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Doctor of Education in Organizational Leadership

Nannette W. Glenn, Ph.D.

Dr. Nannette Glenn, Dean of
the College of Graduate and
Professional Studies

Date 10 / 18 / 2022

Dissertation Committee:

John Kellmayer

Dr. John Kellmayer, Chair

Karen Maxwell

Dr. Karen Maxwell

Simone Elias

Dr. Simone Elias

Abilene Christian University
School of Educational Leadership

Project-Based Learning: Teachers' Perceptions

A dissertation submitted in partial satisfaction
of the requirements for the degree of
Doctor of Education in Organizational Leadership

by

Tricia Nail Haddad

November 2022

Dedication

For my dad, Clyde Gerald Nail. A man who showed me what perseverance looks like and loved me unconditionally. I miss you and love you! For my mom, Barbara Lee Nail. I strive to be like you daily. You showed me what a woman of God looks like and how to prioritize faith, family, and career. I miss you and love you dearly! And for my children, Pierce, Matthew, and Bryce. Thank you for understanding my desire to be a lifelong learner. Thank you for supporting me throughout this journey. And lastly, for my husband, David Jamal Haddad, who is my biggest cheerleader. Thank you for supporting me in everything. I could not have done this without you! I love you!

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Abstract

Project-based learning (PBL), a type of pedagogy, is helping students in today's world stay motivated to learn. This hands-on, collaborative type of learning is seen as beneficial for students, but the problem is the lack of knowledge about teachers' perceptions of PBL. This qualitative study discusses teachers' perceptions of PBL through the challenges, benefits, teacher training, and school administration support. Twelve teachers from magnet schools within a public school district specializing in PBL were interviewed. The teachers ranged from first-year teachers to teachers with over 10 years of experience. Six educators also participated in a focus group. Study findings indicated that teachers felt PBL was beneficial for today's students. Some teachers find PBL challenging as it requires much planning time. It is more challenging if teachers are not supported by their administration. All participants commented on the importance of PBL training. More practical training is needed to help the teachers feel more successful in the classroom. Despite the challenges with PBL, every teacher interviewed said the benefits outweighed the challenges and thought PBL was an effective method for teaching today's students.

Keywords: constructivism, interdisciplinary collaboration, pedagogy, practicum training, project-based learning, teacher perceptions, traditional education

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Chapter 1: Introduction

Project-based learning (PBL) dates back to the early 20th century. John Dewey, an educational theorist and philosopher, challenged the traditional view of learning. Dewey stated, “True learning is based on discovery guided by mentoring rather than the transmission of knowledge” (Lee & Carrington, 2020, slide 2). Teachers are eager to facilitate this type of learning in the classroom but may not be prepared to teach using the PBL method. They may not have enough practical training in PBL, so many teachers feel ready in theory but not in practice (Baysura et al., 2016). This qualitative descriptive study examined teachers’ perceptions of PBL at various experience levels.

Teachers take on the responsibility of student retention as they focus on student success. As society changes, teachers must find diverse ways to connect students with technology, such as iPhones and social media. More than 500,000 students drop out yearly in the United States (McDermott et al., 2019). Most dropouts leave school due to boredom and a lack of encouragement from teachers (Bauerlein, 2013). Better teacher–student connection is a strategy for decreasing the dropout rate. One of the ways teachers can connect with students is through PBL. Meaningful, hands-on projects provided through PBL pedagogy may be one solution to keep students motivated to stay in school.

PBL is based upon a constructivist theory of pedagogy in which students actively engage in hands-on projects that are personally meaningful. Constructivism is a theory that says learners construct knowledge rather than passively take in information (Boss, 2011). PBL can be presented in different directions, so the teacher must have a broad range of expertise to facilitate each student or group through the various steps. PBL offers real-world learning opportunities for students (McDermott et al., 2019).

PBL emerged more than half a century ago. As part of PBL, students are challenged to solve problems that mimic real life, giving students opportunities to demonstrate what they know and what they have learned. The projects can be messy and complicated and usually do not encompass one “right” answer. Teachers may feel overwhelmed as they facilitate PBL classrooms. The projects require planning and management skills that may be unfamiliar to teachers. Training for teachers seems to focus on traditional teaching methods, but there may not be sufficient training for teachers in the teaching methods of PBL.

Baysura et al. (2016) reported that teachers had a positive outlook on PBL, believing it benefits students and indicating they were not sufficiently trained in PBL teaching methods. Although PBL is taught in pedagogical courses, it is not widely practiced. Many teachers may not have the hands-on experience to succeed in a PBL classroom. In another study by MacMath et al. (2017), teachers reported some concerns with methods in their first year of teaching PBL. After teachers had developed more experience with PBL, they saw the benefits of this practice. As teachers developed more experience with the method, they reported giving their students more individual time than in a traditional classroom.

Statement of the Problem

PBL requires specific teaching competencies to achieve its potential benefits to students. The problem is that not enough is known about teachers’ perceptions of their knowledge and skill in utilizing PBL in their classrooms.

Students who take a passive role in their education tend to be less motivated in the classroom. Such students may lack engagement in the learning process, and disengaged students are not likely to learn and achieve at elevated levels (DeMink-Carthew & Olofson, 2020). Traditional education should incorporate strategies to help students fully engage in the

classroom. PBL personalizes learning for students by using interdisciplinary collaboration to solve problems. Unlike traditional educational methods that tell students what they need to know, PBL allows students to experience learning through hands-on learning. As John Dewey stated as an academic principle, “We learn best when we do what we learn,” students should be given opportunities to utilize their creativity to solve problems (as cited in Matriano, 2020, p. 215). PBL de-emphasizes closed-ended tests and encourages the development of critical thinking skills for students to realize that many problems have multiple “right” answers (Warr & West, 2020).

Education must be able to keep up with today’s learners. Research by Warr and West (2020) found that traditional classroom lectures are not as practical for today’s students. Studies have also shown that conventional education emphasizes the results, whereas PBL allows students to learn throughout the process (Warr & West, 2020). Flexibility in education, like PBL, transitions from teacher-centered to student-centered learning. Therefore, students assume a more active role in their education and become more engaged in learning. Because it is not a traditional style of pedagogy in the classroom, teachers have different perceptions of PBL. Teachers may have been trained in theory in PBL yet believe they are not prepared in practice to facilitate this type of instruction (Warr & West, 2020).

Purpose of the Study

Current research by Alrajeh (2020) concurred with Warr and West (2020) that teachers may not be practically prepared to teach using the PBL method. This qualitative descriptive study was designed to research the differing perceptions of teachers in a large Texas school district’s PBL magnet schools. This study explored the problem of insufficient knowledge about teachers’ perceptions of their knowledge and skill in utilizing PBL in their classrooms. This

study was designed to gain greater insight into preparing teachers to facilitate PBL. Based on my literature review, most teachers expressed a need for more training, and this study examined if the targeted district staff believed the same. For this reason, I sought to determine the perceptions of PBL from teachers in this district. Surveys, interviews, and data from a focus group were used to collect responses from teachers with diverse experience levels within a large district in a large urban area in southern Texas.

Research Questions

The following research questions guided this study:

RQ1: What benefits have teachers perceived from using PBL in their classrooms?

RQ2: What are the perceived challenges for teachers regarding PBL?

RQ3: What are the perceived challenges for students as reported by teachers regarding PBL?

RQ4: Do teachers perceive that they are (were) trained to provide instruction using PBL?

RQ5: Do teachers perceive that they receive(d) adequate support and resources to ensure PBL quality?

RQ6: Do teachers perceive PBL as an effective method of teaching?

Definition of Key Terms

Constructivism. A theory in education recognizes that learners construct new understandings and knowledge, integrating with what they already know (Boss, 2011).

Interdisciplinary collaboration. Two or more students use various disciplines to achieve common goals (Houldin et al., 2004).

Pedagogy. The method and practice of teaching (Maida, 2011).

Practicum training. A study designed especially for the preparation of teachers involves the supervised practical application of a theory (Baysura et al., 2016).

Project-based learning. A teaching method in which students learn by actively engaging in real-world and personally meaningful projects (Boss, 2011).

Teacher perceptions. Teachers' thoughts or mental images about their professional activities and students are shaped by their background knowledge and life experiences and influence their professional behavior (Alrajeh, 2020).

Traditional education. Traditional education is the teacher-centered delivery of instruction to the receivers of information (Warr & West, 2020).

Chapter Summary

PBL is a method that excites many teachers to use in the classroom. This study discusses teachers' perceptions of PBL using data from teachers from all years of experience. Research has shown that a hands-on approach to learning can help students feel more engaged in their own learning. The literature review will show that teachers have learned about PBL in theory but feel they lack the practical practice to use their knowledge in the classroom.

Chapter 2: Literature Review

Extensive literature from peer-reviewed journal publications supported this potential dissertation study. I found teachers' perspectives on PBL in the literature that support the idea that teachers may not feel prepared to teach with the PBL method. This study explored teacher perceptions of the need in the study district for practical training in PBL for new teachers. The following topics will be discussed in this literature review:

- The benefits teachers perceive from using PBL in their classrooms.
- The challenges teachers perceive regarding PBL.
- The challenges teachers perceive for students when utilizing PBL.
- The degree to which teachers feel equipped to teach using PBL.

PBL is a method that excites teachers in the classroom, yet many teachers indicated they might not be prepared to teach using the PBL method (Alrajeh, 2020). Teachers in a PBL environment must lead a task-oriented group to successfully achieve a teaching program's outcomes. Teachers facilitating PBL must create plans for students requiring skills and abilities within group dynamics while assessing student learning (O'Neill, 2015). A teacher's role in a PBL classroom is vastly different from a teacher in a traditional classroom. Rather than being primarily a "content expert" who provides the facts, the teacher is a facilitator, responsible for guiding students to identify the critical issues in each problem and find ways to learn those areas in appropriate breadth and depth. Teachers in a PBL curriculum need to alter their traditional teaching methods of lecturing, discussing, and asking students to memorize materials for tests. As such, teachers in PBL focus on questioning student logic and beliefs, providing hints to correct erroneous student reasoning, providing resources for student research, and keeping

students on task. This role will be new to some teachers; they may have concerns about moving away from their past practices (O'Neill, 2015).

The literature has shown that teachers should not only be experts in their field of study but also possess facilitatory teaching skills. These are the skills needed to make PBL a quality pedagogy. Although students have much more responsibility in PBL than in most conventional approaches to teaching, the PBL teacher is not just a passive observer. They must be active and directive about the learning process to ensure that the group stays on target and makes reasonable choices on what issues are essential to study.

Literature Search Method

Peer-reviewed articles from academic journals were gathered to obtain literature. Searches were conducted at the Abilene Christian University Online Library and using Google Scholar. Keywords used include *project-based learning*, *challenges*, *benefits*, *teacher preparation*, and *teacher perceptions*.

Theoretical Framework

A handful of educators helped to create what is now known as PBL. The idea of PBL originated from educator John Dewey. Dewey believed children should access materials and tools to construct and create actively. He thought the classroom should be a small community where play is integral to learning social roles and engagement in the environment. Children would then control their cognitive thinking skills (Maida, 2011). Dewey's child-centered philosophy introduced real-life situations and contexts into the school environment.

Dewey's work continued with William Heard Kilpatrick. Kilpatrick was a student of Dewey's. Kilpatrick organized a curriculum around a central theme. He believed the teacher should provide guidance and not be authoritative so that children can direct their learning

according to their interests (Mitchell et al., 2020). Kilpatrick developed the project method for early childhood education. This progressive education organized curriculum and classroom activities around a central theme. PBL uses this theory as students work together on projects with significant themes.

Maria Montessori was another educator who believed in children being educated more independently, as seen in PBL. She felt children would reach new levels of autonomy and become motivated to learn (Viro et al., 2020). She felt this way because she explored giving children free materials with the freedom to move around the environment. Uninterrupted work was also a philosophy of Montessori. The Montessori curriculum is self-paced but guided. Teachers allow students to lead while assessing their knowledge. Students can follow their curiosity at their own pace, taking the time to understand concepts fully. Maria Montessori believed students who are given the freedom to question and make connections grow to be confident and self-directed learners. She felt that rather than simply filling children with facts, Montessori education should strive to nurture each child's natural desire for knowledge, understanding, and respect.

PBL also evolved from the sociocultural theory. Lev Vygotsky's sociocultural theory is viewed as a process in which children acquire their cultural values, beliefs, and problem-solving through collaborative social interaction (McLeod, 2018). Vygotsky believed that social learning preceded development. He called it the zone of proximal development and scaffolding. PBL utilizes much social knowledge as students work together to solve problems. Vygotsky believed that children should be taught in this zone, which occurs when they can almost perform a task, but not on their own without assistance. A good teacher who can recognize when a child is in this zone of proximal development and scaffolding stretches the student and gradually withdraws

support until the child can perform the task independently (McLeod, 2018). PBL utilizes the Vygotsky theory by guiding the students to use their critical thinking skills with the teacher as the facilitator.

