digital Education for Students (GLIDES) from 2005 to 2008 school year. The

objective of GLIDES is to help teachers integrate standards-based, multidisciplinary, project-based curriculum into the classroom. In addition, this school district encourages, trains, and provides support to teachers who integrate PBL in the learning environment. Furthermore, this school district created a Digital Education Teacher Academy (DETA), in collaboration with a local university, to provide graduate level courses and professional development workshops for teachers and administrators. Through DETA, teachers and administrators received training in the integration of technology into the content of all subject areas. During the 2013-2014 school year, the district started the Digital 5: Pathway to Individualized Learning initiative in more than 27 elementary schools, with the goal of transitioning classrooms to new digital format, while focusing on delivering personalized instruction for students. Each school received laptops for every one of their fifth grade students to implement PBL in the classroom. This location was chosen, in part, because of the principle of maximization, which states that a location should be chosen where the topic of study presents itself most strongly. The school district's history of integrating PBL into the classroom fit the principle of maximization.

Additionally, I targeted elementary school teachers and administrators within the district. Specifically, I selected kindergarten through fifth grade teachers and the administrators supervising them to participate in the study. Teachers and administrators needed to be in schools that had at least 50% of students on free and reduced lunch. The school grade had to be a D or better on the Florida School Grading System. The district had about 4,260 elementary teachers and 213 elementary administrators (Broward County Public Schools, 2013b), representing a teacher to administrator ratio of 20:1.

Therefore, a purposeful sample of size of at least six teachers and a minimum of four administrators were designated for one-on-one interviews and observations. I chose elementary school sites for this study because of their diversity, number of teachers, and administrators' population. The district and elementary schools make it a goal to reflect the teaching and administrative staff to the student population, hence reflecting the demographics of a school. Given the makeup of elementary schools within the district, the study results may be used to enlighten comparable schools or districts in integrating PBL into the classroom. Consequently, based on the size and demographics of the school district, participants were expected to be able to provide a broader depth of experiences and greater insight to answer the study questions

Measures for Ethical Protection of Participants

The U.S. Department of Health and Human Services (HHS, 2009) mandated that Institutional Review Board (IRB) follows ethical code and procedures outlined under the Code of Federal Regulations Title 45 Part 46: Protection of Human Subjects. Researchers and IRBs are required under the law to protect the rights of human subjects participants (HHS, 2009). To prepare for this study, I successfully completed the certificate of completion training course entitled "Protecting Human Research Participants" (Appendix H) offered by the National Institutes of Health (NIH) Office of Extramural Researcher. Successful completion of this training prepared me to take necessary measures to protect participants' rights and follow ethical procedures outlined by HHS.

An informed consent form was provided to teachers (Appendix E) and administrators (Appendix K). Participants were given one-on-one interview questions for teachers (Appendix A) or administrators (Appendix B) outlining their rights and privacy, purpose of study, procedures for collection, analysis and reporting of data (Rubin & Rubin, 2005; Simons, 2009).

Boeije (2010) stressed the importance of establishing trust because it is a basic concept in qualitative research. Therefore, I provided participants with a signed confidentiality agreement (Appendix G) delineating my commitment that their rights and privacy will be protected and that all ethical, and data collection procedures would be followed strictly. I used pseudonyms to protect teachers' and administrators' identity (Boeije, 2010; Rubin & Rubin, 2005). All field notes, codes, and other audio data that I gathered were kept secure under locked file cabinets or digitally protected when stored on computer (Boeije, 2010; Creswell, 2008).

To gain access to participants, I obtained permission from the Walden University IRB (Appendix J) and the district's Department of Student Assessment and Research (Creswell, 2008; Simons, 2009). From there, district officials and school principals (Appendix I) gave me written permission.

To find participants, I conducted a search via personal and email contacts (Appendix D). Participants who responded and agreed to participate received interview questions prior to the interview. They also received informed consent form explaining their rights and privacy, purpose of study, probable benefits, or risks involved, procedures for collection, analysis, and reporting of data (Simons, 2009). I informed participants of

the nature and structure of audio recorded interviews (Rubin & Rubin, 2005). After participants signed the informed consent form, I set up an appropriate time and setting to interview participants in order to conduct interviews. Interviews were transcribed and analyzed for emerging themes. I provided the study findings to participants to review their own data and I gave them an opportunity to discuss it with me (Mabry, 2008).

Role of the Researcher

During this study, I was an assistant principal at an elementary school. With 12 years of teaching and administrative experiences within the district, I have served in the positions of high school mathematics teacher and assistant principal. I have also worked with at-risk students who were expelled or removed from the traditional school population due to behavioral and social issues. Due to my current and past positions, I have worked and developed professional experiences with classroom teachers and administrators. I have shared ideas and worked with several administrators to improve teachers' capacity and students' achievement.

As a former teacher and current school based administrator, I have had to encourage teachers to integrate and implement PBL in their curriculum. Also, I have worked and attended various job-related workshops and training with fellow colleagues and supervisors. Hence, my relationship with participants is twofold: a current educator and a fellow administrator. In my role as school based administrator, I did not supervise any of the participants in the study.

Creswell (2008) and Hatch (2002) indicated that the relationship between the researcher and participant is crucial to the development of a qualitative inquiry. I believe

my experiences and position as a current employee of the district helped to establish and improve my researcher participant relationship.

Research studies are subject to biases due to a practitioner-researcher's past experiences and must be acknowledged by the researcher (Creswell, 2008; Merriam et al., 2002). As a former math teacher, I integrated some elements of PBL in my teaching methods to help enhance students' understanding of taught mathematical concepts. I have also attended district training that provided me with tools and skills on how to create and integrate technology enhanced PBL activities into the classroom. Therefore, I was conscious of the potential for biases my experiences presented as I conducted this study. Subjectivity plays a critical role in qualitative research, and I acknowledge that attaining full objectivity is practically a difficult task. However, I maintained a neutral position as a means to attend the issues of subjectivity and objectivity. Moreover, member-checking strategy was used to solicit participants' views of the findings and interpretations of the their own data. Participants received a copy of the field notes to avoid biases (Creswell, 2008). I consistently maintained the participants' viewpoints and experiences as the pivotal point of the study.

Criteria for Selecting Participants

Teachers and administrators were invited to participate in the qualitative instrumental case study based on the following criteria: teachers who had previous experience integrating or implementing PBL, administrators who closely supervise teachers who integrated PBL, or administrators who integrated or implemented PBL as teachers. Teachers and administrators had to be in schools with at least 50% of students

on free and reduced lunch, and school grade had to be at least a D based on the Florida school grading system. I used purposeful sampling to identify and select individuals who provided thick, rich, and in-depth experiences with PBL (Boeije, 2010; Mabry, 2008). When a researcher uses purposeful sampling, individuals are selected based on lived experiences of the phenomenon (Boeije, 2010; Mabry, 2008).

In qualitative studies, sample size is determined by reaching a thorough understanding of the problem or phenomena under study until saturation is reached. Saturation is reaching the point where no additional data are needed to understand the phenomena, events, or experiences (Guest, Bunce, & Johnson, 2006). Saturation has become the standard to determine sample size and to support findings and claims (Barroso & Sandelowski, 2003; Guest et al., 2006; Morse, 2000).

In general, sample sizes should not be too small to make it difficult to reach saturation or too large that it presents a challenge to analyze (Onwuegbuzie & Leech, 2007). Bernard (2000) explained that most ethnographic studies are based on 35 interviews. Bertaux (1981), on the other hand, argued that 15 should be the smallest acceptable sample size when doing qualitative research. Specifically, Creswell (2007) has recommended that qualitative researchers must (a) explore one to two individuals stories in a narrative research, (b) study a single culture sharing group in ethnography, (c) interview 20 to 30 individuals in a grounded theory study, (d) interview up to 325 people in phenomenological research, and (e) examine four to five cases in a case study (p. 126-127). Additionally, Morse (1994, 2000) suggested that there should be at least six participants in a phenomenological study, and recommended 30 to 50 interviews or

observations for ethnography, ethnoscience, and grounded theory research. Morse (2000) further recommended approximately 100 to 200 observations in qualitative ethological studies. Likewise, Kuzel (1992) recommended six to eight interviews for homogeneous sample and 10 to 20 data sources are usually necessary in qualitative research.

Onwuegbuzie and Leech (2007) recommended that researchers use a sample size that is representative of the population. They also pointed out that this is based on past meta-analysis on sample size and sampling designs. Moreover, Guest et al. (2006) analysis of the literature review on sample size guidelines in qualitative research and found that saturation was reached within the first 12 interviews. A purposeful sample of size of 10 teachers and 5 administrators contributed to one-on-one interviews based on aforementioned criteria. I conducted several one-on-one interviews of teachers and administrators, and observed teachers to provide a comprehensive qualitative data for detailed analysis of teachers' experiences and administrators' perspective on the integration of PBL into the classroom.

Data Collection Procedures

In this study, the data collected followed and aligned with traditional qualitative research design procedures (Creswell, 2008; Hatch, 2002; Janesick, 2004; Rubin & Rubin, 2005). I served as the researcher and as a research instrument (Hatch, 2002; Janesick, 2004; Onwuegbuzie, Leech, & Collins, 2010). Interviews and observations were the data collection techniques used to observe and document various forms of qualitative data (Creswell, 2007; Boeije, 2010; Mabry, 2008; Simons, 2009). After I received approval from Walden University IRB (number 11-18-13-0138879), I begin to

collect data for this study. Interviews were held at the participants' school location and lasted at least 30 minutes. According to Denzin and Lincoln (2008), a researcher within qualitative tradition ought to use variety of interpretive practices in hope of gaining a better understanding of the phenomena under study. Using various data collection strategies, I was able to elevate the level of complexity, rigor, and detail of the case to provide broader perspectives and experiences (Beoije, 2010; Mabry, 2008; Stake, 2008). Denzin and Lincoln (2008), and Mabry (2008) further indicated that using different data procedures help a researcher triangulate data and provide a better, richer understanding of the phenomena. Based on various observations and interviews, I presented qualitative data about teachers and administrators' lived experiences and perspectives of PBL.

Interviews

One-on-one interviews with participants represented one of the sources for collecting data in this study. Interview questions for teachers (Appendix A) and administrators (Appendix B) were predetermined and open-ended to give participants opportunities to express their views and experiences. Qualitative interviews allow a researcher to understand participants' experiences and reconstruct past events (Rubin & Rubin, 2005). Each participant took part in an in-depth, intensive interview in the hope of eliciting his or her explanation of lived experiences. By using this approach, I was able to ask additional questions to delve deeper into experiences of participants and to allow them to elaborate on their answers.

Interviews provided both in-depth and detailed rich data (Rubin & Rubin, 2005). Hatch (2002) asserted that interviews help a researcher discover the methods and

meaning participants used to make sense and organized their world and experiences. The interview format enabled me to gather rich, in-depth, and detail data by probing and by digging deeper into participants lived experiences. Reasons for using interview format were to examine teachers and administrators' perceptions and experiences of the usefulness of integrating PBL into the classroom in order to motivate and assist students in retaining concepts. During the interview, I posed open-ended, probing, and follow up questions about integrating PBL in the classroom, and audiotaped responses to ensure the accuracy of data.

Observations

Observation is the process of obtaining firsthand of account of phenomena by observing people and places at the research location (Creswell, 2008). Observation affords a researcher the ability to document interaction of participants' experiences in a given time and place (Boeije, 2010). Therefore, I gathered data for the instrumental case study by conducting observations of teachers teaching or facilitating PBL lessons to students for the duration of a class period, at least 60 minutes. I concentrated on how teachers engage and challenge students as they implement PBL, and observed how students responded to PBL instruction and if they were actively participating in activities or projects. I observed teachers integrating and interacting with students. To ensure accurate record of observation data, I used Janesick's (2004) observational protocol (Appendix C), which ensured that appropriate and quality recording of descriptive and reflective field notes (Creswell, 2008). The observation protocol was an essential component to conduct, observe, and record my research study observations.

Data Analysis Procedures

As a researcher, I used data analysis procedures outlined by Creswell (2007; 2008), Hatch (2002), and Rubin and Rubin (2005). Qualitative research approaches do not aim to measure data, but to analyze it for emerging themes (Hatch, 2002). Typically, a systematic approach is used to derive with themes deductively and inductively in qualitative research (Hatch, 2002; Simons, 2009). Furthermore, data analysis is a systematic way to search for meaning (Hatch, 2002). Both Hatch (2002) and Simons (2009) pointed out that data analysis is a process of organizing, and cross-examining data to allow a researcher to sort, refine, code, identify patterns and themes, to categorize, discover, explore relationships and explanations, derive with interpretations, critiques, and generate theories or generalizations. These data analysis processes enable researchers to make sense of the data in the hope of producing findings and to give an overall understanding of the phenomena (Simons, 2009). In this study, I followed data analysis strategies outlined in case study research (Creswell, 2007).

During the initial stage of data analysis, the interviews were transcribed. I used open coding to examine transcripts and field notes to develop categories of information based on the transcribed data (Creswell, 2007). Within those categories, I looked deeper into the text for subcategories, commonalities, and extreme themes. Charmaz (2006) asserted that coding is the process of defining what the data described. The process of open coding helps a researcher to break down data into segments and assigns a name to each of them (Simons, 2009). By transcribing the interview, I was able to examine,

compare similarities, and differences (Boeije, 2010). This structured process ensures that findings were grounded in participants' perspectives (Simons, 2009).