Literature Review

Benefits of Project-Based Learning

Research has shown the benefits of PBL. PBL allows students to think more critically and become motivated to learn. In PBL, students learn to meet deadlines and develop soft skills for real-world competencies. This section reports how teachers have examined how students in a PBL environment learn to manage setbacks in demanding situations. Teachers believe that PBL is an excellent method for reaching students in an ever-changing society, so the motivation for learning stays with students.

Examples of benefits of PBL include student and teacher creativity. Creativity can flourish in the PBL classroom if the teacher manages time. According to Cintang et al. (2017), teachers felt the positive impact of applying PBL in their classes if proper time management was utilized. The teachers found three positive results, which include:

- PBL could improve teachers' creativity and drive the teachers' will to learn. As a new concept to some teachers, the PBL method grows as the curriculum and learning ideas change.
- PBL familiarizes teachers with excellent time management. The main obstacle in the implementation of PBL is the time limitation. Therefore, when the teacher tries to implement PBL, the teacher must adapt to timing. Time management should be employed to avoid missing material.
- PBL is student-centered. In the PBL activities, the teacher does not have to explain

too much because the students' activity is increased.

Motivation to Learn. There are varying benefits of PBL, including attitudes toward learning, work habits, problem-solving skills, and self-esteem (Turgut, 2008). Other benefits include increased motivation and interest in topics. PBL also effectively prompts reluctant students to become more engaged learners (Turgut, 2008). Students become self-regulated learners with PBL (Khan & Ibrahim, 2020). This study by Khan and Ibrahim found that students' self-efficacy improved with PBL. With self-efficacy, students believe they can accomplish their goals with their skills.

PBL was effective for students. Agudelo and Morales-Vasco (2019) studied the effects of PBL on students who were perceived as inattentive, easily distracted, and students who would complain about any activity proposed. These students were also perceived as reckless, lazy, undisciplined, unpunctual, not committed, and unconscious of their life prospects. According to Agudelo and Morales-Vasco (2019), after implementing PBL, these students began to show meaningful changes in their behavior and view of learning. For example, "They became more responsible, punctual, committed, and honest" (Agudelo & Morales-Vasco, 2019, p. 44). The students became more aware of their role in the classroom and had a better attitude toward their education. As active learners, these students realized the essentials for their future decisions. Agudelo and Morales-Vasco (2019) stated that these students can now confront doubts, fears, misunderstandings, insecurity, and some features of low self-esteem.

Teaching science with PBL improved student-teacher relationships and enhanced students' enjoyment (Hugerat, 2016). Teachers were able to motivate their students so that the students could research and explore on their own. PBL is relevant to real-life experiences, and

students can succeed through discovery and research with the help of their teachers who apply the PBL method in their classrooms.

Culclasure et al. (2019) investigated how PBL can influence student performance in specific curriculum areas. Social studies and college and career readiness success rates of high school students in a PBL technology high school and traditional high school were compared. This study by Culclasure et al. (2019) found that PBL students scored higher on social studies and standardized science tests and had higher levels of promotion to the next grade level than traditional students. Culclasure et al. (2019) also studied macroeconomics knowledge. Verbal ability, interest in economics, preference for group work, and problem-solving efficacy were studied. Results showed that PBL increased students' macroeconomic competencies compared to traditional methods.

Furthermore, the study found that students with low to midrange verbal abilities learned more in PBL classes than in lecture or discussion classes. PBL students were also found to have more developed cognitive skills and a better ability to collaborate with peers. PBL has also helped ESL (English as a Second Language) students gain proficient English skills and benefitted students with disabilities by equalizing opportunities for disadvantaged students (Culclasure et al., 2019).

Critical Thinking Skills. Necessary thinking skills in students are vital to their education. Students who learn this skill make better decisions and can solve problems. Students thrive when they can solve problems on their own. MacMath et al. (2017) examined teachers' perceptions of their experiences with PBL in a secondary school setting. Two teacher focus group interviews were used in this mixed-methods study. MacMath et al. (2017) showed that in the successful implementation of PBL, teachers witnessed increased students' critical thinking

skills and improved presentation and research skills. Other benefits of PBL, according to MacMath et al. (2017), were an increase in students' self-regulation skills, confidence, and ability to work independently as they critically think through problems.

Critical thinking skills are established through work in PBL. According to Cintang et al. (2017), teachers believe that PBL benefits student learning because what is taught stays in the long-term memory. Also, teachers thought that PBL develops children's skills through real-life experiences. Students can do things as opposed to knowing something. Through PBL, students learn and stay motivated, which leads to higher-order thinking skills.

Critical thinking skills led to student achievement. Achievement rose with PBL, according to Erdogan and Senemoglu (2014). Students have increased self-regulatory learning skills. PBL also significantly influenced student achievement at a knowledge level and comprehension level. According to Erdogan and Senemoglu (2014), the concerns around a PBL environment failing to teach our students the basic knowledge and comprehension level competencies are squashed by the research that shows PBL students continuing to achieve at higher levels than students who learned in a traditional setting.

In a study by Giri (2021), increased critical thinking skills with PBL were also reported. This study concluded that PBL led students to solve real problems that can be reached through systematic and measurable work stages. PBL improved students' ability to analyze, evaluate, and increase creativity. Additionally, PBL enhanced students' higher-order thinking skills and problem-solving knowledge.

Research by Zheng et al. (2021) found that PBL promoted students' problem-solving capabilities. Zheng et al. studied students in an outdoor learning environment where questions and suggestions from teachers and peers created problems through PBL. Students could present

their learned knowledge by tracing their work with PBL. Their work was then shared with peers, teachers, and visitors. Students had positive attitudes toward learning and invested lots of effort in producing PBL work. According to Zheng et al. (2021), this passion and activeness by the students did not appear in past classes. Lin et al. (2015) also found that the creation of projects has helped students expand their views about the themes of projects. PBL has enhanced critical thinking skills as students research and analyze data while concluding their projects.

Tiwari et al. (2017) reported that PBL in the classroom enhances critical thinking. Students researched information on a particular topic in great depth to create their culminating project. Students moved beyond basic factual knowledge of issues and began to delve deeper to think critically about their study project. According to Tiwari et al. (2017), “When students created awareness on a particular topic, their knowledge was appreciated by the community, and they were much satisfied with it” (p. S7). PBL allows students to create projects that result in meaningful learning experiences by tapping into the students’ interests in topics to study.

Issa and Khataibeh (2021) stated that PBL has been a critical classroom strategy in recent years. Their research focused on science in PBL classrooms. Science students constructed and interpreted their new knowledge rather than memorized it. Issa and Khataibeh (2021) reported that PBL strategies eliminated students’ misconceptions and encouraged them to learn meaningfully. PBL has been helpful in science classrooms because these students actively participated and worked collaboratively to solve problems. Students then can discuss what they have known. Critical thinking in PBL leads to students working in groups, exposed to real-life situations. This study taught students essential thinking skills through open-ended lessons, problem-solving, decision-making, and investigative activities. Issa and Khataibeh (2021) also reported that students’ critical thinking skills improved with PBL by supporting learning

outcomes and developing students' communication, cooperation, and creativity abilities. As students participate in PBL, they understand the content and the required skills in schools, universities, work, and life. Students were able to analyze and assess information and showed high-level cognitive ability.

The National Council for Excellence in Critical Thinking stated that PBL was an intellectually disciplined process of conceptualizing and applying information resulting from observation, experience, reasoning, inference, and communication (as cited in Issa & Khataibeh, 2021). Critical thinking also helps students' self-control, accuracy, reliability, and clarity toward the topics and issues they are exposed to. Students who learn through PBL think critically. They have critical basic skills in the learning and teaching process. Students could make logical decisions considering evidence and arguments for solving problems. Critical thinking is regarded as one of the essential features of success in the 21st century (Issa & Khataibeh, 2021).

Collaboration. Although working independently is essential in PBL, learning to collaborate with peer groups is just as important, if not more so. Learning to work with others is crucial in real-world experiences. Collaboration in PBL develops social skills and helps students to build trust. Warr and West (2020) found that students learned better with PBL than traditional learning methods. Students learned how to meet deadlines and how to collaborate with others. Communication skills were utilized, and students saw the need to use several disciplinary studies to conclude their projects within PBL. Most importantly, students were motivated to learn—students who learn to work collaboratively also know conflict resolution skills (Shernoff et al., 2017).

Research by Yamada (2020) expressed the benefit of collaboration in PBL for students learning English. Collaborating with others leads to active learning. The students in this study

learned English by working in teams. More reluctant learners could participate as they became more comfortable within their collaborative team.

Teachers must measure communication skills, self-evaluation, negotiation, cooperation, collaboration, and tolerance in PBL. In an article by Habók and Nagy (2016), teachers felt that social skills are essential for learning. Present and future workforce members are evaluated on their professional accomplishments and group communication and negotiation. Social skills are becoming increasingly important. Therefore, students learning to work collaboratively is essential.

Collaborating with peers to solve problems helps students develop soft skills and real-world competencies. Ayish and Deveci (2019) showed that students who participated in a PBL classroom outperformed students in a traditional classroom regarding learning outcomes. This benefit within PBL is developed by realizing the learning is on the student by engaging with authentic problems that require further research in a team-based environment. Students take on personal responsibility for their behavior and learning. McKenna et al. (2018) conducted other research focused on how PBL enhances skills in students, such as innovation, communication, teamwork, and project time management. Students who used PBL had higher-order critical and creative thinking with positive outcomes. McKenna et al. compared graduate students in traditional education programs to PBL programs. Students from PBL environments were stronger in communication and team skills and completed an entire project. McKenna et al. (2018) also concluded that PBL students developed competence in evaluating alternative views, negotiating to understand, and realizing the importance of learning. These skills help students work together and get ready for real-life experiences. Lin et al. (2015) found that working with

group members and engaging with peers helped students communicate and work better with others.

Educators must utilize effective teaching methods to enhance critical problem-solving skills so students have a comprehensive understanding of applying class lessons to the real-world industry (Kwak & Price, 2012). Students acquired knowledge through peer cooperative learning strategies. According to Kwak and Price (2012), test averages increased through peer collaboration with PBL compared to test norms of students involved in traditional education with collaborative efforts among instructors; students developed social responsibility across disciplines.

Hung et al. (2012) stated that PBL enhanced the collaboration and cooperation between group members, reinforcing learning cognition and promoting learning achievement. PBL developed trust among members to stress individual performance in the group.

Real-Life Experiences. Research studies support the idea that students who participate in PBL learn how to cope in the real world after graduation. According to Pawson et al. (2011), “PBL is an active learning method that leads to greater understanding and achievement of competencies, rather than retention of knowledge for its own sake” (p. 106). Students work in groups to resolve problems to develop lifelong learning skills that transfer to career situations.

Careers in the STEM (science, technology, engineering, mathematics) fields have an insufficient number of qualified candidates, according to Egenrieder (2010). PBL can help students who have goals to work in a career in the STEM fields. According to Egenrieder’s research, many students enjoy science in elementary and middle school until they experience a setback or disappointment in their performance in secondary STEM courses. Educators can foster students’ continued interest in STEM education subjects through student-driven PBL.

Students stay motivated and work through problems with PBL. Egenrieder (2010) concluded that students in PBL environments showed more resilience when they had to recover from setbacks. Literature supports that traditional teaching and learning approaches can suppress interest and creativity among students who do not have strength or support after early failures or disappointing experiences in STEM subjects (Egenrieder, 2010). Teachers, through PBL, can promote student autonomy, which creates creative solutions to real problems for students. Students can regroup, refocus, and renew their approach when they encounter problems rather than give up. This, in turn, develops a love for lifelong learning, which gets students ready for real-life experiences.

Students with high self-efficacy succeed in real life after school. When teachers offer support during challenges in PBL, students gain a more heightened sense of self-efficacy. PBL is successful when the teacher creates an environment where students feel challenged. Student support is critical for engagement and learning (Morrison et al., 2021). Morrison et al. discussed how STEM students felt supported and challenged as they worked on their projects because they had partners in learning with their teachers. This relationship supports students' self-efficacy. A teacher's stance as a learner alongside students builds a strong bond and exemplifies the "partnership" and shared goals often emphasized in STEM schools (Morrison et al., 2021).

Real-life experiences include learning how to be empathic in relationships. According to Kim (2020), PBL changed student empathy scores over time. Students began to empathize with others from the assignments given in a PBL classroom by gaining new perspectives from experiences. Kim (2020) reported that PBL developed students' empathetic abilities by giving them authentic experiences communicating with students with diverse backgrounds and respecting other students' perspectives.

Pan et al. (2019) reported that PBL allowed learners to immerse themselves in real-world experiences through collaboration and detailed research. PBL gave learners more freedom to explore ideas and demonstrate problem-solving skills. Pan et al. (2019) also stated that PBL taught learners how to work in real-life atmospheres by learning to work in informal atmospheres. Students encouraged everyone to participate in discussions, listen to one another, reach decisions by consensus, and allow disagreements.

Aránguiz et al. (2020) reported that one of the most critical aspects of PBL is the ability of the students to apply their work to real-life scenarios. In the study by Aránguiz et al. (2020), students could propose creative solutions based on reliable data. Students were able to use different research techniques to solve problems. Creative problem-solving was used to define the focus, searching for solutions using inductive processes to compare evidence while analyzing the information they obtained.

Wurdinger and Qureshi (2015) stated that life skill development was learned through PBL. This study focused on life skills: problem-solving, communication, creativity, responsibility, and self-direction. In-depth projects allowed students to practice life skills, which taught life skills effectively. Students were given the freedom to develop relevant in-depth projects over time. They must solve problems, be creative in developing plans, communicate with peers, and become more self-directed with their learning. Students must learn how to create goals, evaluate them against reality to determine their worth, and reflect on what to do next (Wurdinger & Qureshi, 2015). Through this process, life skills are learned as students learn persistence in their problem-solving skills. PBL is an effective teaching methodology that motivates and inspires students to learn.

Community Involvement. Involvement within the community is also a positive outcome of PBL. Arantes (2019) stated that PBL empowered students for community involvement to solve real-life problems. This study examined the advantages and disadvantages of combining community-based research and PBL. The research found that PBL improved the students' learning and that community-based research was rich and meaningful to the students. Lastly, through this research, students gained improved research skills. Data from Arantes's (2019) study revealed that PBL might facilitate a deep understanding of content knowledge. Supportive learning communities may be cultivated through productive academic struggle while engaged in PBL experiences.

Lee et al. (2014) showed the benefits of PBL as a benefit in the community. These authors concluded that PBL helped students and teachers collaborate with community leaders. PBL provided career preparation for students as students collaborated with community partners.

Challenges for Teachers

To discuss the teachers' perceptions of PBL and the training they require to succeed with PBL, the teachers' challenges with PBL for teachers must be researched. Although research on PBL has yielded positive educational results in achievement and affective dimensions, the approaches are not without challenges. Some challenges for teachers are:

- time management,
- integrating PBL with curriculum content,
- the shift from traditional roles, and
- lack of practical training.

To help overcome these challenges, O'Neill (2015) stated that schools and teachers who teach using PBL need a supportive context and professional development to learn about PBL and

develop authentic driving questions that align with the curriculum and promote interdisciplinarity.

Time Management. Teachers struggle with time management with PBL. Quality of lesson design and balancing scaffolding and modeling can challenge teachers. Feedback to students needs to be addressed in teacher training regarding PBL. Students can have trouble managing time, generating, evaluating questions, accessing necessary background knowledge, or developing logical arguments (O'Neill, 2015). Therefore, teachers should be trained in these areas. Once teachers find the balance of their degree of skill or expertise, PBL can run smoothly.

Learning new time management skills is a challenge for teachers with PBL. Revelle (2019) researched teachers' perceptions of PBL. Teachers found benefits and challenges in PBL but mostly felt they lacked time to prepare lessons. Although group cohesiveness benefits outweigh this challenge, many teachers said they thought they lacked time to be fully equipped to facilitate a PBL lesson. Student discussions and observations often took longer than expected. Teachers struggle to "fit it all in" with the curriculum, making the classroom feel disorderly. Allowing the students to spend more time on projects can be difficult for teachers.

Integrating PBL With Curriculum Content. Despite the positive benefits of PBL, some teachers found it challenging to enact some PBL elements into their STEAM (science, technology, engineering, art, mathematics) classrooms. According to Herro and Quigley (2017), teachers found projects to be time-consuming and classrooms were disorderly. Teachers also reported that they could not control the flow of information and struggled with the balance of giving students independence and supporting them. Research yet to be discovered is how PBL might align with STEAM. Herro and Quigley (2017) explored ways for teachers to feel more prepared and overcome these struggles before PBL implementation. After professional

development in PBL, teachers learned how to incorporate an increased understanding of STEAM to teach content, collaboration as initial means of PBL teaching, and the importance of experiencing technology as tools to learn content.

Shift From Traditional Role. One of the challenges teachers feel is the significant shift from a directive role to a more facilitative role. Teachers find it challenging to give up control and let students control their learning. Teachers supported all their students' learning difficulties as they shifted to PBL. Rees Lewis et al. (2019) discussed instructor challenges regarding meeting all the students' needs. Some challenges were:

- monitoring teams,
- assisting,
- finding the problem,
- creating project teams,
- designing curriculum, and
- coordinating coinstructors, clients, and students.

Additionally, research by Vasiliene-Vasiliauskiene et al. (2020) studied those teachers who faced challenges in PBL. Teachers felt that they needed time to implement the novel approach of PBL as it may conflict with some deep-seated beliefs of teachers' approach to teaching. Teachers also found it challenging to create a culture of teamwork in the classroom and adjust to a facilitative role. These challenges can be overcome with time, and in the end, the intrinsic value of motivation that the students learn is well worth it (Vasiliene-Vasiliauskiene et al., 2020).

Further research echoed the challenges for teachers in a PBL classroom setting regarding shifting from a more traditional role to a facilitator. Mansor et al. (2015) stated that teachers who

adopted PBL might not cover as much material required in the curriculum as a traditional lecture-based course. PBL involves much planning on teacher preparation, and it can be difficult for a teacher to relinquish their traditional role and function as a facilitator.

The role shift from teacher to facilitator in PBL can be challenging. Condliffe (2017) found that teachers' beliefs about their classroom role from director to facilitator are a hurdle for PBL. Condliffe's (2017) research found that the main challenge for teachers in PBL involved teachers' willingness to change their position in the classroom and alter their perceptions of classroom control. In this study, some teachers found PBL risky because of traditional teaching style changes. These changes included noise level, student movement, and student collaboration.

Sahin and Top (2015) reported that one of the challenges for teachers moving from a traditional teaching role to a PBL facilitator is whether they can prepare their students for standardized testing by using PBL. This was a concern for teachers because standardized tests weigh heavily in schools, yet it seems that in Sahin and Top's (2015) research, PBL teachers did not have a problem preparing their students for standardized tests. This is because PBL classrooms have separate curricula from traditional lectures, where students' minds may wander in conventional classrooms. PBL teachers were able to use hands-on activities, engaging students. Using this type of teaching did not negatively affect standardized test scores. In fact, according to Sahin and Top (2015), not only did students do well on standardized tests, but students also learned better when they were at the center of the instruction and took responsibility for their learning.

Lack of Practical Training. Future efforts to support teachers to align curriculum in PBL are needed to help teachers feel more successful. Shifting from a traditional classroom to a PBL environment can be challenging for teachers. Habók and Nagy (2016) reported teachers felt

they never reached beyond the level of an accomplished novice regarding curriculum writing with PBL.

More challenges with PBL for teachers were studied by Aldabbus (2018). Preservice teachers found it challenging to implement PBL due to a lack of practical training. Some challenges included curriculum was challenging to create for the teachers as textbooks were not used in lesson planning. Preservice teachers also found it challenging to implement PBL within the school schedules. PBL takes more time than traditional education. Lastly, preservice teachers had biases on PBL as they began to teach. Some believed it would be too noisy. Therefore, teachers feared they would lose control of the classroom environment. Others thought that giving support in PBL to many students would be difficult. Preservice teachers were not confident in applying PBL because they were unsure which to focus on: the process or the product. Aldabbus (2018) found that these fears of preservice teachers faded with experience. In a study by Khan and Ibrahim (2020), PBL improved preservice teachers' self-regulated skills, regardless of their learning preferences.

Challenges for Students

Discussing these challenges for students with PBL, the importance of teacher training is magnified. When group sizes are too large, or students feel like they do not have a voice in their learning, PBL can be challenging. Although there are some challenges regarding PBL, the benefits outweigh the challenges. If teachers are aware of these challenges, they can avoid these downfalls.

Challenge of Group Size. Proper student group sizes are essential in PBL. When groups are too large, students do not have a greater chance to succeed. Al Mulhim and Eldokhny (2020) discussed the importance of including teachers' perceptions of PBL, including group size. With

the implementation of PBL, teachers should promote it and minimize any negative impacts which result from too large group sizes. Small group sizes are critical to PBL.

Research by Naviri et al. (2021) found it difficult for teachers to motivate students in a PBL classroom when there are many students. Students had difficulty concentrating on tasks and relating the latest content to previous knowledge. Cooperative learning groups work better in smaller groups. Teachers found that as students needed more attention to staying motivated, large groups made it difficult for teachers to give this attention. Projects often involved enough space to complete, and with large groups, teachers found it more challenging to complete PBL tasks without adequate physical space.

Student Voice. The lack of students' voices can be a challenge in PBL. There is also concern that students might be unable to differentiate between what might be vital to learning and what is not essential (Mansor et al., 2015). Teachers are crucial in PBL to guide students in their learning process. DeMink-Carthew and Olofson (2020) discussed how teachers should be supported when experimenting with PBL and how essential student voice and choice are in PBL. This is where teachers must be given ways to experiment with this concept. The student–teacher relationship is vital to the success of PBL. This relationship helps students create their voices.

Hira and Anderson (2021) stated that students must have a voice in their education. PBL allowed for greater student autonomy than a traditional lecture. Students should have a say in how they spend time completing their project's goals. According to Hira and Anderson (2021), students should be advocates for the kinds of projects they would like to work on. Students who took control of their work and schedule took ownership of their learning because they had a voice.

Conflict Within Teams. Another challenge for students is that teachers must be aware of the conflict among team members in PBL. Ayish and Deveci (2019) stated that team members' competition stems from poor communication, unequal work distribution, slacking, social loafing, and free riding often arise when a team member does not take responsibility for their behavior. Such behaviors often lead to dysfunctional teams where infighting and inferior performance negatively impact members' teaming experiences. In Ayish and Deveci's (2019) study, students reported working alone rather than in teams because of past negative teaming experiences.

Collaborating within teams can be challenging for students academically. In a study by Eckardt et al. (2020), students who learned by collaborating with their peers had some academic struggles. Yet, the students learned how to work together in a community environment through these struggles. The purpose of each project needs to be explained by the teacher to avoid confusion for the students. Teachers need to be trained thoroughly in PBL, and students need to understand the role of a PBL teacher. Some students come from a traditional classroom where the teacher is the primary disseminator of knowledge. It is a shift for teachers and students to take control of their own learning experiences.

Teacher Preparation for Project-Based Learning

Proper teacher preparation with PBL is essential for both teacher and student success. Teachers must be trained in practice and theory in PBL to be successful. Teachers must also feel supported by their team. Teachers feel successful with PBL when introduced and focused on soft skills such as communication and collaboration with peer groups (MacMath et al., 2017).

Teachers must feel comfortable utilizing their creativity and collaborating with other teachers. This is something that should be developed in teachers. Roessingh and Chambers (2011) believed that PBL is a beautiful way for novice and experienced teachers to collaborate.

By doing so, teachers can feel more prepared to teach PBL. Another relevant article by Mahasneh and Alwan (2018) studied the effect of teachers' sense of self-efficacy regarding PBL. It concluded that PBL allowed teachers to collaborate with peers to form successful lessons.

Finally, schools' context must be aligned with the PBL model. Support for teachers from administrators from policies and tests can benefit teachers when implementing PBL in the classroom. When teachers are supported, they have positive perceptions of PBL. According to Susanti et al. (2020), teachers' perceptions during the implementation of PBL contribute to their success. This study found that PBL can increase teachers' satisfaction with teaching. Adversely, if teachers believe PBL is too challenging, a project may not succeed. When teachers perceive PBL because their administrators support them, they have enhanced enthusiasm, confidence, and critical thinking skills (Susanti et al., 2020).

Practice Versus Theory. The literature reviewed supported that teachers, especially prospective teachers, felt trained in PBL in theory but may lack practical PBL training. Baysura et al. (2016) found that teachers may not feel prepared to teach PBL during a study investigating teacher candidates' perceptions of the PBL approach. In a qualitative research study, prospective teachers expressed that they learned PBL in theory but did not feel prepared to teach it confidently. The article concluded that more courses in PBL should be included in university courses for prospective teachers.

Another article that supported the concept that teachers need more practical training in PBL was by Boss (2011). Boss stated that the idea of PBL benefits students' learning. However, the Boss (2011) study echoed that those teachers may not have the tools to succeed in a PBL classroom. PBL requires a great deal of planning and management skills. Teachers must also shift from classroom experts to facilitators. Boss (2011) concluded that teachers would benefit

from professional development in PBL to expand their teaching strategies and feel empowered. Administrators and parents must support teachers as they overcome challenges with PBL.

More research by Alrajeh (2020) supported teachers' need for practical training in PBL. Alrajeh (2020) argued that prospective teachers are taking courses in college that are theory-based only. Professional experiences in university courses are needed to teach both theory and practice. The teachers in this study who experienced the PBL process in college found it meaningful and valuable.

Viro et al. (2020) studied teachers' perspectives on PBL. The authors discussed the importance of better understanding teachers' perspectives on PBL in mathematics and science. Viro et al. identified teachers' views of support and barriers regarding PBL.