Creswell (2007) further expressed that no more than 10 categories should be developed. Therefore, I separated data or categories into coded groups. Then, I used axial coding to sort and refine data into new ways (Simons, 2009). Axial coding is a set of procedures that allows data to be put back together in new ways after applying open coding. It enables connections to be made between categories (Strauss & Corbin, 2007). Also, axial coding relates categories to subcategories, defines properties and dimensions of categories, and reorganizes data from open coding to give it meaning from emerging themes (Boeije, 2010; Charmaz, 2006). Next, I organized the emerging themes and codes within a coding paradigm or matrix (Creswell, 2007). After coding the data and analyzing emerging themes, the final step of the data analysis process I took was to resort, sift, organize, and reorganize the categories to make sense and to explain the meaning of the data (Boeije, 2010). Lastly, I selected quotes or statements from the data that help explain the meaning of the data as it relates to the phenomenon under study, experiences and perspective of teachers and administrators about integration PBL into the classroom.

I used the observation protocol (Appendix C) to document observations. During observations, I wrote down what I observed as descriptively as possible (Saldana, 2011). Also, I attempted to capture actual words of teachers' conversations in the setting (Richards & Morse, 2013). I used the reflective notes section of the protocol to document my personal inferences, comments, and interpretation of actions at the end of each observation (Richards & Morse, 2013; Saldana, 2011). Following this, I transcribed and

analyzed each observation handwritten field notes for meaning of teachers' experiences integrating PBL in the classroom.

Next, I triangulated interviews and observations data to conduct a final data analysis, which aims at putting or integrating all pieces together to describe and to bring meaning to participants' experiences and perspectives (Boeije, 2010; Charmaz, 2006). After this process, I reported on the case study findings related to the research study questions. I also engaged in the data analysis phase to ensure data were triangulated and saturation was reached. Moreover, as recommended by Merriam (2002), researchers should search for discrepant cases that challenge study expectations or conclusions. I examined emerging themes and I did not found any discrepant cases.

Methods to Address Trustworthiness

In qualitative research tradition, the researcher is typically the primary collector of data whose task is to analyze and interpret data gathered from interviews (Boeije, 2010; Creswell, 2007; Simons, 2009). In this instrumental case study, a professor from National Louis University served as a peer reviewer of data and explanations to reassure the accuracy of the data analysis. During the study, he reviewed participants' transcripts, analyze transcripts for biases, provides direction and insight, ask questions, and analyze interpretations provided for inconsistencies or unsubstantiated conclusions. This process was a mean of verifying the accuracy of transcribed interviews and data results. Creswell (2007) expressed that the peer reviewer serves as a "devil's advocate" to keep the researcher honest and to ask tough questions about the data collection and analysis

processes (p. 208). I used pseudonyms for participants; hence, the peer reviewer was unable to identify participants and signed a confidentiality agreement (Appendix G).

Merriam and Associates (2002) said in qualitative studies replicability has nothing to do with getting the same results if the study were repeated. Rather, it is based on whether results are consistent with the data collected. Reliability rests on the fact that will others derive with the same results as the original researcher based on the collected data, do those results make sense, and if the results are consistent and dependable (Merriam & Associates, 2002).

Qualitative research does not use numerical numbers or statistics to answer research questions. It does not employ the same techniques to ensure validity, reliability, and transferability (Boeije, 2010; Mabry, 2008). In qualitative research tradition, researchers have to find ways to think about the validity. Also, researchers have to ask whether the explanation offered was credible (Simons, 2009). In qualitative research, the terms credibility, consistency, dependability, applicability are used to indicate quality (Merriam & Associates, 2002; Simons, 2009). To establish credibility, Creswell (2007), Merriam and Associates (2002), and Mabry (2008) suggested the use of member checks, triangulation, peer review, audit trails, and rich, think descriptions to illustrate how a researcher derived at the explanations. Creswell (2007, 2008) asserted that validity is measured by its trustworthiness, authenticity, and credibility and suggested the use of at least two strategies in any given qualitative inquiry. Nevertheless, I used peer reviewing, member checking, and rich, think descriptions as strategies to ensure validity and trustworthiness. Peer review or peer debriefing strategy was incorporated to enhance the

accuracy of account of events or data (Creswell, 2007). Based on Boeije's (2010) assessment, peer review diminishes bias and prepares for critique. Creswell (2007) indicated that peer review ask tough questions about methods, meanings, and interpretations. Peer review ensures that internal validity and reliability are maintained.

Creswell (2007) emphasized that member checking is the most critical method for establishing credibility. Member checking was used to ensure accuracy and trustworthiness of the study findings. Mabry (2008) stated that member checking is a procedure where those observed and interviewed are asked to confirm, expand, and disapprove data collected. I transcribed interviews data. Transcripts were analyzed for emerging themes and development of meaning for data results. Copy of findings was provided to each participant for review of his or her own data and opportunity to meet with me to discuss results.

Rich, thick descriptions were used to ensure external validity. Rick, thick descriptions offered an understanding of social realities as they are subjectively perceived, experienced, and created by participants (Mabry, 2008). Readers received rich, thick descriptions of the setting of the study to be able to match the research context to theirs and hence, determine if findings can be transferred due to shared characteristics (Creswell, 2007; Merriam & Associates, 2002). I provided to readers a comprehensive description and information that ascertain how closely their situations match and they could decide whether results are plausible for their own data.

Summary

The purpose of this qualitative instrumental case study was to examine teachers and administrators' perspectives and experiences of the integrating PBL in the classroom to engage and help students' retain content. I provided detailed justification and explanation of the chosen qualitative research design and compared them to other possible forms of research designs.

Also, I offered an explanation of the data collection and analysis procedures that guided this case study inquiry. Data analysis and validation procedures that ensured validity and reliability of the data collection and analysis procedures were delineated in this section.

Section 4 presents the findings of the case study.

Section 4: Findings

The purpose of this qualitative, instrumental case study was to explore and gain a deeper understanding of teachers' and administrators' experiences and perceptions integrating PBL in the classroom. The findings provide insight into the lived experiences of teachers who integrate PBL in the classroom. Moreover, I informed administrators of the benefits and challenges pose to teachers as they implement PBL. I provided administrators with a greater understanding of the type of support and resources needed to create an environment conducive to implement PBL based on teachers' perspectives. I also examined administrators' perceptions of the impact of PBL in the classroom. In Section 4, I document the overall process used in this case study to collect, code, and analyze emerging themes from participants' experiences and perceptions.

A qualitative, instrumental case study was chosen as the best suited approach because it allowed the teachers and administrators to communicate their experiences, thoughts, actions, and expressions using thick, rich descriptions. I conducted audiotaped, face-to-face, open-ended, semistructured interviews with teachers and administrators. I also observed teachers implementing PBL in the classroom, which generated field notes. The primary objective of this study was to gain a greater understanding about the lived experiences and perceptions of teachers and administrators in integrating PBL in the classroom. I further investigated whether PBL had any effects on students' motivation, engagement, and concept retention. The case study centered on the following two research questions: What are the experiences and perceptions of teachers at a southern Florida school district regarding integrating PBL in the classroom? What are the

perceptions of administrators at a southern Florida school district regarding integrating PBL in the classroom?

Data Collection Process

In the study, all of the data collected followed and aligned with traditional qualitative research design procedures (Creswell, 2008; Hatch, 2002; Janesick, 2004; Rubin & Rubin, 2005). I served as both the collector of data and in-depth interviewer. The data collection technique used was audio-taped, face-to-face, semistructured interviews and observations. After obtaining approval from the Walden University IRB, I contacted the research department at the Broward County Public Schools for their IRB approval (see Appendix I). Then, I sent an e-mail invitation to all principals and teachers in schools that met the selection criteria, as discussed in Section 3.

Ten kindergarten through fifth grade teachers and five elementary administrators were selected to participate in this study at the local school district. I met with each teacher and administrator individually and explained the focus and guidelines for the study. I gave each participant a consent form and reviewed and explained it to him or her. All participants consented to participate in the study. Once I obtained their approval, I scheduled a mutually agreed upon date and time for observations and interviews with teachers and administrators at their school site. The interviews and observations took place between April 21 and May 13, 2014. Prior to the interview and observation, I provided a detailed explanation of the procedures and guidelines. I also advised participants that their participation was voluntary and that they could opt out at any time. Each participant was informed that his or her identity would remain confidential and that

the data would be kept secure under locked file cabinets and/or digitally password-protected computer. Each participant was assigned a pseudonym to ensure confidentiality and anonymity.

Each interview ranged from as long as 10 minutes to 50 minutes. All interviews were digitally recorded using a Sony IC Recorder. Next, I transcribed all the interviews. Each interview transcript was printed and read prior to sending them to the respective teacher or administrator via e-mail for their review. None of the administrators made changes to their responses; of the 10 teachers, only one had minor changes to her interview transcript.

For the observations, I used Janesick's (2004) observational protocol (Appendix C). Prior to observation, I explained the observation protocol and procedures to each teacher. Each observation lasted for 30-45 minutes. Following each observation, I wrote my reflection on the reflective notes section on the observation protocol. All observations were transcribed and sent to the respective teacher via e-mail for review.

Data Tracking

For the purpose of tracking the data, I used a Sony IC Recorder, laptop, and file folders. I also created a research log (Appendix F) to keep track of the data. I checked all data for accuracy at least three times. For this study, I used a systematic approach to derive with themes or categories deductively and inductively (Hatch, 2002; Simmons, 2009). Each interview was transcribed and sent to participants for review. I used the following coding steps to analyze and construct teachers' and administrators' experiences and perspectives: (a) I printed, read, and prearranged the interviews and observations

transcripts for analysis; (b) I started the coding process by identifying and highlighting words and text segments that supported the derived themes; and (c) I reread data and search for relationships and discrepancies among the themes (Hatch, 2002). During the third reading, each participant's highlighted responses and emerging codes was copied into another page and then summarized. A response matrix (Appendix L) was constructed for each participant. Lastly, the interviews and observations were triangulated and organized under major categories with subcategories or themes.

Participants

Invitation letters were sent to all teachers and administrators at schools that met the criteria via e-mails. I followed up with phone calls to those who responded. All 10 teachers were females with at least 3 years of teaching experiences. Two of the teachers had less than 5 years of teaching experiences. The remaining eight teachers had more than 5 years of teaching experiences and were considered experienced teachers. One kindergarten, two first grade, three second grade, one third grade, one fourth grade, and two fifth grade teachers were chosen to participate (see Table 1). All of the teachers had at least 2 years integrating or implementing PBL in the classroom. Two of the five administrators were females. Two of the administrators were assistant principals with at least 2 years of administrative experiences. Of the remaining three administrators, two had at least 5 years experiences as principal and one on his first year of principalship (see Table 2).

Table 1

Participants - Teachers

Pseudonym	Type (Admin/Teacher)	Sex (M/F)	Grade Level
Liz	Teacher	F	1
Dianna	Teacher	F	1
Helen	Teacher	F	2
Sharon	Teacher	F	3
Michelle	Teacher	F	4
Seth	Teacher	F	KG
Frances	Teacher	F	5
Jessy	Teacher	F	5
Marie	Teacher	F	2
Drane	Teacher	F	2

Table 2

Participants - Administrators

Pseudonym	Type (Asst. Principal/ Principal)	Sex (M/F)	Years of Experiences
John	Asst. Principal	M	>2
Deb	Principal	F	>5
Defay	Principal	F	>7
Josh	Asst. Principal	M	>3
Mich	Principal	M	<1

Findings

Teacher Interviews and Observations

Through the process of analyzing the data, common words and text segments of the interviews and observations were coded and analyzed for frequency determination. These patterns were then categorized for emerging themes related to the research question regarding the experiences and perceptions of teachers at a southern Florida school district regarding integrating PBL in the classroom. Based on teachers' responses

and observations of implementing PBL, three areas emerged: benefits, challenges, and teachers' impressions (see Table 3).

Table 3

Themes and Subthemes for Teachers' Interviews

Major Themes	Subthemes
Benefits	Increase Retention & Engagement
	21st Century Skills
	Student-led
	Academic Success
Challenges	Lesson Planning & Delivery
	Time Consuming
	Lack of Resources & Materials
Teachers' Impressions	Fun, Rewarding, & Excitement Greater
	Greater Teacher Collaboration
	Usage of PBL

Benefits. Participants indicated there were four major benefits to implementing PBL in the classroom (see Table 3). Teachers shared that PBL increased students' retention and engagement in the classroom. Liz stated:

> Students' knowledge increased more so than just listening to me lecture… They are learning about it, they are talking about it. They are presenting without using note cards because they loving what they are learning. So I feel the knowledge is more sustainable now.

Helen stated that not only is the knowledge more sustainable, but "the content they did learn was much deeper, much more involved, and I think they kept it to memory a lot more than they would have if they had learned it from a book." Seth commented,

"Ninety percent of the time when we do project-based, my students get it." Marie added, "So I love the fact that it is more hands on, the kids get involve, and the more you get them involve, the better it is for me because then they are asking the questions." Likewise, Liz shared that students are on-task and engaged 90% of the time and retain more knowledge.

Based on observation field notes, all students were highly motivated and engaged into lessons and projects. Drane's students discussed a water bottle with dirt or particles and clearly articulated their knowledge and understanding of water pollution. Likewise, Helen's students shared their project on the solar system. They communicated the content with specificity and depth that it demonstrated their sustained knowledge and understanding. Students demonstrated long-term retention and ability to apply new knowledge.

Teachers expressed overwhelmingly that PBL help prepare students for the real world and future job markets in the 21st century. Drane confirmed, "It stimulates their critical thinking because in discussing and learning from each other it generates other questions." Jessy agreed, "Also, I can see teamwork, cooperation, helping each other, and giving each other ideas." Liz further commented:

> Through project-based learning and having the technology, I feel it's meeting the needs of the 21st century. It's never working alone; it is being grouped and working together. When you are working, it's how to collaborate and work as a team. We had some kids in here who couldn't even work together and wanted to kill each other but now it's taught them the skills they need.

Helen, Dianna, and Michelle mentioned that students learned communications, computing and information, and communication technology fluency, research, and presentation skills through PBL. Based on observation field notes, six of the 10 teachers had students actively working on computers, laptops, and iPads to conduct research, and they used several software to create projects. Teachers expressed that PBL prepares and develop the 21st century skill sets in students. The concepts students are learning in class are those "they can connect [to in] real life," said Seth.

Teachers said that an added benefit to integrating PBL in the classroom is that it is student-led. Dianna mentioned, "I think a strength or a plus is definitely the students are in charge of their learning and you know I'm a bystander making sure they are getting it." Michelle explained:

> Lesson delivery has changed because it is no longer teacher-led but more student-led. We've found that we are able to cover more information. The kids are really taking that information in because it's their own research. So they have a greater sense of responsibility, I guess you can say and we actually, in my opinion, able to cover more because while the kids are mastering that one area when they go head and present to everybody. They are taking all that work they have learned and sharing it with their friends. Now their friends are able to take notes and become experts, those kids are able to tutors their friends in those areas and able to make connections.

Because PBL is student-led, teachers suggested that it empowers students to make choices and decisions. Jessy expressed, "I gave them the freedom of choice, I provided

different materials and they were on their own and they were more engaged, than when I just gave them a worksheet." Sharon commented, "And I think that's the biggest thing that I like where they have the opportunity to make decisions, to talk, to discuss and see where they are at and they can learn from each other by conversations." In PBL, students take ownership and greater responsibility of their learning. Thus, it is student-led, and teachers become facilitators of the learning process. "We become facilitators as teachers and our students take on the learning themselves" said Michelle.

Academic success or growth is another benefit expounded by all participants. Sharon without hesitation stated, "So I find out with project-based learning any kid can grow." Frances, who is teaching a 2nd grade single-gender girls' class, explained that most of the students came in at kindergarten level "but are now on second and doing very well, flourishing." Likewise, Michelle candidly shared that although she has not received the Florida Comprehensive Assessment Test (FCAT) results for her fifth grade class but based on her school internal progress monitoring assessments, students have made significant process. "So far that data is proving that it is effective," said Michelle, in improving academic performance and success. Seth confirmed, "So right now, 89 or 90% of them have moved" to grade level. It increased students' confidence to tackle challenging assignments, thereby improving their academic success.

Challenges of implementing PBL. All participants indicated that there were several challenges to implementing or integrating PBL in the classroom. They thought those issues should be addressed in order to maintain schoolwide projects that can have substantial long-term impact on students' learning and achievement. The three main

challenges are (a) lesson planning and delivery, (b) the time consuming nature of PBL, and (c) the lack of resources and materials.

Lesson planning and delivery posed as a challenge to teachers. Dianna said:

> The planning is tough because you know what your vision is and to put all those pieces down on paper because I think a lot of teachers that are good at what they do, can envision without putting it on paper and then can write it up afterward but it's just so many standards and all the other stuff that I know this grade level, I know what my standards are, I know what I need to accomplish, the paperwork is like the secondary.

Marie agreed, "So it changed my lessons plan, it's making me digs a little deeper." Helen called lesson planning "a lot of work." Teachers expressed that it is a huge task to plan authentic projects because, as Helen said, "it's exhausting writing the programs, the plan. It's exhausting coming up with activities that are real." Seth said, "You have to really pre-plan, that's one thing about it. You have to really pre-plan before the kids get here everything has to be in place." Dianna added:

> Definitely the lesson plans. Definitely the lesson plans. Also with the implementation process, I do think it is looking out for those students that are not as strong and what is the best situation to put them in. Who can you pair them up with?

Helen voiced her concern, "Those children that are easy to lose are easy to lose in PBL." Michelle worried:

> You'll notice your certain students who are struggling because they aren't strongest reader, if they are allowed to seat by and click through and find pictures for their group that becomes their job. They seat and find pictures or they become the artist.

Dianna, Helen, Michelle, and Seth were concerned that their lesson plans and delivery account for struggling students, how they are team with other students, and integrated projects cover grade level standards and skills.

Another challenge participants expressed was that it is time consuming planning and working with students to complete projects. Helen stated, "It's a lot of work. You will never go home as tired. I'm here 12 hours a day." Sharon declared, "I think it takes a lot of time to research and to really make a good project-based unit that's one of the challenges." Not only does it takes time to plan a good project but, as Liz said, "some of the challenges are time constraints" on implementing projects. Liz added, "You don't want a project to go for weeks at time." Most teachers expressed frustration with PBL been time consuming and limited teaching time.

Lack of resources and materials was an additional challenge affirmed by teachers. "I think resources are a big challenge," stated Sharon. Jessy asserted, "The only concern has nothing to do with the children it has to do more with like technology. I wish we had more technology." Like Jessy, Marie said:

> The only challenge that I would have is sometimes there's things that I want do that I can't do because of technology that's the biggest challenge. To bring the

> real world to them because believe it or not most kids have computers that are more updated than ours.

Technology seemed to be a huge obstacle for teachers. Drane maintained that it was difficult to "acquire the materials needed" to implement projects in her class. Participating teachers in this study pointed to lack of available resources, materials, and funds as a roadblock to incorporating PBL in the classroom.

Teachers' impressions. In this study, teachers expressed their viewpoints about integrating PBL. Participants also shared their students' experiences and expressions. Three categories emerged: (a) fun, rewarding, and excitement; (b) greater teacher collaboration, and (c) usage of PBL.

As I interviewed and observed teachers, it was apparent that teachers had fun, rewarding, and exciting experiences integrating PBL in the classroom. Drane commented, "I mean, it's very excited to incorporate" PBL in the classroom with students. Sharon shouted, "I really really like it!" Marie emphasized, "Again, the experience has been wonderful… I'm having a ball with it, to tell you the truth." Liz said:

> My overall experience has been phenomenal. I absolutely love it. I would not go back to let me stand in front and teach you and now the students stand in front and teach. I feel rejuvenated as a tenure teacher like I feel I had just started teaching again.

Teachers expressed satisfaction with implementing PBL. They have also indicated that it is a rewarding experience for students. Michelle explained it this way after her first project with her students, "They were really excited. They loved it. Their feedback, 'We

love learning like this, we love taking it into our own hands and doing it ourselves and teaching our friends how to do it.' They absolutely loved it." Being new to teaching and integrating PBL for the first time, Jessy shared, "Project-based learning is a great experience for my children…they have so much fun. It helps tremendously to become thinkers, independent thinkers, independent solvers, and that's what you really want to see." Drane echoed Jessy:

> It has been very rewarding. Every time we do it, just looking at the children and their excitement about it, you know, just jumping into the project and then doing it. You know, that's hands on; it's just fun for them.

PBL takes a great deal of work to implement, several teachers contended, but Helen said, "It's fun, it's fun though, it's fun to plan." Teachers insisted that they would continue to integrate PBL because students expressed greater sense of excitement, desire, and willingness for learning.

Based on teachers' narratives, they were able to have greater collaboration with their colleagues. Teachers worked in team to develop lessons and activities that would build into grade level projects. Frances shared, "As a team, we planned out activities." Dianna offered, "Yeah, but this [project] we did this as a whole grade level and we look out for all the different situation" referring to the level of collaboration that went into planning the project to ensure each teachers' classroom situations were taken into account. Sharon said:

> I think with project-based learning there is a lot factors that go into it. I think one of the biggest factors is that on your team your collaboration and how you work

> together is so important to make this successful. I think when we did it, this last one that we did all together, where we just brought different parts to it. Where everyone had something they see differently. It kind, um, cultivating and brings the whole thing to lead to the common core goal. I think with that there is just so much more that you can tap into with the children as well as professionally.

Teachers communicated that collaboration and shared planning with their grade level colleagues increased significantly and they use PBL in various ways. Some teachers commented that they used it in center rotations. Marie stated, "They are willing to go to the centers because it's something new." Dianna explained:

> We've even done it in our classroom around about way; I'm in my reading groups, when they are in their centers, each center build up to a project. So we have different ways of implementing it in my classroom.

According to observation field notes, Jessy's students moved from different stations or centers as they research and work on their projects. Drane's students, however, had more discussions and collaboration as they moved from various centers discussing different subtopics around the main issue of water and seas pollution. The aforementioned participants conveyed that they use PBL in center rotation to build up to a project. However, other teachers (Liz, Michelle, Helen, Sharon, Seth, and Frances) integrated PBL as whole classroom discussion and project with students working in teams or groups. Michelle and Liz affirmed that they co-teach or team teach when implementing PBL. Michelle stressed:

> Now when we do project-based learning we put our classes together. So we took both classes and we group them by abilities. Every group has a team captain and the captain change when we have different projects... So we have some high, some medium, some students that maybe struggling and would benefit from having the higher students in their group. That has been tremendous with project-based learning and we open the wall. It was only open half way today and you can see the amount of space, I am able to go into her classroom and she goes into my classroom as if it was one room. The kids move around to different tables; they have choice in where they seat. They were able to choose which event in history they wanted to work on.

According to observation field notes, Liz and Michelle's classroom walls were opened, and students worked in groups throughout both classes. Michelle and Liz walked around both rooms discussing and guiding students as they worked on developing their ideas, using laptops and iPads to research and design projects. As I observed the learning process, it was evident students were engaged and had deep knowledge and understanding of the content and what they were going to produce as product to demonstrate mastery of content and standards.

Administrator Interviews

Based on the data analysis, several coded texts and emerging themes appeared throughout the administrators' responses, which were further analyzed for frequency. These emerging themes were categorized and related to the research question concerning

their perceptions of integrating PBL. Two overarching categories emerged (a) benefits and (b) challenges of PBL (see Table 4).

Table 4.

Themes and Subthemes for Administrators' Interviews

Major Themes	Subthemes
Benefits	Improved Behavior, Engagement & Retention
	21st Century Skills
	Students as Regulators of Learning
	Academic Success
Challenges	Lack of Resources & Materials
	Teachers' Lack of Willingness & Openness

Benefits. All five administrators indicated that there were four key benefits to teachers integrating PBL in the classroom: improved behavior, engagement and retention, 21st century skills, students as self-regulators of learning, and academic success. Defay, a veteran principal, said, "Also seen [sic] a decrease in behavioral referrals using project-based learning." Deb added:

> It helped with discipline. It helped with getting kids on time because they did not want to miss out. So not only it makes a difference with the teachers, it made such a huge impact with the students, then in turn make the teachers want to come back to school. It's just a happy place to be when they are doing the project-based and not the traditional lessons.

When students are doing PBL, according to the administrators, they are motivated to come to school and to learn. Deb said, "It has such a positive impact. It impacts student

behaviors. It impacts attendance." Defay stated, "And also just the motivation of students been involved, taking an interest in learning and applying the skills learned, just has been tremendous." John affirmed, "For one, it get them more engaged. They are more excited about learning." Deb asserted, "I think what we've learned is the teachers that really open to it they are realizing the kids are learning better in this method." Defay emphasized:

> The strengths I think is [sic] that kids are learning and they don't realize they are learning. Kids are applying skills' learned and they don't realize they are enjoying school. My attendances have increased. One of the plus that I have is an increase in attendance and an increase in students getting to class on time.

Administrators are excited about PBL's ability to improve students' comprehension and retention. Josh declared, "For students who do participate in the project, I've seen students are more articulate when it comes to those topics." John confirmed, "We are seeing where more kids are engaged, the better they will perform. The more they are taking responsibility for their learning, the longer the retention of knowledge." Students are able to retain more information and have greater depth of knowledge and understanding. "It really contributes to students' learning. I think it really enhances students learning," Josh acknowledged.

Participants conveyed that PBL prepares students for the 21st century. It gives them the skills to be successful in the real world. Mich shared, "The more we institute project-based learning in our school, the more we are connecting our future workforce to the real world." It helps develop 21st century skills in students. Josh claimed that students

are able to use more technology, communicate effectively while doing presentation, and developed greater critical thinking skills. Mich asserted:

> The vision was to see more C students collaborated in groups, problem solving groups, communicating and articulating complex information in groups, and using creativity to problem solve, which obviously include the project-based learning as a huge piece that or that fall under that umbrella.

Defay offered, "I just think it is the way to go if we want to reach students and prepare students for college. Project-based learning is the way we need to go." Based on administrators' responses, they believe that PBL connects concepts to the real world. PBL makes concept rigorous and relevant. Mich further explained:

> Well, it's project-based learning, to put it in my own words, to me it's the equivalent of relevancy. To me it is the equivalency of real world today, 21st - century learning where kids have an opportunity to collaborating in groups, communicates, be creative, do critical thinking together. So to me if I can sum it all up it's the relevancy to the real world. We are really preparing our students for the future if we put them through project-based learning.