According to Noordin et al. (2018), teachers need theoretical knowledge and well-developed skills in doing practical work. Therefore, it is a priority for future teachers to master and remember what they have learned in the university during preservice training to convey their knowledge easily through lessons for their students. Universities that train future teachers must use appropriate approaches to understand a PBL lesson. Noordin et al. (2018) believed five factors were essential for future teachers in PBL to learn during preservice training. The five factors included:

- the frequency of application of the knowledge in the practical process,
- an understanding of the respective knowledge,
- the difficulty of the project,
- provision of a working manual during the project, and
- collaboration between team members.

Brundiers and Wiek (2013) studied how science students benefitted from PBL. They found certain areas in science classrooms that teachers must be trained on for a PBL classroom to run smoothly. Science education needs to be more active in PBL opportunities for students. According to Brundiers and Wiek (2013), there needed to be a closer collaboration between teachers and scientists for an effective PBL science classroom. According to Brundiers and Wiek (2013), practical training in the following areas is vital for a successful PBL classroom:

- Learning objectives for the PBL course must aim at the sustainability of the learning competencies.
- Practical experiences incorporate a solid trans-academic approach for a PBL course.
- Self-directed learning and advanced team working is problem- and solution-oriented.

Preservice Training. It is essential to support teachers in PBL through preservice training. Tsybulsky et al. (2020) researched preservice teachers' experiences who participated in a PBL process during their first year of the program. Two areas were studied: (a) the quality of the experience and (b) the changes in the quality of the experience. Teachers went through various stages when learning about PBL. The steps were frustration, coping with difficulties, experiencing success, and satisfaction, which built confidence. The conclusion of this study found that preservice teachers had trouble implementing PBL. The ability to cope with difficulties regarding PBL led to the experience of success. This study found that preservice teachers found PBL enriching, but there was a need to connect theory to practice with teacher modeling for novice teachers.

Preservice training for teachers with PBL can help alleviate the challenges. According to MacMath et al. (2017), teachers perceived three categories as challenges when implementing PBL. These challenges are teacher beliefs, teacher practice, and context. Teacher beliefs research

showed that effective implementation of PBL required a shift in approach for most teachers. Practical training with PBL is essential for preservice training and contextual concepts. Professional development is necessary for successful PBL learning in the classroom. Teacher planning and lack of knowledge of accurately assessing students in PBL showed the need for more training for teaching when implementing PBL.

As research demonstrated, practical training for teachers is needed to help make PBL successful. It begins with programs with student teaching programs. Perspective teachers in training must be prepared with the pedagogical and subject knowledge required for teaching in the PBL method (Du Toit, 2017). Universities are beginning to see the benefit of practical training in PBL instead of just theoretical training. For example, at Wright State University, teacher preparation courses are taught in PBL. Teacher preparation courses on PBL increased sustainability and educational effectiveness and demonstrated the importance of providing children with opportunities to be healthy, happy, and eco-literate global citizens (Ramey, 2013). At Wright State University, prospective teachers learn to foster skills as informed decision-makers and engage future teachers. Novice teachers should gain a necessary academic grounding in the discipline and participate in meaningful, practice-based training in the classroom.

Research has shown that there seem to be several gaps that need to be addressed regarding training and support for teachers with PBL. Siew et al. (2015) reported teachers expressed their lack of expertise in conducting PBL because of the reluctance to move away from traditional teaching. Educational institutions need to develop more PBL training programs for teachers.

It is crucial to examine teachers' understanding and implementation of PBL. According to Han et al. (2015), the teacher's role in PBL must be different from that in traditional

classrooms. Teachers should also be open to adapting new principles in education. For example, the teacher's role should evolve from being a lecturer of instruction to a participant in the learning activities by being an advisor. The relationship between teachers' understanding and implementation of PBL should be investigated because what teachers implement in their classrooms may differ from what they learn from the professional development provided (Han et al., 2015). The study's findings by Han et al. (2015) implied that more teacher-driven professional development should be designed to decrease the gap between knowing and doing PBL.

Preservice teachers' perceptions of PBL and their ability to apply PBL to lessons were researched by So and Kim (2009). Student teachers designed projects to make connections between content and pedagogy. The study showed that while student teachers understood pedagogical knowledge of PBL, they experienced difficulties applying their expertise to a PBL-based lesson. Student teachers found it challenging to balance teacher guidance and student independence. Yet, student teachers in this study learned the importance of student-centered pedagogy and helped students learn higher-order thinking skills. This study stated that it is essential for teachers to connect their beliefs, knowledge, and actions and have sufficient repertoires for teaching PBL. Novice teachers had superficial expertise and had difficulty seeing the connection between content and pedagogical knowledge. Therefore, this study concluded that preservice training should include continuous exposure to teaching practices emphasizing student-centered learning.

Content of Preservice Training. Preservice training for teachers in PBL helps students succeed. Teachers are experts in their content fields, but additional training is necessary because PBL differs from traditional teaching methods. Areas that should be included in preservice

training for teachers facilitating PBL are ways to collaborate, what questions to ask students, and ways to listen to students and form relationships. Time management, as well as disciplinary procedures, should also be included in preservice training for PBL.

Collaboration among students can be utilized by PBL lessons focusing on one question. Roessingh and Chambers (2011) discussed how teachers could feel more prepared when teaching PBL by encircling their lessons around one question. This question presents the problem to be solved (Roessingh & Chambers, 2011). The question must be clearly articulated as it guides learning and assessment. For example, in a probability math lesson, the question to be solved could be, “How does probability relate to games?” Students working together to work through the question is a skill that teachers must facilitate.

Solving problems with collaboration revolves around student-centered learning. Preservice teacher training must focus on facilitating this type of learning best. During preservice teacher programs and professional development, teachers must have learning opportunities in PBL. Teachers must deeply understand what student-centered, active learning entails (Grossman et al., 2019). In a study by Grossman et al. (2019), experts in PBL were surveyed to describe what these experts do in their classrooms regarding PBL. These experts focused on four primary goals, which included:

- supporting deep disciplinary content learning,
- engaging students in authentic work,
- supporting student collaboration, and
- building an iterative culture where students constantly prototype, reflect, redesign, edit, and try again.

By better articulating the practices teachers need to be successful and investing in high-quality professional development, educators can change the teaching trajectory and our students' futures (Grossman et al., 2019).

Preparing teachers for PBL must be thorough during preservice training. Learning to listen to students and form relationships is crucial in PBL. Preparing teachers to support students in PBL may not be thoroughly covered in all teacher preparation programs (Morrison et al., 2021). According to Morrison et al. (2021), research stated that while students preparing to become middle and high school teachers need strong science or mathematics content backgrounds, they may also need to learn about developing the teachers' role in students' learning. PBL involves a strong relationship between students and teachers. Morrison et al. (2021) discussed that preservice teachers preparing to become high school teachers, especially those in science and mathematics, may not intensely focus on teacher support, caring, or building personal relationships with students. As Morrison et al. (2021) researched PBL with preservice middle school and high school teachers, they discovered the importance for future high school science teachers to learn the value of listening to students and practicing strategies to elicit students' ideas.

Morrison et al. (2021) stated:

A classroom where project-based learning is the focus will necessarily include a teacher who values the student as a person provides opportunities for students to share who they are and builds strong relationships with students. We see this as a critical need for teacher education. (p. 1106)

Teachers reported that regular PBL training in preservice or professional development for teachers helped them feel more prepared to teach with PBL. Roessingh and Chambers (2011)

said that guiding principles helped train preservice teachers in PBL. Teachers, as a result, felt more prepared in the PBL classroom. Roessingh and Chambers (2011) studied an instructional design for prospective teachers. The PBL instructional design included the following characteristics.

- The instructor requires content area expertise and pedagogical competence.
- Instructional design is learner-centered and flexible.
- A central question or a problem focuses on and provides the catalyst for learning.
- Teaching and learning objectives are explicit.
- Learning tasks are authentic and engaging.
- Instruction is mediated and integrated.
- Critical reflection and higher-order thinking skills are promoted.
- There is continuous assessment and monitoring of learning.

With these principles taught to prospective teachers, PBL is better understood, and teachers feel more prepared in the classroom.

Along with the guidelines, teachers who facilitate PBL must also know when and how much scaffolding to provide and when to step back and let the students self-direct their learning. Mansor et al. (2015) stated that the preparation of facilitators is critical in developing a sense of readiness for PBL. Teachers require training with PBL to learn classroom practices to achieve the educational goals of producing knowledgeable graduates.

Wahbeh Ghosheh et al. (2021) found that prospective teachers benefitted from an accurate scientific education to improve their positive emotions and reduce their negative feelings toward science lessons. This would allow for a better connection with students during

PBL. Prospective teachers should be motivated and taught methodologies that produce meaningful learning.

Another element to include in teachers' preservice training for PBL is the awareness of students' cultures and backgrounds. According to Petersen and Nassaji (2016), it is crucial to be aware of students' backgrounds as they approach projects in PBL. Due to diverse cultures and backgrounds, opinions about projects may vary within working groups.

Slattery and Douglas (2014) reported that both novice and experienced teachers stated that building social interactions with students and observing student learning and group development were positive aspects of their role. Social congruence must be included in preservice training for teachers to communicate informally and empathetically with students. This influences students' learning and achievement. Slattery and Douglas (2014) also concluded that PBL facilitators needed opportunities for self-reflection and continuing education, irrespective of their years of experience. Developing strategies that encourage reflection on the facilitator's role would be helpful in preservice training. This study found that novice and experienced facilitators believed in continued support and development, including knowledge-based training, peer support, cofacilitation, and mentoring.

Chapter Summary

PBL helps students find their sense of wonder. Self-directed learning in PBL helps students find their problem-solving ability instead of relying on rote memorization as in traditional learning methods. Students must play an active role in PBL alongside teachers. PBL is a student-centered process. It is the responsibility of the individual student to participate fully, not only for their learning but also to aid the learning of others in the student learning group. In

PBL, students devise a plan for gathering more information, then do the necessary research and reconvene to share and summarize their new knowledge in the student group.

Teachers who teach using PBL need support and training for students to succeed. Teachers found PBL beneficial, but there were some challenges. These challenges need to be addressed in preservice training and professional development. According to the literature, practical training in PBL needs to be prioritized in teacher training.

The methodology for the research to gain further information on the participating teachers' perceptions of PBL will be discussed in Chapter 3. Semistructured interviews were conducted to explore whether similar challenges and benefits reported in the literature existed and if teachers' perceptions about their readiness to use PBL indicated the need for further training. Chapter 3 will describe the population sample used in this qualitative study. It will also identify the instruments used to gather data and the procedures for data collection and analysis. Lastly, the study's ethical considerations, assumptions, limitations, and delimitations will be discussed.

Chapter 3: Research Method

With over 20 years in education, I have observed that students who play a passive role in their education often tend to be less motivated in the classroom. PBL personalizes learning for students by utilizing student collaboration to solve problems. Therefore, students are more active in their learning. The problem is teachers may have been trained in theory in PBL yet feel as though they are not prepared in practice to facilitate this type of instruction. During the student-teaching semester that most teachers must take before graduation, most student teachers experience the traditional way of teaching.

This qualitative descriptive study was designed to research the differing perceptions of teachers in a large Texas public school district that has implemented PBL. Qualitative analysis is beneficial as it allows questions to be put into a numerical data format. Feelings, values, and motivations are better gained through qualitative research (Berkwits & Inui, 1998).

This study data were gathered by interviewing teachers within a large urban school district in southern Texas. A focus group of teachers who currently facilitate PBL was formed from within the same district. The following research questions guided the research:

RQ1: What benefits have teachers perceived from using PBL in their classrooms?

RQ2: What are the perceived challenges for teachers regarding PBL?

RQ3: What are the perceived challenges for students as reported by teachers regarding PBL?

RQ4: Do teachers perceive that they are (were) trained to provide instruction using PBL?

RQ5: Do teachers perceive that they receive(d) adequate support and resources to ensure PBL quality?

RQ6: Do teachers perceive PBL as an effective method of teaching?

Chapter 3 explains the research design and method regarding teachers' perceptions of PBL, the sample population of teachers interviewed, the materials and instruments used to retrieve data, data collection and analysis procedures, ethical considerations and assumptions, limitations, and the delimitations in the study.

Research Design and Method

This qualitative descriptive study examined teachers' perceptions of PBL in public schools. The study site was a large southern Texas school district. I contacted the district administration and was told to apply for a research study at the beginning of the 2021 school year. Student data was not solicited. Principals were contacted asking for permission to send a survey to their staff to recruit potential participants to interview.

Before the actual study, experts reviewed the interview and focus group questions. One of the experts was interviewed, and his responses were recorded. A transcript was created and was run through Dedoose to develop codes for the study.

Proper protocols were followed to obtain data from teachers (see Appendices A and G). The school district was contacted regarding the appropriate steps for outside research. Initial surveys (see Appendix B) to teachers were distributed via email using Survey Monkey. Follow-up interviews (see Appendix C) and a focus group were formed (see Appendix D) with a small pool of teachers with PBL experience.

Population

The school district used in this study was a large urban district in southern Texas, serving over 60,000 students. Of the district's 70 campuses, 14 of them implement PBL. I explored teachers' perceptions of PBL at these campuses, ranging from sixth through 12th grade. Novice teachers, as well as experienced teachers, participated in the research. Data were retrieved from

three groups: first-year teachers, teachers with 2–10 years of experience, and teachers with 10+ years of experience. Teachers at the PBL campuses within the school district were interviewed. Data were collected from the teachers answering the interview questions about their perceptions of PBL.

Study Sample

Twelve teachers from six campuses in the district were interviewed because these campuses have implemented PBL. A focus group of six teachers from the same district was also formed. These schools are the more economically disadvantaged, with predominantly minority students. The schools were coded as School A, B, C, D, E, and F. The percentage of economically disadvantaged students and the percentage of minority students are listed (see Table 1). Students are financially disadvantaged if they qualify for free or reduced lunch. According to the Texas Education Agency (TEA), the school's 2018–2019 student performance grade is also listed. Statistics for 2019–2020 are not listed due to the COVID-19 pandemic. Given the impact of COVID-19, schools received a label of Not Rated: Declared State of Disaster for their accountability ratings during the 2019–2020 school year. TEA received approval from the U.S. Department of Education to waive statewide assessment and accountability requirements under the Elementary and Secondary Education Act, as amended by the Every Student Succeeds Act, for the 2019–2020 school year. Additionally, for the 2020 state academic accountability, all districts and campuses will receive a label of Not Rated: Declared State of Disaster.

The schools listed received either a “B” or a “C” in student performance. A status of “B” recognizes performance when the school serves students well, encouraging high academic achievement and appropriate academic growth for most students (see Table 1). In contrast, a

grade of “C” is considered an acceptable achievement when at least 41% of students meet the grade level. At least 39% of graduates are college-ready, obtained a specialized career credential, or enlisted in the military on the State of Texas of Assessment of Academic Readiness (STAAR).

Table 1

Demographics of PBL Schools Within the District

School	Economically disadvantaged students	Minority students	Student performance rating
School A Middle school	68.0%	77.1%	C
School B Middle school	77.7%	79.3%	C
School C Middle school	76.1%	85.8%	C
School D High school	45.7%	70.0%	B
School E High school	66.4%	79.0%	C
School F High school	63.9%	82.6%	C

I interviewed 12 teachers from PBL campuses within the district. The participants were categorized into three groups: first-year teachers, 2–10 years of experience, and 10+ years of experience. A focus group of teachers with a range of expertise was also formed.

Setting

Interviews, as well as the focus group, were held through Zoom. It is crucial for the participants to feel comfortable answering the interview questions. Participants should also feel

comfortable during the focus group questioning. Participants were assured that their answers would be kept confidential.

Materials and Instruments

With the principal's permission, an email with a screening survey was sent to the staff to see who might be interested in this PBL research study. Once a sample of participants was found, a group of teachers was formed for a focus group, and another group of teachers participated in semistructured interview questions. Both groups were asked questions that helped to answer the research questions.

The focus group and the interviews were conducted through Zoom. The responses were recorded with the teachers' permission through Zoom. The teachers' perceptions of the benefits and the challenges of PBL were collected as their perceptions of their readiness to facilitate instruction using PBL.

Data Collection and Analysis Procedures

Data collection from the interviews and focus groups lead to data analysis. I obtained data, analyzed it, and made meaning (Denzin & Lincoln, 2011). I found patterns in the participants' answers in this qualitative descriptive study. Qualitative research is best for this study to conclude by interviewing the individuals on a matter that means something to them. Interviewees can base their answers on their career-experienced perceptions of PBL.

Participants were encouraged to speak freely. One hour and 30 minutes were set for each semistructured interview, with much of the conversation from the participant. Semistructured interviews are in-depth interviews where the respondents must answer preset open-ended questions within an estimated hour (Jamshed, 2014). Twenty interview questions were used to fit into the allotted timeframe. A panel of experts in PBL (see Appendix E) examined the interview

questions before they were utilized (see Appendix F). The questions were open-ended to draw more information than simple closed-ended questions would. The interview questions were field-tested with two participants who were not part of the study. Their responses were recorded, a transcript was created, and the transcript was run through the program, Dedoose, to see what themes emerged during the research. I listened “to allow the participant to tell ... what it is like to live in their world” (Smith et al., 2009, p. 61). Intently listening is essential to gain the best seriation from the participants.

A focus group was also formed of six teachers of differing experience levels from within the district being studied. Participants were encouraged to speak freely about PBL. The focus group met for an hour through Zoom. Eight questions were asked about PBL (see Appendix D). Participants were encouraged to speak freely to one another as they answered the questions. Participants can ask questions, exchange anecdotes, and comment on each other’s experiences and points of view (Kitzinger, 1995).

The following steps were taken to obtain data for this study:

- The framework for the analysis was consistent.
- With the permission of the principal of each school in the study, an initial survey to screen participants interested was conducted via email. The survey asked about the number of years a teacher has been using PBL, their knowledge of PBL, and their interest in participating in the study.
- Once surveys were returned, a purposeful sample of teachers ranging from novice to experienced was used.
- Once the initial survey results were analyzed, I contacted individuals from each experience level interested in participating in this PBL research study.

- Interviews with the participants took place.
- A focus group was formed and conducted.
- Transcripts were transcribed by me and reviewed by an expert panel (see Appendix E).
- Patterns were found and categorized into information about the research questions.
- Follow-up meetings with participants may be needed to help with clarity to lead to the final report (member checking).

Otter.ai is a web-based application that allows users to upload recordings and transcribe them. This program was used to transcribe the data. Another application that was used was Dedoose. The data retrieved from the interviews were analyzed and coded with Dedoose to reflect the answers to the research questions. Dedoose organizes data in qualitative methods. After this process, themes emerged that answered the research questions. According to past research, as found in Chapter 2, data was analyzed to determine teachers' perceptions of PBL.

There are four researcher responsibilities to assure the reader that the study is accurate. They are credibility, transferability, dependability, and confirmability. Credibility refers to the extent to which a research account is believable. The transferability of a research finding can be applied in other studies. Dependability refers to the reliability of the research findings, and lastly, the research must be supported by data confirmatory.

Credibility

According to Creswell (2009), the researcher conveys the steps taken during the study to check for credibility. Interviews followed an outlined protocol. Member checking was used "to determine the accuracy of the qualitative findings through taking the final report or specific descriptions of themes back to the participants and determining whether these participants feel

they are accurate” (Creswell, 2009, p. 191). Participants were asked to read the interview notes and review their interviews. Therefore, there is credibility as the participants add, correct, or delete data from the interview notes.

Transferability

This research can be transferred to other large school districts with PBL schools. Other PBL schools can benefit from this study. Interview and focus group questions can be assigned to teachers in other districts. This study can be applied to similar sample populations and contexts.

Dependability

Proper procedures were followed throughout this study; therefore, the dependability rating of this research is high. People were selected, and the report can be audited to verify the credibility and transferability standards. I was methodical and patient during interviews, analyzing data, and reporting results.

Confirmability

Systematic steps achieved confirmability throughout the research. The trace of actions from beginning to end was evident. Peers, colleagues, and a committee oversee the investigation to confirm this research.

Ethical Considerations

Keeping the participants’ identities confidential was ideal for gaining accurate responses. By maintaining confidentiality, trust was formed between the participants and myself. Therefore, more precise and in-depth answers were given to the questions asked. Teachers may skew answers if they feel their supervisor will know their identity. Participants were given pseudonyms, so names were not used, and interviews were conducted individually. All responses were stored on my personal computer. Participants choose to respond or not and could withdraw

from the study at anytime. The minimal risk would be peers interested in what was said during the interview.

Assumptions

It was assumed that interviews through Zoom were best for this study. Interviews provide more in-depth conversations, more so than a survey can produce. It was believed that the participants would answer truthfully based on their own experiences. It was also assumed that a focus group would allow participants to honestly answer how they feel about PBL. It was also believed that qualitative research was best for this research. A qualitative study allows for discussions with the participants about their experiences with PBL.

Limitations

The study's limitations were that I must keep personal feelings about PBL out of the study. Keeping bias out of the research was a priority. Due to the many tasks of principals and teachers, this research study may be pushed back on their staff agendas. Principals may not allow the research to protect their teachers' time.

Other limitations included a small population sample. There are limited schools that support PBL in the district studied. Participants' ability or willingness to share or describe their experiences may also be a limitation. Lastly, researching during a pandemic has its limits. Due to the COVID-19 pandemic, campus visits may not be as welcoming for me; therefore, data could be more difficult to collect from the participants.

Delimitations

Teachers from one public school district were interviewed and involved in the focus group. Although it would be prudent to interview teachers from other districts, time constraints only allow for one district's data. Also, educators were not interviewed from charter schools and

private schools. PBL is found in all grade levels, yet this study focused on grades 6–12. Lastly, another delimitation was that one economic group of students was studied in this research. The schools which will be reviewed within the district that offer PBL fall into the free or reduced lunch majority category.

Chapter Summary

PBL is a constructivist theory in education purported to keep up with today's learners better than traditional education. Prior research has shown that teachers feel prepared in theory but lack practice in PBL. This chapter discussed each step through the research process. The research design and methods and the sample population of participants were outlined. This qualitative study also examined my limitations and ethical responsibilities.

Chapter 4 reports the study's results. It maps out the trustworthiness of the data and discusses the study's results.

Chapter 4: Results

This study explored the problem that there is not enough knowledge about teachers' perceptions of their knowledge and skill in utilizing PBL in their classrooms. This study was designed to gain greater insight into preparing teachers to facilitate PBL. Through interviews and a focus group of new and experienced teachers, data were collected depicting teachers' perceptions of PBL.

This chapter summarizes the data collection process and the analysis of data acquired from interviews with 12 teachers and the data received from a focus group of six educators. The themes that emerged from the data on PBL are discussed in detail. Comments from the teachers that reflect each theme are presented in tables.

Data Collection Process

The data-gathering process consisted of conducting semistructured one-on-one interviews. Novice teachers, as well as experienced teachers, participated in the research. Due to the lack of available teachers, retired PBL teachers were interviewed along with administrators. A focus group of six educators was conducted as well. Data were retrieved from three groups: first-year teachers, teachers with 2–10 years of experience, and teachers with 10+ years of experience. All participants were from the same school district or had worked in PBL magnet schools. The interview and focus group questions were designed to gain teachers' perceptions of PBL. An expert panel reviewed and revised the interview questions as needed. After the interviews and focus groups were conducted, they were transcribed and coded. Themes were then identified by utilizing the following research questions to guide the process:

RQ1: What benefits have teachers perceived from using PBL in their classrooms?

RQ2: What are the perceived challenges for teachers regarding PBL?

RQ3: What are the perceived challenges for students as reported by teachers regarding PBL?

RQ4: Do teachers perceive that they are (were) trained to provide instruction using PBL?

RQ5: Do teachers perceive that they receive(d) adequate support and resources to ensure PBL quality?

RQ6: Do teachers perceive PBL as an effective method of teaching?

Answers to these research questions are explained in the participants' summaries and the themes that emerged from the data analysis.

Participant Summaries

Synopses of the participants' interviews and the focus group data provide perceptions of PBL from their point of view. Participant identifications were assigned to protect the participants' identities. Table 2 and Table 3 give an overview of the participants, indicating the amount of experience they have teaching, their years of experience teaching PBL, and the grade and subject taught.

Table 2*Interview Participant Profiles*

Participant ID	Teaching experience	PBL experience	Grade	Subject
1	10+	10+	9	Digital Media
2	10+	2–10	12	English
3	2–10	1	9–12	English
4	2–10	1	11–12	Economics
5	10+	2–10	11–12	Health & PE
6	10+	2–10	9–12	French
7	2–10	1	5	Math
8	10+	2–10	9–12	English
9	NA	NA	9–12	Admin
10	10+	10+	9–12	Cybersecurity
11	10+	2–10	9–12	Admin
12	2–10	2–10	9	English

Note. For Participant 9, the survey questions for teaching experience and PBL experience were not completed and NA shows for “not answered.”

Table 3*Focus Group Participant Profiles*

Participant ID	Teaching experience	PBL experience	Grade	Subject
13	10+	2–10	6-8	Technology
14	10+	10+	6-8	Administrator
15	10+	10+	11–12	US History
16	10+	10+	8	Science
17	10+	10+	6–8	Math
18	10+	10+	6–12	Retired

Discussion of Findings

In their interviews and during the focus group, all the study participants identified their perceptions of PBL. They discussed the benefits and challenges for both students and teachers. They also discussed the training and support they received and the support they received from their school, district, and community. The differences between PBL and traditional teaching methods were also discussed. I tried to ensure that as I interviewed each participant, I represented the perceptions of PBL by each educator. During data analysis, which included coding through Dedoose, I identified key themes from each interview participant and the focus group. The themes aligned with the six research questions that guided this study. The following themes were explored during the interviews and focus group:

- benefits of PBL,
- challenges of PBL, and
- importance of support.