Another benefit administrators shared was that PBL help students become self-regulators of own their learning. In PBL, students are the drivers of their learning; hence, it is student-led. Josh affirmed:

> I think one of the biggest strengths of it is given ownership to the students… And through project-based learning students are allowed to develop their own

concepts. They are allowed to make their own mistake and learned from their mistake from beginning of the mistake through a possible solution.

Deb stressed:

I feel like the students take on some accountability for their learning when the teachers do it authentically. The kids not only take responsibility but also enjoy the learning because their learning it based on their own modality especially when the teachers give them choices. They give them opportunity to do research and become the expert in it.

Defay indicated that PBL gives students the "extra incentive" to learn and create. Participants responses alleged that when students are in the driver seat of their learning, it give them choices, makes them more accountable, and ultimately they self-regulate their own learning.

Administrators' responses revealed that academic success is another benefit to integrating PBL in the classroom. John suggested that lower performing students are "bringing up their grades" when they participate in PBL activities. Defay said, "I see a tremendous growth in my students' performance, looking at your last assessment 11% increase in reading, 9% increase in math, and we also made up 3% in science with integrating that." Josh offered, "It really contributes to students' learning. I think it really enhances students' learning." Meanwhile, Deb confidently shouted, "Project-based definitely contribute to students learning!" Administrators' interview answers signified that PBL has the ability to improve students' academic success and growth.

Challenges. All administrators indicated that there were numerous challenges to teachers implementing PBL in the classroom that must be eradicated for teachers to be successful in implementing PBL. The two major challenges are (a) the lack of resources and materials, and (b) teachers' lack of willingness and openness.

Mich declared that one of the biggest problems is "Resources and materials… The biggest challenge is getting the funds." Mich further explained that in his Title 1 School 90% of the student body is on free and reduced lunch, so it is a huge challenge to find necessary funding for PBL. Defay confirmed, "One of the challenges that we had initially was teachers finding resources…and pulling resources is one of the biggest challenges with project-based learning." Mich said that he has focused his attention and worked with teachers on finding and applying for small grants to fuel PBL initiative in his school. As it relates to implementing PBL, lack of resources and materials are huge challenges to teachers cited by administrators.

Administrators mentioned that teachers' lack of willingness and openness is a challenge to implementing PBL. Administrators seemed to think that teachers are hesitate to trying new something. John offered, "If you are a person not open to change then it is going to be difficult for you." Deb affirmed:

> I think the biggest challenge is the teachers are scared to let go of the old methods. Some of them have been teaching the same way for so many years and they like I've been teaching and it's working. But what they don't realize is that it is not working any more. They blamed the kids for the scores.

Likewise, John shared that teachers are not open to try new things in their classroom because they do not want to let go of the control. They want to be the bearer of knowledge and PBL at its core is student-led. However, Josh indicated that it is due to how teachers' are evaluated and their evaluation is link to their paycheck. Josh explained:

> In our society, we are telling teachers that you will be evaluated based on your children score on standardized test… Therefore, teachers are geared to prove that they are effective based on their students' test scores. So project-based learning tends to push to the side because teachers feel as though they cannot take that chance. They cannot take that risk on doing a project that may not necessarily be tied to the test, may not prepare students for the test. So our teachers are sort of caught in a Catch-22 where they don't have the trust from their administrators, they don't have the trust from the local and state stakeholders. Then they are afraid to take that leap into project-based learning.

Based on administrators' responses, it is evident teachers are reluctant to let go of other teaching methods that may have been working for them. To overcome teachers' hesitation, Defay recommended, "One of the things we have done as a school, we had weekly collaboration meeting." Deb and Defay suggested that administrators set and establish regular time for teachers to collaborate and plan. Based on participants' responses, greater on-going support from administrators is the catalyst that will fuel continuous and successful transition to implementing PBL by teachers.

Discrepant Cases

There were no discrepant cases in the study. All participants' responses addressed the research questions. I did not detect any evidence of nonconforming data that challenged the primary purpose of the study. Participants' expressions and thoughts met my expectations and the finding.

Summary of Patterns, Relationships, and Themes

As the researcher, it was crucial for me to learn teachers' lived experiences, thoughts, and stories as it relates to implementation of PBL. Through teachers' observation, I wanted to obtain a firsthand account of how integration of PBL looks like in the classroom. Likewise, I am wanted to get administrators' perceptions of teachers who implement PBL. The case study centered on two research questions:

1. What are the experiences and perceptions of teachers at a southern Florida school district regarding integrating PBL in the classroom?
2. What are the perceptions of administrators at a southern Florida school district regarding integrating PBL in the classroom?

Based on the data collection and analysis of this case study, typologies, key words, and texts were identified. They were then coded and analysis for emerging themes or categories. Several overarching themes emerged as the presentation of teachers and administrators' experiences and perceptions. They provided insight into the specific problem of the case study and overall conclusions of the analysis.

The major themes or categories emerged from teachers' interviews and observations were the benefits, challenges, and teachers' impressions of integrating PBL.

Each of these major themes had subthemes. The subthemes for benefits of integrating PBL were increase retention and engagement, 21st century skills, student-led, and academic success. The subthemes of benefits to implementing PBL are consistent with literature review. Various research studies confirmed that PBL enhances students' engagement, comprehension, attainment of 21st century skills, and academic success (Filippatou & Kaldi, 2010; Hernandez-Ramos & De la Paz, 2009; Hung et al., 2012; Wirkala & Kuhn, 2011). Teachers mentioned that PBL at its core is student-led; therefore, it is a good vehicle that engaged and helped students retain more information. Teachers further shared that PBL has a real world connection making it palpable for attaining 21st century skills. Teachers asserted that once students are engaged in PBL activities it increases their confidence to tackle challenging assignments, thereby improving their academic success. Researchers have showed that PBL has positive impact on students' achievement or performance (Hernandez-Ramos & De la Paz, 2009; Wurdinger & Rudolph, 2009).

The subthemes for challenges of integrating PBL described by teachers were lesson planning and delivery, time consuming, and lack of resources and materials. These themes also were supported by the literature review. All participating teachers cited that lesson planning and delivery pose a challenge because there were not enough time set aside for planning and designing lessons that would meet all students' learning styles in the classroom. They indicated that administrators should allocate more time for collaboration, planning, and creating of projects. Some teachers stated that they spent a lot of time after school to design effective lessons and activities. Teachers further

expressed frustration with PBL been time consuming and limited teaching time. They also felt that it requires additional resources and materials to do projects that they do not have in the classroom. Teachers urged administrators to address those concerns in order to continue schoolwide projects that may have substantial long-term impact on students' learning and success. These concerns were also confirmed in the Parsons et al. (2011) research of elementary teachers who implemented PBL in the classroom.

The subthemes for teachers' impressions were fun, rewarding, and excitement, greater teacher collaboration, and usage of PBL. Overall, teachers shared that they had fun, rewarding, and exciting experiences integrating PBL. Teachers made it clear that they incorporated PBL differently throughout the school year. Some conducted class wide projects while others infused it into center rotations. Teachers communicated their enjoyment of seeing their students' research, create, discuss, and present their findings to their peers especially lower performing and disabled students. The teachers who had the opportunity to collaborate with colleagues claimed that it improves the collaboration among teachers and made them feel like a family. Teachers shared their lived stories of integrating PBL as if it was a turning point in their careers and in the lives of their students; however, they cautioned that challenges should be eradicated to improve teachers' experiences.

Based on administrators' interviews, the overarching themes emerged were the benefits and challenges of integrating PBL. Each of these overarching themes had subthemes. The subthemes for benefits of integrating PBL were improved behavior, engagement and retention, 21st century skills, students as self-regulators of learning, and

academic success. These themes are articulated in literature review. Researchers (Filippatou & Kaldi, 2010; Hernandez-Ramos & De la Paz, 2009; Hung et al., 2012; Wirkala & Kuhn, 2011) have confirmed that PBL improves students' behavior, engagement, comprehension, attainment of 21st century skills, and academic success. Administrators also have made it clear that PBL improved students' behavior, engagement, and retention of course concepts based on their observations and assessments. According to administrators' interviews, when students are involved in PBL activities they are more excited to attend school and behave. They have longer retention of materials. They are able to articulate, share, discuss, and present information on a deeper level. They become self-regulators of their own learning. Students take greater ownership and responsibility of their learning. As a result, PBL enhances their learning and improve academic success.

The subthemes for challenges of integrating PBL voiced by administrators were lack of resources and materials, and teachers' lack of willingness and openness. These subthemes are uttered in the literature review. All administrators that were interviewed worked with low socioeconomics students. They expressed their frustration of not been able to provide more resources and materials for implementation of PBL. Administrators claimed that resources and materials is the biggest challenge to integrating PBL in the classroom. Administrators communicated that lack of funding for technology and other materials for classroom usage present a significant roadblock to capable teachers from integrating more PBL activities and projects. Furthermore, administrators indicated that another challenge is teachers' lack of willingness and openness. Administrators seemed

to think that some teachers are stuck in their old methods or ways and they are unwilling to try new thing. Administrators and few researchers (Parsons et al., 2011; Wirkala & Kuhn, 2011) have found some teachers who are reluctant to integrate PBL. Some of the challenges revealed were time consuming, lesson planning and assessments, cost, control, lack of resources, and materials. Administrators conveyed that their goals are to eliminate these challenges to energize integration of PBL in their schools.

Evidence of Quality

In conducting this qualitative case study, I followed all research procedures and guidelines established by Walden University. Member checking was done by sharing statements with participants for accuracy. Participants had the opportunity to review, add, remove, and approve their transcribed transcripts. To minimized biases in the study, all participants' responses were copied verbatim. A sample of the transcribed transcript is included in Appendix L. In addition, a peer debriefer I communicated with by phone ensured and maintained accuracy and quality of the data.

Section 5: Discussion, Conclusions, and Recommendations

Introduction and Overview

This case study was conducted to examine the experiences and perceptions of teachers and administrators in integrating PBL in the classroom in an urban school district. The conceptual framework rested on the constructivist theory and paradigm (Boeije, 2010). The theory of constructivism is based on the premise that knowledge is socially constructed through highly structured activities and experiences around meaningful tasks (Cook, 2009). I conducted audio-taped, face-to-face interviews with 10 teachers and five administrators. I also observed teachers integrating PBL in the classroom.

This section includes a summary and interpretation of the findings reported in Section 4 in relation to the research questions. A discussion of the implications for social change and recommendations for action are offered to delineate the significance of the study and provide greater understanding of the benefits and challenges of PBL based on the lived experiences of teachers and administrators. Lastly, recommendations for further research and my reflection are outlined based on results of this study.

Summary Review of the Findings

This instrumental case study centered on the following two research questions: What are the experiences and perceptions of teachers at a southern Florida school district regarding integrating PBL in the classroom? What are the perceptions of administrators at a southern Florida school district regarding integrating PBL in the classroom? Based on teachers' responses and observations of integrating PBL, three themes emerged: benefits,

challenges, and teachers' impressions. All teachers expressed that there were four major benefits from implementing PBL in the classroom: increased retention and engagement, 21st century skills, student-led, and academic success. The three main challenges shared by teachers were lesson planning and delivery, time consuming, and a lack of resources and materials. Likewise, teachers expressed their lived experiences and impressions. Three lived experiences and impressions emerged: fun, rewarding, and excitement; greater teacher collaboration; and usage of PBL. Teachers thought that if challenges were addressed, it would aid and maintain school-wide projects that can have a long-term impact on students' learning and achievement.

According to the data analysis of administrators' interviews, two overarching themes emerged: the benefits and challenges of PBL. The four key benefits communicated were improved behavior, engagement and retention, 21st-century skills, students as self-regulators of learning, and academic success. Two major challenges were a lack of resources and materials and teachers' lack of willingness and openness. All administrators emphasized that the benefits of integrating PBL outweigh the challenges. Hence, the challenges should be removed for teachers to be successful in implementing PBL in the classroom.

Interpretation of the Findings

The research questions were designed to gain a richer understanding of the lived experiences and perceptions of teachers and administrators in integrating PBL in the classroom. The results were presented as emerging themes or categories for teacher

interviews and observations and administrator interviews. The key findings are examined in relation to the research questions and literature review for the study.

Teacher Interviews and Observations

Teachers believed that PBL engaged and helped improve students' retention of materials and ability to apply it to new settings, echoing past research by Wirkala and Kuhn (2011). Students tend to do better and retain more information when they are involved in doing meaningful PBL activities and projects. Hernandez-Ramos and De la Paz (2009) suggested that when students are engaged in PBL, it improves their attitudes and motivation. These improvements in students fuel their confidence and independence that resulted in students taking ownership and accountability for their learning (Weller & Finkelstein, 2011). Students begin to lead their own learning; hence, the learning becomes student-led.

In this case study, teachers proclaimed that students attained 21st century skills such as critical thinking, problem solving, creativity and innovation, collaboration, teamwork and leadership skills, communication and presentation skills, computing and informational fluency, and learning self-reliance. Likewise, policy makers and business owners believe that 21st-century skills are crucial for future workers (Spires et al., 2008). Hung et al. (2012) and Moylan (2008) asserted that, through PBL, students can develop these skills. Additionally, teachers conveyed that PBL improved students' academic success. Through PBL, Eskrootchi and Oskrochi (2010) demonstrated that students' learning and achievement significantly improved from PBL. Wurdinger and Rudolph

(2009) reaffirmed that academic performance and success are improved using PBL in the classroom.