Individual Interviews

Participant 1. Participant 1 finished her 34th year of teaching. For the last 24 years, she has taught digital media at a PBL school. She most recently taught ninth grade. The benefits of PBL to her as a teacher include how she feels she has more of a purpose in the classroom through utilizing PBL. She loves to see what her students create.

Participant 1 has noticed that the benefits to students include how they are much more motivated to work and how they want to come to class to work on their projects. Participant 1 stated, “Students are showing up on time and completing their work.” Time management is another student benefit of PBL, according to Participant 1. She commented, “Teaching students real-world situations and how to manage them teaches students time management and how to problem solve.”

Participant 1 did not comment on many challenges with students using PBL other than she found that they needed breaks between projects. But she did comment on challenges for teachers. “Teaching students how to work collaboratively is challenging, especially with my students from charter schools or homeschooling backgrounds.” She also found it challenging to find time to collaborate with other teachers. Participant 1 said, “To find time to plan has been challenging due to COVID and the high teacher turnover rate.”

Participant 1 felt as though she had practical PBL training. Participant 1 received training through the institute training her school brought in. She attended with some of the staff members at her school. She also read many books on PBL on her own.

Support from the school, district, and community varies for Participant 1. Participant 1 found it helpful that at her school, the faculty would meet every Wednesday morning for an hour and talk together about their PBL projects. Participant 1 felt she had good school support in

facilitating PBL in her classroom, yet the district support was lacking. She commented that the district only cares that state scores are high. The community support was lacking because she felt the community did not understand what PBL was. Overall, Participant 1 felt that PBL is an effective teaching method for today's students because it teaches them real-life skills and how to manage their time.

Participant 2. Participant 2 has taught juniors and seniors at a PBL school for the past 5 years. Participant 2 is familiar with PBL. She has changed all her classes to revolve around PBL. She loves how her students are so engaged. Participant 2 felt she learns a lot from her students and could be creative by creating cross-curriculum projects.

I discussed with Participant 2 the benefits of PBL. She said that her students could find an avenue where it is meaningful to them. She said the benefits of PBL include how the students do an excellent job of seeking out their resources and asking for help when needed. She stated:

They use examples of other student work as templates of what direction to go with. I liked that they were able to make it personal. PBL keeps students motivated to learn and teaches perseverance when they get tired of the projects.

Participant 2 commented on challenges with PBL. "Students can feel overwhelmed if they choose a big project. It is my job as the facilitator to narrow the project down. Sometimes students find it difficult to find a topic to write about." She said, "It's also hard to get my anxious students to come out of their shells and embrace working with others and collaborating with experts." Other challenges include how much grading she must do as an instructor with PBL. She stated, "It can get overwhelming or complicated to the point where it is frustrating. I routinely do like 10- or 12-hour days."

When asked about training, Participant 2 stated she was frustrated because the training

she attended were identical. The best training for her was when she could walk out of the training with a project's skeleton. Participant 2 has taken the initiative to put together a Google classroom for the other teachers on campus that would help them through the steps and the process of making a PBL. Participant 2 felt training should be multipart so it is not overwhelming. She felt like she has support from her administration with PBL. She said, "I've been given a blank check regarding what I can do with my curriculum."

Participant 3. Participant 3 is a newer teacher in her fourth year of teaching English. This is her first year of teaching PBL. She enjoys teaching PBL because, in previous years, she felt the focus in education was on state testing.

Participant 3 talked about the success of PBL. She has seen a lot more students buy-in, especially those students who did not have success with traditional teaching. She has noticed that her students are asking many more questions and are more reflective of their learning. When her students were presented with problems, they learned how to problem-solve independently and think freely. Participant 3 has seen academic growth in her students. Participant 3 felt PBL is more student-focused and student-centered instead of teacher-centered. So, it gives her free time and more flexibility. She can focus on student needs and how to help them with their small groups. When asked about challenges with PBL, Participant 3 commented that it was difficult for some students to struggle with that amount of creative freedom because it is not what they are used to.

Participant 3 did not feel like she had much training with PBL. She commented that she was figuring it out as she went along. She wishes her campus had professional development in PBL. She also hopes she can become certified through workshops in her district. But what she thinks would be most helpful with PBL training is simply having the opportunity to look at

somebody else's lesson plans or observe them in the classroom, watching their students work. She wants to see how her colleagues implement PBL from beginning to end.

When asked if PBL was an effective teaching method for today's students, Participant 3 commented that it does work because educators want the students to grow into creative, global thinkers. She said,

We want to have people to be able to problem solve, and by prescribing assignments, by prescribing tasks to them, they're only ever going to learn how to follow directions and what's given to them instead of coming into it on their own coming up with solutions on their own because when they go into the workforce, there might be an issue.

Participant 4. Participant 4 has only been teaching for two years. She currently teaches 11th- and 12th-grade students in economics. Due to the COVID pandemic, her student teaching was cut short, so she feels she was thrown into a classroom with little training. Participant 4 did not know about PBL until she began utilizing it. She learned PBL from a colleague at her campus.

Participant 4 saw the benefits of PBL in her students. She was excited to see students connected and more engaged in the curriculum. Participant 4 felt the students could dive deeper into subjects and learn more. Participant 4 has seen student work go from average to excellent outcomes with PBL. She replied, "Once they got excited about it, they wanted to keep going and were sad when it was over."

Participant 4 commented on challenges with PBL. Participant 4 admitted that she wanted to give up a few times because she could not figure out how to use PBL while teaching economics. She could see how it worked in other subjects, but as an economics teacher, she struggled to find the connection. She also slipped into traditional teaching methods because her

students did not have prior knowledge to conduct a PBL. She found herself falling into lectures to give her students knowledge about economics.

When asked about PBL training, Participant 4 commented that she had no PBL training during her undergraduate degree. She learned about PBL when she began working at her campus. She received training at the beginning of the school year. Yet, the training was a “one size fits all,” so it was hard to integrate it into her curriculum. Participant 4 felt she had good support from her school as she designed her PBLs. She commented:

We have a little PBL committee at our school. Five teachers are on it, and we all just come together and ask how everyone’s PBLs are going. We get help with our PBL by using that time to collaborate, elaborate, and refine them.

When asked if Participant 4 thought PBL was an effective educational method for teaching today’s students, she responded that she felt PBL teaches students to be self-sufficient. She stated:

It is not just the teacher lecturing for 45 minutes or 50 minutes. They are thinking on their own. The teacher is facilitating them, and that is what the real world will be like, with the job. You are not going to get all the answers from your boss. You are going to have to think a little bit on your own.

Participant 5. Participant 5 is an educator who feels he is not particularly good at PBL. He teaches 11th- and 12th-grade students in health and PE (physical education). He sees the benefits of it but struggles to incorporate PBL into his classes. He finds it difficult because he states that his students need prior knowledge before doing projects.

Participant 5 commented on the benefits of PBL. He noted that crossing the curriculum in PBL is beneficial to students. His students are considered at-risk, so completing all subjects in

one project helps them see their graduation goal. Participant 5 also sees his students think deeper and apply real-life situations to their learning.

There are some challenges with PBL, according to Participant 5. His words were, “PBL is a lot for me. It is a lot of work before introducing the content to the students. It is also difficult to assess students because they are all at different spots in the projects.” Another challenge that Participant 5 stated was how it was difficult to motivate his students at the beginning of projects. He also finds PBL difficult because students should have some prior knowledge. For example, “If the students are doing a bridge-building project, the prior knowledge of math must come before the actual project. It cannot just be how to build a bridge, but they must understand why.”

I asked Participant 5 about the PBL training he had received. He said he did receive training from his school before the year began, but he believes he truly learned how to facilitate PBL through experience. He has learned PBL best by observing colleagues who do PBL. His campus team communicates about their PBLs. There is no formal assessment of his PBLs, but he discusses with his team what is working and what is not. He feels support from both the school and the district.

Although Participant 5 felt PBL was complex for him, he sees how it benefits today’s learners. He thinks the real-life correlation is critical for his students. He likes the concept but struggles with its implementation. He felt that he would feel more comfortable with more training and time.

Participant 6. Participant 6 has been a teacher for 18 years. She has taught at several different school districts, teaching social studies and French. She has been teaching at a PBL school for 4 years. She feels like she has a lot of freedom and flexibility with PBL and enjoys teaching it. She loves the opportunity to create a PBL curriculum and feels much support from

her school administration. They give her plenty of time to plan for her students. Participant 6 felt she had a good understanding of PBL yet sometimes struggled with the length of the projects.

Participant 6 found the benefits of PBL in its excitement when she sees the applicability of what her students are doing. They can use the skills they have learned in real life. Participant 6 finds that PBL helps her at-risk students. She stated:

Traditional teaching has not worked for these students, so it is exciting when her students see the value in PBL. The students find ownership of their learning when doing PBL.

Students can talk to one another and brainstorm ideas, even if they are not working on the same project.

She finds that peer conversations help her students realize why they are working on specific projects. She finds the conversations involve the students instead of just sitting in front of a screen, as in traditional learning. Participant 6 stated how PBL allows students to apply the knowledge they have learned. She said:

I firmly believe that a test does not make a student. I prefer projects over tests because you know what they can do. Anyone can go through a multiple-choice or short-answer test and get all the answers right. But that does not mean they understand or can apply that knowledge. Project-based learning allows students to develop skills they have been working on and shows what they are passionate about.

Participant 6 has found that PBL is challenging for students in two areas: finding the right audience for the final projects and working collaboratively within the student groups. She stated, “Students have different dynamics, so sometimes finding a group with good dynamics can be difficult.”

PBL training at Participant 6's campus happened at the beginning of the school year. She found it helpful that they could work together, but it was so much information at once that it was overwhelming. She commented that finding time to collaborate with peers and integrate all subjects would be helpful, along with refresher courses throughout the year. Participant 6 felt as though she receives excellent support from her school administration. She has much time to plan and gets the resources she needs.

Participant 6 does feel like PBL is an effective method for teaching today's students.

Participant 6 stated:

Students today need help to formulate that critical thinking. Project-based learning does that, and it allows them to take the information they know and apply it to solve something they know. The students do not just regurgitate the information but use their knowledge to create something worth sharing.

Participant 7. Participant 7 has been a teacher for 12 years. This is her second career. This is her first year teaching PBL to sixth graders. She feels her familiarity with PBL was established through experience this past year.

Participant 7 felt as though PBL brought out the creativity in teachers. She said, "PBL gives teachers the environment to think outside the box and bring all elements into one project." Regarding the benefits for students with PBL, Participant 7 commented that students are given a new routine while learning. She felt it was a diversion from traditional learning, and students are given fundamental life skills they can take with them. Lastly, she likes that students can highlight their projects with their families.

Participant 7 found her most significant challenge with PBL to be the lack of support from her administration. She felt they were not supportive of her projects with her students.

Another challenge Participant 7 commented on was that she felt that with phones and social media, students feel the need to be constantly entertained. She found it difficult to fill the time for her students. Regarding challenges for her students with PBL, she felt group dynamics was the biggest challenge. The benefits outweigh the challenges, according to Participant 7, because it gives the students something they will remember and apply to real life.

When asked about the PBL training she received, Participant 7 felt as though she did not receive any training. She said she was given a book that she was to reference. Participant 7 did some technical training on her own. She wishes her administration would allow the teachers to share their thoughts on PBL so they could learn from others. Participant 7 also felt that many teachers needed to know the difference between a regular project and a PBL.

The lack of support from her administration was a big challenge for Participant 7. Participant 7 was very hurt when her administration team did not come to an end-of-year showcase her students presented with their PBL projects. She commented that she felt intimidated asking her administration team to go on field trips with her students for their PBLs. She felt her work with PBL was not even on her administration's "radar."

Participant 8. Participant 8 has been an educator for over 22 years. She began teaching PBL 3 years ago. Participant 8 teaches English at a PBL school for at-risk students. She has found that this type of teaching has helped her students to graduate and find their love for learning as it is not so competitive as traditional learning. Her familiarity with PBL began with PBL training at her school, where she received so much information that she was overwhelmed.

Participant 8 has found that the benefits of PBL for teachers included how she can have much more meaningful conversations with her students. She felt the PBL atmosphere was more relaxed, and her students were more satisfied with what they were doing with their projects.

Students were more confident in their work, according to Participant 8. Compared to her years as a traditional classroom teacher, she finds that her students in the PBL environment do not have as much resistance to work.

There were some struggles with PBL for Participant 8. Trying to bring in the community connection was a struggle for her. Participant 8 also found that students found it challenging if they got the answer wrong, they would continue working on the project until they got it right. Yet, Participant 8 felt the benefits outweighed the challenges because students were allowed to think freely.

When asked about training with PBL, Participant 8 said she received her best training through a mentor on her campus who is proficient in PBL. They can meet weekly for an hour and talk through her projects. Examples from her colleagues of their PBLs have been beneficial as she creates her PBLs. Receiving feedback from colleagues has helped grow her confidence with PBL. Participant 8 felt support from her administration. But she wishes she had better resources. According to Participant 8, a database of suggestions of who to bring in on the community element would be helpful. She commented, “It would also be helpful to bring in someone from the major PBL workshops every once in a while to check in on the team to ensure we are on the right track.”

Participant 8 felt that PBL was an effective teaching method for today’s students. She said, “Students are used to instant gratification and have technology at their hands. And so, because PBL gives them a choice. They are more apt to be interested longer in what we are trying to get them to learn.”

Participant 9. Participant 9 has 28 years of experience in education. He was a teacher for 15 years but has spent the last 13 years as an administrator at a PBL school. Participant 9 felt the

benefits for him were seeing the benefits of PBL for the students. He said, “You see them passionate about the subject, working in groups, analyzing feedback, and having discussions. You see a higher level of thinking.” Participant 9 also commented, “A benefit is that one PBL project can be associated with three of four different TEKS (Texas Essential Knowledge and Skills). Students become confident with PBL. Public speaking skills increase, students feel pride, and they pay attention to detail.” Another benefit of PBL for Participant 9 was the decreased amount of discipline problems in students. He commented, “The lack of phone usage has helped students become more focused on the task.”

According to Participant 9, one challenge for teachers was the fear of failure. He commented, “A lot of effort goes into creating PBLs, and if they don’t go as planned, it can feel defeating.” Facilitating PBL is also physically demanding, according to Participant 9. He said, “You are on your feet a lot, monitoring the students’ work.” The benefits outweigh the challenges, though, and he commented, “With the students having so much instant access to information, PBL is the way for educators to get to them. This is how students should learn today.”

PBL training at Participant 9’s school is done through an organization the school brings in. As an administrator, Participant 9 strives to give his teachers what they need to be successful in the classroom. His teachers can travel on field trips with their students and attend training. He does not feel much support from the district, though.

PBL is an effective teaching method for today’s students. According to Participant 9, “PBL gives students many options and choices while they learn. Therefore, they stay motivated and have a voice.”

Participant 10. Participant 10 has been an educator for over 21 years. He felt proficient as a facilitator of PBL due to the 10+ years he has been teaching PBL. Participant 10 teaches cybersecurity to grades ninth through 12th. He sees the benefits of PBL to the students he teaches. His students graduate with professional certifications that give them a better opportunity to find decent work. His students have real-world connections with the hands-on experience PBL provides. After a while, the students can take ownership of their projects.

Lack of resources is a challenge for Participant 10. He stated, “More funds could provide more resources, such as field trips, computers, etc.” Grading group work is also a challenge for Participant 10. He said, “It is harder to assess the students’ growth with PBL.” Assessments can be a challenge for students as well, according to Participant 10. Despite the challenges, Participant 10 believes the benefits outweigh the challenges. He thinks the real-world, hands-on experiences help his students overall.

Participant 10 had PBL training at the beginning of the school year but commented that it always seems like a “fire hose” of information. He said, “So much is thrown at the teachers at one time, and then there is nothing else throughout the year. Checkpoints throughout the year from administrators and other teachers would be helpful.” Participant 10 also commented that a clearinghouse of PBLs would be helpful—a resource of PBLs that colleagues have tried with their students so other teachers can learn from what has been done in the past. Participant 10 does feel as though his administration and the school district support him. He said, “The district is beginning to realize that PBL is best practice, so they are supporting our program.”

Regarding PBL as an effective method in teaching today's students, Participant 10 commented:

PBL is an effective method for today's students because it builds interpersonal communication skills, especially in group settings. Putting students into an environment where they must work together, they realize that cooperation in a live environment requires a whole different skill set than what cooperation looks like in an online environment. You cannot say and do things you might be able to get away with online, in a face-to-face situation, because things get out of control. These kids need to be able to work together in a face-to-face environment, and there is a lot of retraining which needs to happen there.

Participant 11. Participant 11 has been in education since 1994. He began as a special education teacher and is now an administrator at a PBL school that serves students in grades 9–12. He feels he has much knowledge about PBL. He has seen the positive effect it has on students.

The benefits of PBL for students, according to Participant 11, are that it is cross-curricular, and the students can pursue topics that can interest them. Participant 11 commented, "PBL is a real-world application, and the teachers can get more out of their students. PBL students can stay focused on the topics and become better writers."

The challenge of PBL, according to Participant 11, is that learning to teach PBL takes time and practice. Another challenge is the concept that the final grade is not so important. The benefits of PBL do outweigh the challenges. Participant 11 does his best to train his staff on PBL as he believes it is an effective method to teach today's students.

Participant 12. Participant 12 is an educator who learned about PBL while getting her master's degree. She currently teaches ninth-grade English at a PBL school. She feels she did not know how to utilize PBL properly until she was in the classroom and was forced to teach in the PBL method. Her experience is what gave her knowledge of PBL. The benefits of PBL to her as an educator have helped her plan her lesson plans with a bigger goal in mind. She is forced to be more creative, pushing her students further into learning.

She stated that her students benefit from PBL because:

It is essential to learn through projects because it helps them have a concrete way to access the content. It is not just sitting in a chair and getting the information, but learning the information themselves, and having many diverse ways to learn the information has been super important.

Participant 12 also commented on the benefits of PBL to her students because “a lot of our projects have also been cross-disciplinary, or interdisciplinary. So, I think that that has been helpful for students to have the opportunity to make connections. It helps them like bridge score with life a lot better.”

Another benefit of PBL, according to Participant 12, was that she noticed an increase in curiosity with her students while they were engaged with PBL. Her students have big questions about what comes next, and they try on their own to answer them. She has seen an increase in problem-solving and higher-order thinking skills in her students. According to Participant 12, an increase in persistence, which is an important life skill, is also learned while doing PBL. Her students work together and do not give up even when a project is hard to complete. She commented, “It is difficult to do a big project. And it is difficult to collaborate with other people. And so, continuing, even when difficult, is important. They are learning how to collaborate.”

Lastly, Participant 12 saw the benefits of PBL in how it gives students the ability to highlight their learning. She said:

The traditional pen and paper method of school is taken away, and students shine in many ways with PBL. Students can not only shine in these diverse ways and show their academic growth through the different components of the project but also identify ways in which they can step up in a group and identify ways in which they can make my offer stuff up in a group. So, academic growth happens in two ways. The first way is highlighting their academic work and showing that in creative ways, and then the second is recognizing academic growth in their peers.

According to Participant 12, some challenges for students with PBL include those who struggle with social interactions. She discussed how collaboration could be challenging for them. Also, she mentioned how some students work with the fact that there is sometimes no concrete answer when doing PBL. However, Participant 12 thought the benefits of PBL outweighed the challenges. She replied:

I think that in the real world, there is more alignment with PBL. And students must learn those skills. It is beneficial for them to learn it in an environment where they are currently learning many things. So, the pros outweigh the cons.

Regarding PBL training, Participant 12 said she received PBL training from her master's program. Then, while doing an internship at her current school, her mentor teacher did PBL. She said she received her training through experience and observation only. Her mentor did not have formal training, so they both "learned as they went." She felt it would be better if they both had more formal PBL training.

Regarding support of her PBL teaching, Participant 12 said her dean observes her annually, but it is not specific to PBL. Participant 12 felt more support and training were needed for teachers to be successful with PBL. More resources and formal training were required. Yet, Participant 12 felt that PBL was an effective teaching method for today's students. She commented:

Project-based learning prepares students for life; it helps them build that curiosity, learn how to collaborate with others, and investigate these big questions. And so, if we are instructing students not just [on] the content but the skill of discovering that content on their own, then you are preparing them to be citizens that will do that right in the future. And one of your main jobs as a teacher is not just to give them content but to teach them how to find that content or to teach them how to apply that skill 10 years from now.

Focus Group

The focus group consisted primarily of seasoned teachers and administrators. Some were retired educators. All participants were deeply knowledgeable in PBL and had much experience with it. All participants felt PBL is beneficial to students. Comments were made on how students are motivated to learn and are excited about their projects. One group member stated, "Students work hard to get results, and they work collaboratively." The team also commented on how students become more confident with PBL. One teacher responded, "The students become experts in what they are studying, and their strengths emerge when they work as a group." Another participant commented on how PBL helps to make students independent learners and stated:

It's not like we're giving them something and making them learn it, they have the desire to seek out the answer, whether it's a competition among each other or just the excitement of being a part of a group, but they became independent learners.

Teachers see the benefit of PBL as well. It takes a lot of planning, but teachers are more facilitators and see their students' excitement as they work on their projects. One teacher commented:

Some teachers are a little more apprehensive because you might have in one classroom 15 different projects, and you must have 15 different conversations. But that makes it so powerful: the kids are getting to share with you what they are researching, what they are learning.

Teachers also commented that they learn from their students. One said:

I think as teachers, we also love to learn, and when students are doing, especially the integrator projects, where it's cross-curricular, and some of the things that they'll bring in, and I'm like, I don't even know how you did that, like technology that has now surpassed things that I never learned because it didn't exist. You know, I am getting to learn from them. It makes those kids even more excited to share what they have learned with an adult. It encourages the students to keep going.

I asked the participants in the focus group how they would compare PBL to traditional learning. A popular response was that PBL was more engaging. The students also must learn how to work in a group. They are excited to learn. One participant commented:

They're not going to remember what they did on some Google Doc or a piece of paper. They will remember a product they worked on, that they built, that they created and presented, and they will remember why they did that.

From a teacher's perspective, PBL can be a little scary compared to traditional teaching, as it takes a lot of planning. Still, the benefits outweigh the challenges, according to the focus group.

Each participant named their favorite PBL that they had done. Each participant shared one and spoke about how it was exciting to see their students work hard and how proud they were to share their final products.

Themes

Benefits of PBL

Of the 12 participants I interviewed, common answers arose regarding the theme of perceived benefits of PBL to teachers and students. Data from the focus group also had common themes regarding the benefits of PBL. The analysis of each theme is explained in the text. The tables for each theme contain narrative statements referencing each participant's perceptions.

Teacher Benefits. Teachers witness meaningful conversations with their students. The excitement of their students brings them joy. Teachers also enjoy the freedom of PBL, allowing their students to choose what they are passionate about.

Student Benefits. The overarching theme of PBL mentioned was how beneficial it is because it keeps students motivated. Participant 2 commented, "My students are motivated. That is huge!" Students enjoy the change of routine from traditional learning. Students can take ownership of their knowledge, and they are learning persistence and time management. Another commonly mentioned benefit of PBL is how students learn to collaborate with others. Each participant said that PBL benefits students because they feel a purpose in the classroom. Their projects are hands-on; therefore, their skills will help them with real-life applications. One PBL program gives students opportunities to graduate with professional certifications.

The teachers interviewed saw an increase in student creativity and a decrease in discipline problems. With PBL, students are focused on the task at hand, finding concrete ways to solve problems. Curiosity and problem-solving skills rose with PBL as students learned to incorporate all subjects into one product. The participants also discussed how PBL is much more engaging for the students. One teacher commented, “It’s the type of thing that makes the students want to come back to class every day.”

Independent learning and collaboration were two themes that frequently emerged when the benefits of PBL were discussed. One teacher commented, “The students become responsible for their learning with PBL.” PBL gives students a clear focus and brings in real-world aspects, another teacher commented.

All the participants agreed that PBL is a good teaching style for today’s students. Regardless of the challenges, teachers felt that PBL was reaching students today by keeping them more motivated to learn. PBL gives students choices and allows them to think on their own. Several participants commented on how important it is to learn life skills today, and PBL does this. Participant 10 commented, “PBL is the real world.” PBL teaches critical thinking skills and time management. According to the data retrieved, these skills and communication skills set students up for success in today’s world.

Table 4 shows the significant statements of the participants regarding Theme One: Benefits of PBL to Teachers and Students.

Table 4*Theme One: Benefits of PBL to Teachers and Students*

Benefits of PBL	Ideas shared by participants on perceived benefits
Teachers	<ul style="list-style-type: none"> • More meaningful conversations with students. • Decreases discipline issues. • Provides more time for a teacher to be flexible.
Students	<ul style="list-style-type: none"> • Become independent learners. • Become responsible for their learning. • Prepares students for life. • Helps them to think a little bit deeper. • More focused on what they are doing. • Learn resilience. • Keep improving their work. • Provides real-world application. • Motivates investment in learning. • Invested in learning; put their best foot forward. • Provides a different routine from traditional learning. • Learn to be self-sufficient. • Builds on curiosity. • Learn to collaborate with others. • Learn to investigate big questions. • Learn to manage time. • Connects to future careers. • Allows use of technology to solve problems. • Builds interpersonal communication skills. • Provides different options and choices. • Gives students a voice in learning.

Challenges of PBL

Teacher Challenges. Teachers have found some challenges with PBL. Some common themes arose when asked about these challenges. Time management on their end was complex. Many wished they had more time to plan their PBLs. Others felt their days were longer due to PBL and found it more physically demanding. Participant 2 stated, “I normally do 10–12-hour days.” For some, the lack of resources and support from their administration can be frustrating. PBL takes time and practice for the teachers, and some are afraid to fail.