Teachers throughout the study indicated that PBL integration was an enjoyable and rewarding experience. They shared detailed narratives of their experiences and how they would continue using PBL to drive instruction and lesson delivery. They further articulated that students showed greater interest and motivation for learning when PBL was employed. These key findings were consistent with the body of research and literature review on these topics.

The teachers revealed several challenges to implementing PBL, including lesson planning and delivery, the time-consuming nature of PBL, and a lack of resources and materials. Yuen (2009) indicated that teachers thought it took a significant amount of time and effort to plan, implement, and assess PBL activities. Like Yuen, Cherney (2008) found that planning PBL lessons took time and there was limited class time to implement it. Teacher lesson planning and class time would need to be expanded to create a supportive culture to integrate PBL in the classroom. Both Beringer (2007) and Parsons et al. (2011) further pointed out that additional materials and resources should be made available to teachers to successful implement PBL. Funding and resources would need realignment by policy makers and state and local administrators to remove real obstacles posed to teachers.

Administrator Interviews

The administrators pointed out two themes: the benefits and challenges of implementing PBL. The benefits are improved behavior, engagement and retention, and

21st century skills, as well students as self-regulators of learning and academic success. Filippatou and Kaldi (2010) suggested that students who regularly engaged in PBL exhibited improvement in their behavior, engagement, comprehension, attainment of 21st-century skills, and academic success. Parsons et al. (2011) and administrators alike demonstrated that students' behavior, engagement, retention, and application of information improved based on their observations and assessments of teachers in the classroom. Students demonstrated a deeper understanding of knowledge, concepts, or standards learned which improved their academic performance.

Bell (2010) showed that PBL improved students' higher-order thinking skills such as problem solving, critical thinking, planning, and self-monitoring. These skills are embedded in 21st-century learners. Hence, PBL allows students to develop 21st-century skills in order to become self-regulators of their learning. As self-regulators of their own learning, students exude confidence and resiliency that facilitates a pathway for increase academic performance (Weller & Finkelstein, 2011). Students emanate greater ownership and responsibility of their learning, yielding greater academic attainment and achievement.

The challenges that administrators face include a lack of resources and materials and teachers' lack of willingness and openness. Pease and Kuhn (2011) contended that a lack of funding, resources, and materials are challenges facing schools as they attempt to integrate PBL in the classroom. Ravitz (2010) supported realignment of existing limited materials and resources and policy to sustain PBL integration. Policy makers are

encouraged to reallocate more resources to support and maintain implementation of PBL in schools.

Mitchell et al. (2009) noted that teachers are reluctant to PBL integration. In this study, administrators found that teachers' lack of willingness and openness posed a challenge to furthering PBL implementation. Viilo et al. (2011) and Yuen (2009) suggested that teachers should let go of their stance and embrace PBL integration to assist students in becoming self-regulators of their learning and achievement. As the voice of lawmakers and business owners' call for changes to the educational system, open-minded teachers can accelerate and prepare students for the 21st century and future job market by embracing PBL implementation in every classroom (Ravitz, 2010; Wirkala & Kuhn, 2011).

Discussion of Conceptual Framework

The conceptual framework of constructivist theory, which states that an individual constructs knowledge and meaning from prior knowledge, experiences, and its application, aligned with the key findings of this case study (Cook, 2009; Mikropulous & Natsis, 2011). Participants shared their stories and experiences integrating PBL in the classroom and the nature of PBL guided students in constructing their own learning. The rich, detailed narratives data gathered from participants were used to construct meaning and gain a deeper understanding of teachers' and administrators' experiences and perceptions of integrating PBL in the classroom.

Discussion of Practical Applications

The emerged themes in the result of the study are applicable for K-12 educators because they can gain greater understanding of the benefits and challenges of colleagues who integrated PBL in the classroom. Educators can examine participants' experiences and perceptions to bring greater awareness, training, and support for teachers who implement PBL on a daily basis. Knowledge of the findings could help navigate teachers and administrators in their attempt to expand PBL integration in schools. State and district administrators could benefit from the findings in the study to support the greater implementation of PBL by eradicating challenges. I stopped reviewing here due to time constraints. Please go through the rest of your section and look for the patterns I pointed out to you. I will now look at your references.

Implications for Social Change

In Section 1, the significance of the study was discussed to provide a greater understanding of teachers and administrators' experiences and perceptions integrating PBL in the classroom. The findings, reported in Section 4, stressed the benefits and challenges associated to implementing PBL in schools. Policy makers, state and local administrators, and K-12 educators to improve students' learning and achievement can use these insights, offered through the lens of teachers and administrators.

Participants voiced a common lack of funding, resources, and materials to implement PBL in the classroom. The findings suggested the need for policy makers, state, and local administrators to allocate greater resources to ease the burden on teachers. It also stressed the importance of bringing greater awareness and partnering with

businesses to correlate standards to practical 21st century skills needed for future workers to perform in the real world. The results also signified that more time should be allocated for lesson planning and collaboration for teachers. Local administrators need to make it a priority to release teachers from unnecessary tasks to focus on lesson planning, delivery, and collaboration with colleagues. Furthermore, the results of the study indicated a lack of willingness and openness on the part of teachers to integrate PBL. There is a need for K-12 educators to open themselves to try to implement PBL in the classroom. Educators should be keenly aware that the benefits of integrating PBL outweigh the challenges and uneasiness of coming out of their comfort zone.

Recommendations for Action

Based on the findings, the following recommendations for action are suggested. Idealistically, standardized testing should be abolished and replaced with PBL outcome measures. On the national level, there could be broader support and accountability measures for standards-based PBL from lawmakers and U.S. Department of Education. Federal funding and grants can be made available for states to expand the integration of PBL in the classroom.

At the state level, policy makers and educators can consider passing laws that assessed students' mastery of standards based on produced products. Evaluation policies may be modified to evaluate teachers and administrators based on standards-based PBL products or projects produced by students. State policymakers could provide greater funding for training and implementation of school-wide PBL.

At district and school level, I will make the findings known and bring greater awareness around PBL integration. Administrators may seek funding and resources to support implementation of PBL in the classroom. Training and on-going support must be provided to school-based administrators and teachers in how to successfully implement PBL in the classroom. Parents and all stakeholders should be informed of the study results and how PBL can positively affect their children learning and achievement.

Recommendations for Further Study

My primary focus was to examine the experiences and perceptions of teachers and administrators who integrated PBL in the classroom. This study did not take into account students' viewpoints. Future studies could examine the perceptions and achievements of students who participated in PBL activities or projects. Additionally, more research studies could be conducted to compare Title 1 and non-Title 1 teachers and administrators' experiences and perceptions in relation to the implementation of PBL.

More research is needed to investigate best strategies and curriculum alignment for successful implementation of PBL. Furthermore, this study could be expanded to explore secondary teachers' and administrators' experiences and perceptions implementing PBL in the classroom. Future studies could also probe deeper and compare lived experiences of teachers and administrators across the districts, the state, and nation.

Researcher's Reflections

As a former teacher who integrated some elements of PBL in my lessons and classroom to engage, motivate, and increase course retention, I wanted to see if other teachers shared my experiences and perceptions. I was interested in exploring whether

their stories would be similar to mine. As a current administrator, I did not interview or observe teachers I supervise. I did not seek administrators who shared my experiences or views. I was conscious of the potential for personal biases or preconceived ideas; consequently, I did not discuss my experiences or opinion with the participants. I maintained a neutral position as a means to attend the issues of subjectivity and objectivity. Also, I designed the interview questions in such a way to enable participants to express freely their viewpoints and lived experiences. During the interviews, I did not disclose my personal feelings and recorded the interviews without commentary. I tried to create a relaxing environment so participants could feel at ease to share their stories and experiences. All participants' responses to the interview questions were valid and exclusive of my personal effect.

As I reflected on this study, I learned that teachers and administrators wanted to bring awareness to the benefits and challenges of implementing PBL in the classroom. They also wanted to reaffirm that greater funding and resources needed to be allocated for PBL. As result of this study, I gained a deeper appreciation for teachers who implement PBL in adverse situations. I have also grown as a school leader in my knowledge and strategies I can employ to support teachers.

Conclusion

The primary purpose of this study was to examine and gain a deeper understanding of the experiences and perceptions of the teachers and administrators integrating PBL in the classroom through interviews and classroom observations. The results of the study were that teachers and administrators expressed that PBL improved

students' retention, engagement, and behavior, 21st century skills, academic success, and students as self-regulators of learning. The data analysis also revealed that teachers experienced few challenges such as lesson planning and delivery, time consuming, and lack of resources and materials. Administrators affirmed that lack of resources and materials, and teachers' lack of willingness and openness to implement PBL pose as challenges. As other researchers (Filippatou & Kaldi, 2010; Hernandez-Ramos & De la Paz, 2009; Hung et al., 2012; Parsons et al., 2011; Wirkala & Kuhn, 2011) have found, successful implementation of PBL rests on administrators creating a school culture and environment where teachers are supported, lesson planning and collaboration are prioritized, and funds and resources are made available.

References

Alasuutari, P., Bickman, L., & Brannen, J. (Eds.). (2008). *The Sage handbook of social research methods*. Thousand Oaks, CA: Sage.

Almeida, C., Johnson, C., & Steinberg, A. (2006). Making on a promise: What policymakers can do to support the educational persistence of dropouts. Retrieved from http://www.jff.org/Documents/MkingGoodProm.pdf

Aud, S., Hussar, W., Planty, M., Snyder, T., Bianco, K., Fox, M.,… Drake, L. (2010). *The condition of education 2010* (NCES 2010-028). Retrieved from http://nces.ed.gov/pubs2010/2010028.pdf

Barell, J. (2003). *Developing more curious minds*. Alexandria, VA: Association for Supervision and Curriculum Development.

Barroso, J., & Sandelowski, M. (2003). Sample reporting in qualitative studies of women with HIV infection. *Field Methods*, *15*(4), 386-404. doi:10.1177/1525822X03257392

Barton, P. E., & Coley, R. J. (2009). *Parsing the achievement gap II*. Retrieved from http://www.ets.org/Media/Research/pdf/PICPARSINGII.pdf

Baumgartner, E., & Zabin, C. J. (2008). A case study of project-based instruction in the ninth grade: A semester-long study of intertidal biodiversity. *Environmental Education Research*, *14*(2), 97-114. doi:10.1080/13504620801951640

Baviskar, S., Hartle, R. T., & Whitney, T. (2009). Essential criteria to characterize constructivist teaching: Derived from a review of the literature and applied to five

constructivist-teaching method articles. *International Journal of Science Education*, *31*(4), 541-550. doi:10.1080/09500690701731121

Bell, S. (2010). Project-based learning for the 21st century: Skills for the future. *The Clearing House*, *83*(2), 39-43. doi:10.1080/00098650903505415

Beringer, J. (2007). Application of problem based learning through research investigation. *Journal of Geography in Higher Education*, *31*(3), 445-457. doi:10.1080/03098260701514033

Bernard, H. R. (2000). *Social research methods*. Thousand Oaks, CA: Sage.

Bertaux, D. (Ed.). (1981). *Biography and society: The life history approach in the social sciences*. London, England: Sage.

Bitter, G., Thomas, L., Knezek, D., Friske, J., Taylor, H., Wiebe, J.,… Kelly, M. (1997). National educational technology standards: Developing new learning environments for today's classrooms. *NASSP Bulletin*, *81*(592), 52-58. Retrieved from http://bul.sagepub.com/cgi/content/abstract/81/592/52

Boeije, H. (2010). *Analysis of qualitative research.* Thousand Oaks, CA: Sage.

Boghossian, P. (2006). Behaviorism, constructivism, and Socratic pedagogy. *Educational Philosophy and Theory*, *38*(6), 713-722. doi:10.1111/j.1469-5812.2009.00592.x

Bottge, B. A., Grant, T. S., Stephens, A. C., & Rueda, E. (2010). Advancing the math skills of middle school students in technology education classrooms. *NASSP Bulletin*, *94*(2), 81-106. doi:10.1177/0192636510379902

Broward County Public Schools. (2013a). General district information. Retrieved July 1, 2013, from

http://www.broward.k12.fl.us/studentassessment/Office/Broad/GeneralDistrict.htm

Broward County Public Schools. (2013b). District overview. Retrieved August 5, 2013, from http://browardschools.com/about/overview.htm

Brown, P. L., & Abell, S. K. (2007). Project-based science. *Science & Children, 45*(4), 60-61.

Bruck, L. B., & Towns, M. H. (2011). What's the diagnosis? An inquiry-based activity focusing on mole-mass conversions. *Journal of Chemical Education*, *88*(4), 440-442. doi: 10.1021/ed100466j

Cakir, M. (2008). Constructivist approaches to learning in science and their implications for science pedagogy: A literature review. *International Journal of Environmental & Science Education*, *3*(4), 193-206.

Charmaz, K. (2006). *Constructing grounded theory: A practical guide through qualitative analysis.* Los Angeles, CA: Sage.

Cherney, I. D. (2008). The effects of active learning on students' memories for course content. *Active Learning in Higher Education*, *9*(2), 152-171. doi: 10.1177/1469787408090841

Clark, A. (2006). Changing classroom practice to include the project approach. *Early Childhood Research & Practice*, *8*(2), 40-50. Retrieved from http://go.galegroup.com/ps/i.do?id=GALE%7CA153900246&v=2.1&u=minn4020&it=r&p=EAIM&sw=w&asid=b4da3cbb388c1ad215019256ebbb832d

Cook, K. (2009). A suggested project-based evolution unit for high school: Teaching content through application. *The American Biology Teacher*, *71*(2), 95-98. doi:10.1662/005.071.0209

Correiro, E. E., Griffin, L. R., & Hart, P. E. (2008). A constructivist approach to inquiry-based learning: A TUNEL assay for the detection of apoptosis in cheek cells. *The American Biology Teacher*, *70*(8), 457-460. *doi:10.1662/005.071.0209*

Covill, A. E. (2011). College students' perceptions of the traditional lecture method. *College Student Journal, 45*(1), 92-101.

Creswell, J. W. (2007). *Qualitative inquiry and research design: Choosing among five approaches.* Thousand Oaks, CA: Sage.

Creswell, J. W. (2008). *Research design: Qualitative, quantitative, and mixed methods approaches.* Thousand Oaks, CA: Sage.

Creswell, J. W. (2009). *Research design: Qualitative, quantitative, and mixed methods approaches* (3rd ed.). Thousand Oaks, CA: Sage.

Czarniawska, B. (2004). *Narratives in social science research.* London, England: Sage.

David, J. L. (2008). Project-based learning. *Educational Leadership*, *65*(5), 80-82.

Denzin, N. K., & Lincoln, Y. S. (Eds.). (2008). *Strategies of qualitative inquiry* (3rd ed.). Thousand Oaks, CA: Sage.

Dewey, J. (1929). *The quest for certainty.* New York, NY: Minton, Balch & Co.

Dewey, J. (1933). *How we think: A restatement of the relation of reflective thinking to the educative process.* Boston, MA: Heath.

Dewey, J. (1938). *Logic: The theory of inquiry.* New York, NY: Holt. I stopped reviewing here. Please go through the rest of your references and look for the patterns I pointed out to you.

Educational Testing Service. (2007). *Educational issues 2007*. Retrieved July 7, 2010, from http://www.ets.org/Media/Education_Topics/pdf/candbrief2007.pdf

Eskrootchi, R., & Oskrochi, G. R. (2010). A study of the efficacy of project-based learning integrated with computer-based simulation-stella. *Educational Technology & Society*, *13*(1), 236-245.

Filippatou, D., & Kaldi, S. (2010). The effectiveness of project-based learning on pupils with learning difficulties regarding academic performance, group work and motivation. *International Journal of Special Education, 25*(1), 17-26

Florida Department of Education. (2012). *School accountability reports.* Retrieved from http://schoolgrades.fldoe.org/default.asp

Friedman, A. M., & Heafner, T. L. (2007).You think for me, so I don't have to. *Contemporary Issues in Technology and Teacher Education*, *7*(3), 199-216. doi:10.3102/0013189X030004003

Geier, R., Blumenfeld, P. C., Marx, R. W., Krajcik, J. S., Fisherman, B., Soloway, E., & Clay-Chambers, J. (2008). Standardized test outcomes for students engaged in inquiry-based science curricula in the context of urban reform. *Journal of Research in Science Teaching*, *45*(8), 922-939. doi:10.1002/tea.20248

Gerring, J. (2007). *Case study research*. New York, NY: Cambridge University Press.

Gijbels, D., Dochy, F., Bossche, P. V. D., & Segers, M. (2005). Effects on problem-based learning: A meta-analysis from the angle of assessment. *Review of Educational Research*, *75*(1), 27-61. doi:10.3102/00346543075001027

Glassman, M. (2001). Dewey and Vygotsky: Society, experience, and inquiry in educational practice. *Educational Researcher*, *30*(4), 3-14. doi:10.3102/0013189X030004003

Greene, J., & Winters, M. (2006). *Boys and education on national review online.* Retrieved November 20, 2008, from http://www.nationalreview.com/comment/greene_winters200604190558.asp

Gooding, J., & Metz, B. (2008). A blueprint for cultivating inquiry. *Science Scope, 32*(1), 12-14.

Gordon, M. (2008). Between constructivism and connectedness. *Journal of Teacher Education*, *59*(4), 322-331. doi: 10.1177/0022487108321379

Guest, G., Bunce, A., & Johnson, L. (2006). How many interviews are enough? An experiment with data saturation and variability. *Field Methods*, *18*(1), 59-82. doi: 10.1177/1525822X05279903

Harada, V. H., Kario, C., & Yamamoto, S. (2008). Project-based learning: Rigor and relevance in high schools. *Library Media Connection*, *26*(6), 14-20.

Hatch, J. A. (2002). *Doing qualitative research in education settings*. Albany, NY: State University of New York Press.

Harkness, S., D'Ambrosio, B., & Morrone, A. (2007). Preservice elementary teachers' voices describe how their teacher motivated them to do mathematics. *Educational Studies in Mathematics, 65*(2), 235-254. doi:10.1007/s10649-006-9045-1

Heafner, T. L., & Friedman, A. M. (2008). Wikis and constructivism in secondary social studies: Fostering a deeper understanding. *Computers in the Schools*, *25*(3-4), 288-302. doi:10.1080/07380560802371003

Helle, L., Tynjala, P., & Olkinuora, E. (2006). Project-based learning in post-secondary education – theory, practice and rubber sling shots. *Higher Education*, *51*(2), 287-314. doi:10.1007/s10734-004-6386-5

Hernandez-Ramos, P., & De La Paz, S. (2009). Learning history in middle school by designing multimedia in a project-based learning experience. *Journal of Research on Technology in Education*, *42*(2), 151-173.

Hiebert, J., Carpenter, T., Fennema, E., Fuson, K., Human, P., Murray, H.,… Wearne, D. (1996). Problem solving as a basis for reform in curriculum and instruction: The case of mathematics. *Educational Researcher*, *25*(4), 12-21. doi:10.3102/0013189X025004012

Hmelo-Silver, C. E., & Barrows, H. S. (2008). Facilitating collaborative knowledge building. *Cognition and Instruction*, *26*(1), 48-94. doi: 10.1080/07370000701798495

Janesick, V. J. (2004). *"Stretching" exercises for qualitative researchers* (2nd ed.). Thousand Oaks, CA: Sage.

Jones, R. (2007). Project-based learning and early learning standards: Making the connection. *Exchange, 174*, 8-12.

Kahveci, A., & Ay, S. (2008). Different approaches-common implications: Brain-based and constructivist learning from a paradigms and integral model perspective. *Journal of Turkish Science Education*, *5*(3), 124-129. doi:10.3102/0013189X030004003

Kirschner, P. A., Sweller, J., Clark, R. E. (2006). Why minimal guidance during instruction does not work: An analysis of the failure of constructivist, discovery, problem-based, experiential, and inquiry-based teaching. *Educational Psychologist*, *41*(2), 75–86. doi: 10.1207/s15326985ep4102_1

Kuzel, A. (1992). Sampling in qualitative inquiry. In B. Crabtree & W. Miller (Eds.) *Doing qualitative research* (pp. 31–44). Newbury Park, CA: Sage.

Lambert, L., Walker, D., Zimmerman, D. P., Cooper, J. E., Lambert, M. D., Gardner, M. E., et al. (2002). *The constructivist leader* (2nd ed.). New York, NY: Teachers College Press.

Loyens, S. M. M., Rikers, R. M. J. P., & Schmidt, H. G. (2007). Students' conceptions of distinct constructivist assumptions. *European Journal of Psychology of Education*, *22*(2), 179-199.

Mabry, L. (2008). Case study in social research. In P. Alasuutari, L. Bickman, & J. Brannen (Eds.). *The sage handbook of social research methods* (pp. 214-227). Thousand Oaks, CA: Sage.

Mayer, R. E. (2004). Should there be a three-strikes rule against pure discovery learning? The case for guided methods of instruction. *American Psychologist, 59*(1), 14-19. doi: 10.1037/0003-066X.59.1.14

McGrath, D. (2004). Equity revisited. *Learning & Leading with Technology*, *32*(2), 36-39.

McGuinn, P. (2012). Stimulating reform: Race to the top, competitive grants and the Obama education agenda. *Educational Policy*, *26*(1), 136-159. doi: 10.1177/0895904811425911

Merriam, S. B., & Associates. (2002). *Qualitative research in practice: Examples for discussion and analysis.* San Francisco, CA: Jossey-Bass.

Mikropoulos, T. A., & Natsis, A. (2011). Educational virtual environments: A ten-year review of empirical research. *Computers & Education*, *56*(3), 769-780. doi:10.1016/j.compedu.2010.10.020

Mioduser, D., & Betzer, N. (2007). The contribution of project-based-learning to high-achievers' acquisition of technological knowledge and skills. *International Journal of Technology & Design in Education*, *18*(1), 59-77. doi:10.1007/s10798-006-9010-4

Mitchell, S., Foulger, T. S., Wetzel, K., & Rathkey, C. (2009). The negotiated project approach: Project-based learning without leaving the standards behind. *Early Childhood Education Journal*, *36*(4), 339-346. doi:10.1007/s10643-008-0295-7

Morse, J. (1994). Designing funded qualitative research. In N. K. Denzin and Y. S. Lincoln (Eds.), *Handbook for qualitative research*, (pp. 220–35). Thousand Oaks,

CA: Sage.

Morse, J.M. (2000). Determining sample size. *Qualitative Health Research*, *10*(1), 3-5. doi: 10.1177/104973200129118183

Moylan, W. A. (2008). Learning by project: Developing essential 21st century skills using student team projects. *The International Journal of Learning, 15*(9), 287-292. doi: 10.1080/09650790802445676

Murphy, L. (2006). Changing the landscapes of opportunity for vulnerable youth. *Voices of Urban Education, 12*, 36-44.

National Center for Education Statistics. (2009). *The nation's report card: Mathematics 2009* (NCES 2010–451). Retrieved from http://nces.ed.gov/pubsearch/pubsinfo.asp?pubid=2010451

National Research Council. 2000. National science education standards. Retrieve http://www.nap.edu/catalog.php?record_id=4962

No Child Left Behind Act of 2001, Pub. Law No. 107-110 (2002). Washington DC: Office of Elementary and Secondary Education. Retrieved from http://www2.ed.gov/policy/elsec/leg/esea02/index.html

Olson, S., Loucks-Horsley, S. (2000). *Inquiry based learning*. Retrieved from http://www.gslis.org/index.php?title=Inquiry-based_learning

Onwuegbuzie, A. J., & Leech, N. L. (2007). A call for qualitative power analyses. *Quality & Quantity, 41*(1), 105-121. doi: 10.1007/s11135-005-1098-1.

Parsons, S. A., Metzger, S. R., Askem, J., & Carswell, A. R. (2011). Teaching against the grain: One title I school's journey toward project-based literacy instruction.

Literacy Research and Instruction, 50(1), 1-14. doi: 10.1080/19388070903318413

Pease, M. A., & Kuhn, D. (2011). Experimental analysis of the effective components of problem-based learning. *Science Education, 95*(1), 57-86. doi: *10.1002/sce.20412*

Princiotta, D., & Reyna, R. (2009). *Achieving graduation for all: A governor's guide to dropout prevention and recovery*. Retrieved from National Governors Association Center for Best Practices website: ww.nga.org/Files/pdf/0910ACHIEVINGGRADUATION.PDF

Ravitz, J. (2010). Beyond changing culture in small high schools: Reform models and changing instruction with project-based learning. *Peabody Journal of Education*, *85*(3), 290-312. doi: 10.1080/0161956X.2010.491432

Regassa, L. B., & Morrison-Shetlar, A. I. (2007). Designing and implementing hands-on, inquiry-based molecular biology. *Journal of College Science Teaching, 36*(6), 36-41. doi: 25023638

Richards, L. & Morse, J.M. (2013). *Readme first for a user's guide to qualitative methods* (3rd ed.). Thousand Oaks, CA: Sage.

Rubin, H. J. & Rubin, I. S. (2005). *Qualitative interviewing: The art of hearing data* (2nd ed.). Thousand Oaks, CA: Sage.

Saldana, J. (2011). *Fundamentals of qualitative research*. New York, NY: Oxford University Press.

Sbaraini, A., Carter, S.M., & Evans, R.W. (2011). How do dentists understand evidence and adopt it in practice?. *Health Education Journal*, *71*(2), 195-204. doi:10.1177/0017896911434427

Scheuerell, S. (2008). Using a problem-based learning approach and the internet. *Social Studies Research and Practice*, *3*(1), 68-79. doi:10.3200/TSSS.99.4.181-186

Simons, H. (2009). *Case study research in practice.* Thousand Oaks, CA: Sage.

Spires, H. A., Lee, J. K., Turner, K. A., & Johnson, J. (2008). Having our say: Middle grade student perspective on school, technologies, and academic engagement. *Journal of Research on Technology in Education*, *40*(4), 497-515.

Stake, R. E. (2008). Qualitative case studies. In N. K. Denzin & Y. S. Lincoln (Eds.), *Strategies of qualitative inquiry* (pp. 119-149). Thousand Oaks, CA: Sage.

Stark, S. & Torrance, H. (2005). Case study. In B. Somekh & C. Lewin (Eds.), *Research methods in the social sciences* (pp. 33-40). Thousand Oaks, CA: Sage.

Stillwell, R. (2010). *Public school graduates and dropouts from the common core of data: School year 2007–08* (NCES 2010-341). Retrieved National Center for Education Statistics website: http://nces.ed.gov/pubsearch/pubsinfo.asp?pubid=2010341

Strauss, A.L. & Corbin, J. (2007). *Basics of qualitative research. Techniques and procedures for developing grounded theory* (3rd ed.). Thousand Oaks, CA: Sage.

Struyven, K., Dochy, F., & Janssens, S. (2008). Students' likes and dislikes regarding student-activating and lecture-based educational settings: Consequences for students' perceptions of the learning environment, student learning and performance. *European Journal of Psychology of Education, 23*(3), 295-317.

Sutinen, A. (2008). Constructivism and education: Education as an interpretative transformational process. *Studies in Philosophy & Education*, *27*(1), 1-14. doi:10.1007/s11217-007-9043-5

U.S. Department of Health and Human Services. (2009). Code of Federal Regulations Title 45—Public Welfare, Department of Health and Human Services: Part 46 Protection of Human Subjects. December 2011. [Electronic Version]. Retrieved from http://www.hhs.gov/ohrp/policy/ohrpregulations.pdf

Van Dijk, L. A., Van Den Berg, G. C., & Van Keulen, H. (2001). Interactive lectures in engineering education. *European Journal of Engineering Education, 26*(1), 15-28. doi: 10.1080/0343379001000878 0

Viilo, M., Seitamaa-Kakkarainen, P., & Kakkarainen, K. (2011). Supporting the technology-enhanced collaborative inquiry and design project: A teacher reflections on practices. *Teachers and Teaching: Theory & Practice, 17*(1), 51-72. doi: 10.1080/13540602.2011.538497

Vygotsky, L. S. (1987). *The collected works of L.S. Vygotsky: Vol. I Problems of general psychology*. (R. Rieber & A. Carton, Eds.; N. Minick, Trans.). New York, NY: Plenum Press.

Walker, C. L., McGill, M. T., Buikema, A. L., & Stevens, A. M. (2008). Implementing inquiry-based learning in teaching serial dilutions. *Journal of College Science Teaching, 37*(6), 56-61. doi:10.3200/CTCH.56.3.183-190

Weller, D., & Finkelstein, C. (2011). From adding inquiry to doing science. *Science & Children, 48*(7), 49-53.

Wirkala, C., & Kuhn, D. (2011). Problem-based learning in k-12 education: Is it effective and how does it achieve its effects?. *American Educational Research Journal, 48*(5), 1157-1186. doi: 10.3102/0002831211419491

Wurdinger, S., Haar, J., Hugg, R., & Bezon, J. (2007). A qualitative study using project-based learning in a mainstream middle school. *Improving Schools*, *10*(2), 150-161. doi: 10.1177/1365480207078048

Wurdinger, S., & Rudolph, J. (2009). A different type of success: Teaching important life skills through project based learning. *Improving Schools*, *12*(2), 115-129. doi: 10.1177/1365480209105576

Yazzie-Mintz, E. (2007). *High school survey of student engagement*. Retrieved November 18, 2008, from http://ceep.indiana.edu/hssse/pdf/HSSSE_2006_Report.pdf

Yuen, L. H. F (2009). From foot to shoes: Kindergartners' families, and teachers' perceptions of the project approach. *Early Childhood Education Journal*, *37*(1), 23-33. doi:10.1007/s10643-009-0322-3

Appendix A: Teacher Interview Protocol

Date: _____ Start Time: _____ End Time: _____

Introduction:
Thank you for participating in this research study. The information gathered in this study will be useful to other educators, administrators, and stakeholders interested in implementing project-based learning and instruction in their schools and classrooms. This interview should take approximately 1.5 hours and it will be tape-recorded. When completed, you may check the transcription for accuracy. Do you have any questions?

1. How would do you describe the project-based learning approach as compared to "traditional" teaching?
2. How has using project-based learning (PBL) affected your lesson delivery (or teaching) of course concepts?
3. Explain any contribution that PBL has made on the structure of your class
4. How has the knowledge students gained or did not gained through PBL change your perception of project-based learning?
5. How have the skills that students have learned through PBL affected your planning for lessons?
6. Tell me about your overall experiences integrating or implementing PBL in the classroom
7. What are the strengths or pluses of using PBL?
8. What are the concerns or challenges in the implementation of PBL in the classroom?
9. Based on your experiences integrating or implementing project-based learning, will you continue to use PBL in your classroom? Why or why not?
10. Is there anything you would like to add to this interview?

Thank you again for participating in this interview. Your responses and your identity will be kept confidential.

Appendix B: Administrator Interview Protocol

Date: _____ Start Time: _____ End Time: _____

Introduction:
Thank you for participating in this research study. The information gathered in this study will be useful to other educators, administrators, and stakeholders interested in implementing project-based learning and instruction in their schools and classrooms. This interview should take approximately 1.5 hours and it will be tape-recorded. When completed, you may check the transcription for accuracy. Do you have any questions?

1. Tell me about your experiences in supervising teachers who integrate or implement project-based learning in the classroom
2. How often do you observe project-based learning been taught in the classroom?
3. How do you think project-based learning contribute to student learning?
4. Based on your observation, how has project-based learning made a difference with students in the classroom?
5. What are some types of projects you have observe this academic year? Do you think the knowledge and skills gained in those projects prepare students to be college and career ready? If so, how?
6. Based on the skills and knowledge gained through project-based learning, what contribution do you think project-based learning will have on students' performance on the State Standardized test?
7. Tell me about your overall perception of project-based learning approach as compared to "traditional" teaching in the classroom
8. What are some of the strengths or plus of using PBL in the classroom?
9. What are some of the challenges teachers have in implementing project-based learning in the classroom?
10. Is there anything you would like to add to this interview?

Thank you again for participating in this interview. Your responses and your identity will be kept confidential.

Appendix C: Observation Protocol

OBSERVATION PROTOCOL

Observational Fieldnotes **Setting:** **Observer:** **Date:** **Time:** **Length of Observation:**	
Observation Notes	**Reflective Notes**

Adapted from:

Creswell, J. W. (2008). *Educational research: Planning, conducting, and evaluating quantitative and qualitative research* (3rd ed.). Upper Saddle River, NJ: Pearson Education.

Janesick, V.J. (2004). *"Stretching" exercises for qualitative researchers*. (2nd ed.). Thousand Oaks, CA: Sage Publications, Inc.

Appendix D: Invitation to Participate

INVITATION TO PARTICIPATE

Participant:

My name is Gastrid Harrigan, a doctoral candidate at Walden University. I am working on my dissertation in which I will focus on the experiences and perceptions of teachers and administrators integrating project-based learning into the classroom. Your name was furnished to me along with others who may had experiences and/or supervise teachers who integrated or implemented project-based learning (PBL) in the classroom.

I hope you will consider working with me as I interview teachers and administrators from this district to determine the impact PBL on students' motivation and content retention. I believe you can provide valuable information that will help teachers and administrators alike in integrating PBL in our public school classrooms.

The meeting will be in the form of either an interview and/or classroom observation to share your experiences. This meeting will take place at a time and place convenient for everyone and should take approximately 60 minutes.

The interviews will be audiotaped and transcribed. You will have an opportunity to review your own data for accuracy and meet with me individually to discuss results. Please be assured that your identity will be protected and you may withdraw from the study at any time.

I hope you will agree to work with me.

Thank you!

Gastrid Harrigan
Walden University Doctoral Student

Appendix E: Teacher Consent Form

You are invited to take part in a research study of the perceptions and experiences of teachers and administrators integrating project-based learning into the classroom. The researcher is inviting you because of your past or current experiences in integrating project-based learning into the classroom. This form is part of a process called "informed consent" to allow you to understand this study before deciding whether to take part.

This study is being conducted by a researcher named Gastrid Harrigan who is a doctoral student at Walden University. You may already know Gastrid Harrigan as an assistant principal, but this study is separate from that role.

Background Information:
The purpose of this study is to examine teachers' and administrators' perceptions and experiences of the usefulness of integrating project-based learning in the classroom to motivate and help students with content or concept retention.

I will transcribe interviews data. Transcripts will be analyzed for emerging themes and development of meaning for data results. Copy of findings will be provided to each participant for review of his or her own data and opportunity to meet with me to discuss results.

Procedures:
If you agree to be in this study, you will be asked to:

- Participate in an interview with Gastrid Harrigan regarding your perceptions and experiences of the integration project-based learning in the classroom. Interviews will last approximately 60 minutes. The interviews will be audio taped and transcribed. Transcripts will be further analyzed for emerging themes and meanings. Each participant will be provided a copy of findings for review of his or her own data and opportunity to individually meet with me to discuss any discrepancies or unsubstantiated conclusions. This follow up meeting should take approximately 30 minutes.
- Allow Gastrid Harrigan to observe you teaching or integrating project-based learning in the classroom. Observation should last approximately 60 minutes.

Here are some sample questions:

1. Tell me about your experiences integrating or implementing project-based learning (PBL) in the classroom
2. Could you tell me about the students that experience PBL lessons or activities?
3. Did PBL enhance student's concept retention based on your observation/ assessments (tests, quizzes, classwork & homework)? If so, how well was student able to recall information?
4. Would you agree that PBL enhanced students' learning? If yes, how so?

5. How would you describe students' classroom participation once engaged in PBL?
6. What are some challenges you have had with planning and implementing/ integrating PBL in your classroom?
7. In your opinion, how effective is PBL compared to other teaching methods (i.e. lecture)?

Voluntary Nature of the Study:
This study is voluntary. Everyone will respect your decision of whether or not you choose to be in the study. No one at Broward County Public Schools will treat you differently if you decide not to be in the study. If you decide to join the study now, you can still change your mind during or after the study. You may stop at any time.

Risks and Benefits of Being in the Study:
There are no risks associated with participating in this study. The benefits will be that you had an opportunity to share the benefits or lack there of in integrating project-based learning in the classroom to improve students motivation and content retention.

Payment:
There will be no compensation for your participation in this study.

Confidentiality:
Any information you provide will be kept confidential. The researcher will not include any information that will make it possible to identify you. Research records will be kept in a locked file. Only the researcher will have access to the records.

Contacts and Questions:
The researcher conducting this study is Gastrid Harrigan. The researcher's faculty advisor is Dr. Heather Miller and her email address. You may ask any questions you have now. Or if you have questions later, you may contact Gastrid Harrigan. If you want to talk privately about your rights as a participant, you can call Dr. Leilani Endicott. She is the Walden University representative who can discuss this with you. Her phone number is 612-312-1210 and email address irb@waldenu.edu. Walden University's approval number for this study is **11-18-13-0138879** and it expires on **November 17, 2014.**

The researcher will give you a copy of this form to keep.

Statement of Consent:
☐ I have read the above information and I feel I understand the study well enough to make a decision about my involvement. By signing below, "I consent", I understand that I am agreeing to the terms described above.

Printed Name of Participant

_____

Date of consent

Participant's Signature or Electronic Signature

Appendix F: Research Log

"An Instrumental Case Study of the Experiences of Teachers and Administrators Integrating Project-Based Learning"

Date Responded	Participant Name	Type (Admin/ Teacher)	Participating (Y/ N) & School Name	Interview Date	Observation Date	Consent Form Returned (Y/ N)	Transcribed (Y/ N)
4/2/2014	John	Admin	Y- A.B.C. ES	5/6/14	NA	Y	Y EM
4/2/2014	Liz	Teacher – 1st Grade	Y- A.B.C. ES	4/21/14	4/21/14	Y	Y EM
4/2/2014	Dianna	Teacher – 1st Grade	Y- A.B.C. ES	4/21/14	4/21/14	Y	Y EM
4/2/2014	Helen	Teacher – 2nd Grade	Y- A.B.C. ES	4/21/14	4/21/14	Y	Y EM
4/2/2014	Deb	Admin	Y – Wood ES	5/09/14 @8:30am	NA	Y	Y EM
4/2/2014	Sharon	Teacher – 3rd Grade	Y - Wood ES	5/09/14 @8:30am	5/9/14	Y	Y EM
5/9/14	Michelle	Teacher – 4th Grade	Y - Wood ES	5/9/14	5/9/14	Y	Y EM
5/9/14	Seth	Teacher – KG Grade	Y - Wood ES	5/9/14	5/9/14	Y	Y EM
5/9/14	Frances	Teacher – 5th Grade	Y - Wood ES	5/9/14	5/9/14	Y	Y EM
5/9/14	Jessy	Teacher – 5th Grade	Y - Wood ES	5/9/14	5/9/14	Y	Y EM
4/5/2014	Defay	Admin	Y – William ES	5/05/14 @8:30am	NA	Y	Y EM
5/5/14	Marie	Teacher – 2nd Grade	Y - William ES	5/5/14	5/5/14	Y	Y EM
5/5/14	Drane	Teacher – 2nd Grade	Y - William ES	5/5/14	5/5/14	Y	Y EM
4/2/2014	Josh	Admin	Y – Country ES	5/13/14 @ 11:00am	NA	Y	Y EM
4/7/2014	Mich	Admin	Y – Highway Blvd ES	5/06/14 @1pm	NA	Y	Y EM

EM - Email

Appendix G: Confidentiality Agreement

CONFIDENTIALITY AGREEMENT

Gastrid Harrigan:

During the course of my activity in collecting data for this research: "An Instrumental Case Study of Experiences of Teachers and Administrators Integrating Project-based Learning", I will have access to information, which is confidential and should not be disclosed. I acknowledge that the information must remain confidential, and that improper disclosure of confidential information may be damaging to the participant.

By signing this Confidentiality Agreement, I acknowledge and agree that:

1. I will not disclose or discuss any confidential information with others, including friends or family.
2. I will not in any way divulge, copy, release, sell, loan, alter or destroy any confidential information except as properly authorized.
3. I will not discuss confidential information where others can overhear the conversation. I understand that it is not acceptable to discuss confidential information even if the participant's name is not used.
4. I will not make any unauthorized transmissions, inquiries, modification or purging of confidential information.
5. I agree that my obligations under this agreement will continue after termination of the research that I will perform.
6. I understand that violation of this agreement will have legal implications.
7. I will only access, use systems or devices I'm officially authorized to access and I will not demonstrate the operation or function of systems or devices to unauthorized individuals.

Signing this document, I acknowledge that I have read the agreement and I agree to comply with all the terms and conditions stated above.

Signature: _____ Date: _____

Walden University. (2012). Institutional Review Board for Ethical Standards in Research. Retrieved from http://researchcenter.waldenu.edu/Office-of-Research-Integrity-and-Compliance.htm

Appendix H: National Institutes of Health Certification

Certificate of Completion

The National Institutes of Health (NIH) Office of Extramural Research certifies that **Gastrid Harrigan** successfully completed the NIH Web-based training course "Protecting Human Research Participants".

Date of completion: 06/18/2011

Certification Number: 318896

Appendix I: School District Approval

THE SCHOOL BOARD OF BROWARD COUNTY, FLORIDA
INSTITUTIONAL REVIEW BOARD
600 SOUTHEAST THIRD AVENUE • FORT LAUDERDALE, FLORIDA 33301-3125 • TEL 754-321-2500 • FAX 754-321-2520

DEAN W. VAUGHAN
Institutional Review Board (IRB) Chair
dean.vaughan@browardschools.com

March 21, 2014

Mr. Gastrid Harrigan
[redacted]

Dear Mr. Harrigan:

Thank you for submitting your research proposal, #771 — ***An Instrumental Case Study of the Experiences of Teachers and Administrators Integrating Project-Based Learning*** — for consideration by Broward County Public Schools (BCPS). Staff has reviewed your research proposal and approval has been granted for you and/or members of your research team to *contact the Principals at following elementary schools **only**:*

Bennett	Boulevard Heights	Broadview	Charles Drew	Colbert
Coral Springs	Davie	Hollywood Park	Hunt James	Lauderhill, P.T.
Lloyd Estates	Maplewood	Markham	North Fork	Orange Brook
Palmview	Parkside	Perry, A.C.	Riverland	Sanders Park
Sea Castle	Sheridan Park	Thurgood Marshall	Watkins	Wilton Manors
West Hollywood	Village			

This approval means that we have found your proposed research methods to be compatible with a public school setting and your research questions of interest to the school district. The expiration date of your proposal is ***Friday, March 20, 2015.*** The anticipated date for submitting an electronic copy of your research findings is ***Tuesday, July 21, 2015.*** If you are unable to complete your research by the expiration date, you must submit a *Request for Renewal*, (http://www.broward.k12.fl.us/sar/docs/IRB.pdf), to the Student Assessment & Research Department ***four weeks*** prior to the expiration date.

Implementing your research, however, is a decision to be reached by the affected school-based staff on **a strictly voluntary basis**. To assist the school-based staff in their decision to participate, please outline the operational steps to be performed at their school. Based upon this information, each school-based staff would then make a decision to participate or not. School-based staff have been instructed not to cooperate unless you provide this **District Approval Letter** and the **Principal Approval Memorandum**.

PLEASE NOTE: All researchers and team members must complete the District's security clearance procedures to receive a **Security Identification Badge** before entering a BCPS campus or sponsored school event, or having contact with students or staff under any circumstances. **Researchers who do not complete these procedures before visiting a school site will have their IRB approval suspended.**

If additional assistance is needed from our staff, please **contact us at 754-321-2500**.

Sincerely,

Dean W. Vaughan

DWV/RWC:bt
Attachments

Appendix J: IRB Approval

Walden University's approval number for this study is **11-18-13-0138879.**

69 / 581

Reply | Reply All | Forward | Delete | Move to Folder | Add to

Subject : **Proposal Approved: Gastrid Harrigan**
Date : Mon, Sep 23, 2013 08:24 AM CDT
From : **Doctoral Study <DoctoralStudy@waldenu.edu>**
To : Gastrid Harrigan <gastrid.harrigan@waldenu.edu>
CC : IRB <IRB@waldenu.edu>, Walden coedocadvising <coedocadvising@waldenu.edu>, Steve Wells <Steve.Wells@waldenu.edu>, Heather Miller <heather.miller@waldenu.edu>, "andrea.thompson@waldenu.edu" <andrea.thompson@waldenu.edu>, Karen Hunt <Karen.Hunt@waldenu.edu>

Hello,

Congratulations on the **approval** of your doctoral study proposal, which is a major component of the research process. Equally important in this process is approval by the Walden Institutional Review Board (IRB) of the research ethics in your study. You should submit your Application to the IRB to Conduct Research as soon as possible.

You may not begin research or data collection until you have received the *Notification of Approval to Conduct Research*. Once you have received the Notification email you may begin your data collection and research. If there are any changes to your research protocol, you must submit a new IRB form. If your IRB materials have been received, you will be contacted soon regarding the formal IRB review.

Please let me know if you have any questions.

Congratulations again!

Alex Dohm

Research Service Specialist
Office of Student Research Administration
Walden University
doctoralstudy@waldenu.edu

Follow us on Twitter for research resources and tips!
Twitter: @WaldenResearch
https://twitter.com/WaldenResearch

Appendix K: Administrator Consent Form

You are invited to take part in a research study of the perceptions and experiences of teachers and administrators integrating project-based learning into the classroom. The researcher is inviting you because of your past or current experiences of integrating or supervising teachers who integrated project-based learning into the classroom. This form is part of a process called "informed consent" to allow you to understand this study before deciding whether to take part.

This study is being conducted by a researcher named Gastrid Harrigan who is a doctoral student at Walden University. You may already know Gastrid Harrigan as an assistant principal, but this study is separate from that role.

Background Information:
The purpose of this study is to examine teachers' and administrators' perceptions and experiences of the usefulness of integrating project-based learning in the classroom to motivate and help students with content or concept retention.

I will transcribe interviews data. Transcripts will be analyzed for emerging themes and development of meaning for data results. Copy of findings will be provided to each participant for review of his or her own data and opportunity to meet with me to discuss results.

Procedures:
If you agree to be in this study, you will be asked to:

- Participate in an interview with Gastrid Harrigan regarding your perceptions and experiences of the integration project-based learning in the classroom. Interviews will last approximately 60 minutes. The interviews will be audio taped and transcribed. Transcripts will be further analyzed for emerging themes and meanings. Each participant will be provided a copy of findings for review of his or her own data and opportunity to individually meet with me to discuss any discrepancies or unsubstantiated conclusions. This follow up meeting should take approximately 30 minutes.

Here are some sample questions:

1. Tell me about your experiences integrating or implementing project-based learning (PBL) in the classroom
2. Could you tell me about the students that experience PBL lessons or activities?
3. Did PBL enhance student's concept retention based on your observation/ assessments (tests, quizzes, classwork & homework)? If so, how well was student able to recall information?
4. Would you agree that PBL enhanced students' learning? If yes, how so?
5. How would you describe students' classroom participation once engaged in PBL?
6. What are some challenges you have had with planning and implementing/ integrating PBL in your classroom?
7. In your opinion, how effective is PBL compared to other teaching methods (i.e. lecture)?

Voluntary Nature of the Study:
This study is voluntary. Everyone will respect your decision of whether or not you choose to be in the study. No one at Broward County Public Schools will treat you differently if you decide not to

be in the study. If you decide to join the study now, you can still change your mind during or after the study. You may stop at any time.

Risks and Benefits of Being in the Study:
There are no risks associated with participating in this study. The benefits will be that you had an opportunity to share the benefits or lack there of in integrating project-based learning in the classroom to improve students motivation and content retention.

Payment:
There will be no compensation for your participation in this study.

Confidentiality:
Any information you provide will be kept confidential. The researcher will not include any information that will make it possible to identify you. Research records will be kept in a locked file. Only the researcher will have access to the records.

Contacts and Questions:
The researcher conducting this study is Gastrid Harrigan. The researcher's faculty advisor is Dr. Heather Miller. You may ask any questions you have now. Or if you have questions later, you may contact Gastrid Harrigan. If you want to talk privately about your rights as a participant, you can call Dr. Leilani Endicott. She is the Walden University representative who can discuss this with you. Her phone number is 612-312-1210 and email address irb@waldenu.edu. Walden University's approval number for this study is **11-18-13-0138879** and it expires on **November 17, 2014.**

The researcher will give you a copy of this form to keep.

Statement of Consent:
☐ I have read the above information and I feel I understand the study well enough to make a decision about my involvement. By signing below, "I consent", I understand that I am agreeing to the terms described above.

Printed Name of Participant

Date of consent

Participant's Signature or Electronic Signature

Appendix L: Sample Transcript

Teacher Interview

Interviewer: Gastrid Harrigan
Teacher: Frances, 5th Grade Teacher, Wood ES
Date: 5/ 09/14

Interviewer: How would do you describe the project-based learning approach as compared to "traditional" teaching?
Teacher: It's very different in the sense that it is student driven. We become facilitators as teachers and our students take on the learning themselves. They're very eager to do it and been a digital 5 school with our 5th graders. They are able to utilize the computers in ways that we would not been able to teach them otherwise. Right now our students are researching the American Revolution. Each student was assigned a specific event in history and they are researching that one particular event and are going to have to presenting a multimedia project where they are going to incorporate some kind of video using Movie Maker or Photo Story into a powerpoint. They've been taught the technology piece of it and they are taking on the learning of the history themselves.

Interviewer: How has using project-based learning (PBL) affected your lesson delivery (or teaching) of course concepts?
Teacher: Lesson delivery has changed because it is no longer teacher led but more student led. We've found that we are able to cover more information. The kids are really taking that information in because it's their own research. So they have a greater sense of responsibility I guess you can say and we actually, in my opinion, able to cover more because while the kids are mastering that one area when they go head and present to everybody, they are taking all that work they have learned and sharing it with their friends. Now their friends are able to take notes and become experts, those kids are able to tutors their friends in those areas and able to make connections, how the events kind of went in order in history because the kids would be presenting them in chronological order. It's now more students led verses teacher led. We still do follow the I Do, We do, You Do, we present little tip bits, give them that main big picture, the kids would go in and would teach them how to do the research. We would do some of that together and then the good majority of it verses how it has been in the past, the majority of their learning is you do. They do a lot of it own their own.

Interviewer: Explain any contribution that PBL has made on the structure of your class
Teacher: Ms. Bretz and I team-teach. We do departmentalize and we both are responsible for social studies piece of it. Ms. Bretz does primarily the ELA (reading/ Language arts) and I do the math. Now when we do project-based learning we put our classes together. So we took both classes and we group them by abilities. Every group has a team captain and the captain change when we have different projects. So it's fair for everybody, so we are able to group them heterogeneously. So we have some high, some medium, some students that maybe struggling and would benefit from having the

Curriculum Vitae

Gastrid Harrigan

EDUCATION:

Doctorate of Education in Administrator Leadership for Teaching & Learning February 2015
Walden University, Minneapolis, MN
Dissertation: "An Instrumental Case Study of the Experiences of Teachers and Administrators Integrating Project-Based Learning"

Master of Education in Educational Leadership School Leaders K-12 December 2006
Florida Atlantic University, Boca Raton, FL

Bachelor of Science in Electrical Engineering December 2002
Florida Atlantic University, Boca Raton, FL

Master of Science in Theological Studies October 2002
Logos Christian College, Jacksonville, FL

CERTIFICATIONS:

Mathematics (6-12), Professional Teaching Certificate (FLDOE) May 2016
Administration and Leadership (K-12), Professional Teaching Certificate (FLDOE) May 2016

TEACHING & ADMINISTRATIVE EXPERIENCE:

- **Intern Principal,** Broward County Public Schools 2007 – Present
- **Math Teacher,** Broward County Public Schools 2003 – 2007
- **Superintendent of School Sunday & Sunday School Teacher,** Christian Life Restoration Ctr 2007 – 2012
- **Youth Minister & Church Administrator,** Christian Life Restoration Ctr 2000 – 2012
- **Program Director & Instructor,** Life Restoration International Bible College 2002 – 2005

WORK EXPERIENCE:

Florida Department of Children and Families March'03 – August'03
Family Services Counselor

Motorola Inc. November'01 – January'03 & August'99 – January'00
Research Assistant/ Intern & Assembler/ Operator

EXTRACULAR ACTIVITIES/AWARDS:

- 2014 Caliber Award Assistant Principal of Year Nominee
- **Member,** ASCD, 2010 – present
- **Member,** National Alliance of Black Educators, 2008 – present
- **Member**, Florida Association of School Administrators and Broward Principals' and Assistants' Association
- **Co-Founder,** Haitian American Professional Society (HAPS), Inc., 2005
- **Program Chair & Senator,** NSBE (National Society of Black Engineers) FAU Student Chapter, 2000-2002.
- **Youth Coordinator / Youth Leader / Mentor / Teacher,** Christian Life Restoration Center, 1998 - 2012.
- **Member,** IEEE (Institute of Electrical and Electronics Engineers)

FOREIGN LANGUAGES:

- French
- Creole (Fluent)