Connecting to all students is also a challenge for some teachers. Students have various levels of prior knowledge and are working at different stages within their projects, so for teachers to connect with all students can always be tricky. Finding a connection with the community is also difficult for some teachers. Several participants feel the community is ignorant of PBL and does not support it as they should.

When the subject of PBL challenges was discussed during the focus group, teachers commented on how it can be difficult to begin PBL if students do not know how to work together. Much planning takes place for the teacher for a PBL to be successful. One teacher commented, “It just takes a lot of planning.” This can also be a challenge.

Lastly, assessing students with PBL has been a challenge for teachers. Because it is a different process from traditional teaching, the final grade is determined through the project process rather than tests. This newer way of assessment is something that teachers must learn and experience. Although the participants found challenges with PBL, everyone commented that the benefits of PBL outweighed the challenges.

Student Challenges. The participants did not comment much on challenges with PBL for students. They commented on how some students struggled to collaborate with their peers. “Some of my students find it difficult to collaborate with their peers,” commented Participant 4. Social interactions and working together seem to be the biggest challenges for the students.

Another challenge for students is that initially, the projects can be overwhelming. The process can seem daunting, but also students can be intimidated when it is time to present to an audience.

The participants in the focus group did not have much to say about the challenges for students. Two themes were mentioned. One challenge is that some students find it difficult to

work together in groups. Several focus group members commented, “Students just don’t know how to work together.” Another challenge is that if not all teachers buy into PBL, it is not successful for the team. Table 5 demonstrates the perceived challenges of PBL to teachers and students by notating significant statements by the participants.

Table 5

Theme Two: Challenges of PBL to Teachers and Students

Challenges of PBL	Ideas shared by participants of perceived challenges
Teachers	<ul style="list-style-type: none"> • Lots of work upfront before you can present a project to students. • Hard to learn PBL; it takes constant practice. • Teaching collaborative skills to students. • Community connection is difficult. • Finding an audience can be difficult. • Assessments can be complex. • Rethinking grading practices. • More physically draining. • Routinely do 10–12-hour days. • Unsupportive administration. • Ensure ways to help everyone, not just small group. • Making connections to the subject area. • Planning is the hardest part. • Motivating students at the beginning of projects. • Creating clear directions.
Students	<ul style="list-style-type: none"> • Struggle with collaboration and working together in groups. • Lack of motivation at the beginning of the project-based learning. • Understanding that the grade is not necessarily what is important. • Need a break between projects. • Learn that if it is wrong, they must persist until it is correct. • Absences have a detrimental impact on the group. • Creative freedom may be uncomfortable for some students. • Apprehension about generating ideas for writing. • Getting overwhelmed by project scope. • Group dynamics. • Understanding and following directions.

Importance of Support

Participants in both the interviews and the focus group commented on the importance of support for PBL. Resources and training are two themes that emerged while gathering data. The participants had differing views of the support they received while teaching PBL. Some felt they received no support, whereas others thought their administration significantly supported them. Most participants agreed that the district did not have much support for PBL, but because state test scores were good, they could continue to do PBLs.

Resources. Some teachers can meet weekly with their team to discuss their PBLs, which they commented were helpful. Many teachers wished they had more opportunities to utilize samples of past PBLs by their colleagues. Several participants mentioned that they felt supported when their administration gave them time to plan and collaborate with their peers. Participant 1 stated that the time for planning would be huge for her.

The administrators in the focus group commented that they recognized the importance of planning time for their teachers. They did their best to give their teachers time to plan so their PBL would be successful. One participant commented, “I tried my best not to pull my teachers out of their planning times for teacher conferences or ARDS (admission, review, dismissal).” Another administrator discussed how she used to give her teacher stipends to come up to the school on Saturdays to plan. The teachers in the focus group felt overall support for their projects.

Training. Several participants commented that they received PBL training at the beginning of the school year. It was a lot of information at once, so many commented that “check-ins” would be helpful throughout the year. Some participants commented that they did not receive training and learned PBL independently through experience and observation. Some

read books on PBL, and others had a mentor teacher they learned from. Overall, most participants felt they did not receive enough PBL training. Participant 14 commented, “I was figuring it out as I went along.” Table 6 shows the importance of support for teachers while utilizing PBL.

Table 6

Theme Three: Importance of Support

Types of support	Ideas shared by participants regarding level of support provided
Resources	<ul style="list-style-type: none"> • Visit other classes, observe for extended periods, and see what they have created. • Meet every Wednesday morning for an hour. • Need time to have people review project and give me feedback. • Need a clearinghouse for lesson plans. • Administration provided us with so many resources. • Dean observes and gives us feedback, but I do not know that there is anything specific to PBL. • Administrators are on top of it. • Time for planning is essential. • Planning alleviates the fear of not getting through content in a subject. • District always looks for ways to enhance the PBL experience. • PBL was not on their (administration) radar at all. • Many in the community do not know or understand what PBL is.
Training	<ul style="list-style-type: none"> • Leaders need formal training too. • Week of training provided foundational knowledge. • Felt like we were figuring it out as we went along. • It would have to be a multi-part thing where maybe if it is all in one chunk, you could do it in a week. But that can also be overwhelming for people. • Had no training or extraordinarily little. • Did not have any practical training. • Have someone from PBL Works talk to us, look over our stuff, and give us refreshers. • Opportunity of looking at somebody else’s lesson plan, observing them in the classroom, and watching their students’ work. • Seeing PBL in practice, how it works, and how it is implemented from beginning to end helps conceptualize it for teachers instead of just being written about it in a book and figuring out how to implement it on your own. • Having that scaffold where you have someone who can help you. • Having a district PBL specialist would be helpful. • My principal has been our leading supporter. Every year, he offers endless opportunities to go to training and gives us Wednesday afternoons as our time to work on the PBL curriculum.

Similarities in Results Between the Interviews and the Focus Group

While gathering data from the teacher interviews and the focus group, I found similarities and differences. Overall, all participants felt that PBL was effective for today's students. They agreed that PBL helped students stay motivated and prepared them for real life. None of the focus group members commented on any challenges for students or teachers. However, the teachers in the interviews commented on the challenge with PBL because students do not know how to work together in groups. The teachers see this aspect as essential because collaboration is a life skill they will need in the workforce.

All participants commented on the importance of support from the administration by incorporating planning time. Teachers need time to plan PBL before students begin their projects. Teachers appreciate administrators who give them that planning time. The administrators commented on how they presented their teachers with time to plan, whether through stipends to come up on Saturdays or by not pulling teachers out of their planning times for conferences.

Overall, all participants had many good things to say about PBL. They support it because they see the benefit of it within their students. The benefits outweigh the challenges, according to 100% of all participants. Participants during the interviews felt more training would be beneficial. Some even taught themselves PBL. The focus group did not comment much on the activity, but they felt support from an administrator and giving time to plan helped them with their training. Both groups were invested in PBL and discussed its benefits for the student.

Chapter Summary

The purpose of this study was to identify teachers' perceptions of PBL. This chapter focused on the data gathered from interviews and a focus group of teachers and administrators

with differing years of teaching experience. All participants had prior knowledge of PBL from working within a PBL school. After transcribing each interview and the focus group, the data analysis process was coded through Dedoose. The data collected identified themes related to the participants' perceptions of PBL.

The themes that emerged provided a comprehensive understanding of teachers' perceptions of PBL. The benefits and challenges of PBL were explored in the training teachers received with PBL. Support from the administration, district, and community was also discussed. All participants agreed that PBL is an effective teaching method for today's students. Chapter 5 discusses how the findings answer this study's research questions.

Chapter 5: Discussion, Conclusions, and Recommendations

Teachers see the benefits of PBL for their students, but some feel they are not prepared to teach using the PBL method. The problem is that not enough is known about teachers' perceptions about their knowledge and skill in utilizing PBL in their classrooms. As Baysura et al. (2016) stated, "Teachers may not have enough practical training in PBL, so many teachers feel ready in theory but not practice" (p. 18). To fulfill the purpose of this study, to explore teachers' perceptions of PBL, this qualitative descriptive study examined teachers' perceptions of PBL at various experience levels.

Twelve teachers of various teaching experience levels were interviewed, and six teachers and administrators participated in a focus group. During the interviews and focus groups, participants answered questions related to the research questions that guided this study. The data were then analyzed, and insight into the research questions was captured. Due to the time of year (summer), finding teachers willing to participate was difficult. Therefore, retired PBL teachers, as well as administrators, were used in data collection. The research questions that guided this study focused on teachers' perceptions of PBL. This chapter will discuss study findings as they relate to each research question. Study implications and recommendations for future research will also be addressed.

Discussion of Findings in Relation to Past Literature

Findings from this study affirmed the importance of understanding teachers' perceptions of PBL. Data from the current study and past literature were compared to answer the research questions.

Findings for Research Question 1

In Research Question 1, participants were asked about their perceived benefits when using PBL. Teachers use PBL because they see its benefits, including how it motivates students. One of the participants, Participant 2, commented that PBL keeps students motivated to learn and teaches perseverance when they get tired of the projects. This compares to the literature by Turgut (2008), who stated, “Benefits of PBL include increased motivation and interest in topics” (p. 76).

Students become self-regulated learners with PBL (Khan & Ibrahim, 2020). Participants commented on their students’ motivation, especially those considered “at-risk.” Students who found traditional education challenging excelled with PBL. They stayed motivated to complete their projects because it was something of interest to them. As mentioned in previous literature, Agudelo and Morales-Vasco (2019) studied the effects of PBL on students who were perceived as inattentive, easily distracted, and students who would complain about any activity proposed. These students were also perceived as reckless, lazy, undisciplined, unpunctual, not committed, and unconscious of their life prospects. PBL worked on these students.

As in past literature, participants discussed an increase in critical thinking in students. During the interview, Participant 6 commented that students today need help formulating critical thinking, and project-based learning does that. Cintang et al. (2017) stated how PBL helps students with their critical thinking skills because what is taught stays in the long-term memory. Increased critical thinking skills with PBL were also reported in a study by Giri (2021). This study concluded that PBL led students to solve real problems.

Both past literature and the data collected during this study found collaboration skills among the students as a benefit. Warr and West (2020) found that students learned to meet

deadlines and collaborate with others. Students worked together to solve problems. Participant 12 commented that one of the benefits she noticed with PBL is how her students learn to work together. Collaboration is a life skill students will need to succeed later in life. Compared to past literature, in an article by Habók and Nagy (2016), teachers felt that social skills are essential for learning.

PBL also helps with real-life experiences. Both past literature and the data from this study reiterated this point. Wurdinger and Qureshi (2015) stated that life skill development was learned through PBL by focusing on problem-solving, communication, creativity, responsibility, and self-direction. Participant 1 felt that PBL is an effective teaching method for today's students because it teaches them real-life skills by helping them learn how to work with others effectively and manage their time. Comparative to past literature (Kim, 2020), PBL helped students over time empathize with others. Students learned how to work with others from different backgrounds.

Findings for Research Question 2

In Research Question 2, participants were asked about perceived challenges for teachers regarding PBL. Arantes (2019) stated that PBL empowered students for community involvement to solve real-life problems. Most participants said that one of their biggest challenges was the community involvement piece. Trying to bring in the community connection is a struggle for Participant 4 and Participant 8.

Time management and planning were challenges for teachers. Revelle (2019) researched teachers' perceptions of PBL and found that teachers found it challenging to find time to prepare lessons. Participant 1 stated that finding time to plan with coworkers was challenging. Teachers find it difficult to incorporate the current curriculum with PBL. Sometimes they fall back into

their traditional teaching roles. Mansor et al. (2015) stated that teachers who adopted PBL might not cover as much material required in the curriculum as a traditional lecture-based course. PBL involves much planning and teacher preparation. It can be challenging for teachers to relinquish their traditional role and function as facilitators. Condliffe's (2017) research found that the main challenge for teachers in PBL involved teachers' willingness to change their position in the classroom and alter their perceptions of classroom control.

Findings for Research Question 3

In Research Question 3, participants were asked about the perceived challenges for students as reported by teachers using PBL. A challenge with PBL, discussed in both past literature and this study, was the importance of group size. When groups are too large, students have a lower chance of succeeding (Al Mulhim & Eldokhny, 2020). Working within groups can be a challenge for some students. Participant 7 stated that group dynamics was the biggest challenge in the classroom. Naviri et al. (2021) found it difficult for teachers to motivate students in a PBL classroom when there are many students. Students must feel like they have a voice regarding their education for PBL to be successful. Hira and Anderson (2021) stated students must have a voice in their education. Participant 7 commented on how PBL gave them a chance to have a voice in things. Traditional school does not always do that.

Some students found time management difficult with PBL. There are not always immediate deadlines to meet with projects, so students must learn how to complete the task. O'Neill (2015) found that teachers must be trained in time management to best help their students with this element of PBL. Relatively, Participant 3 commented on the difficulty of teaching students how to manage their time best when they are new to PBL. It takes a while to feel comfortable with PBL when students come from traditional educational backgrounds.

Findings for Research Question 4

In Research Question 4, participants were asked whether they were trained to provide instruction using PBL. Comparing past literature with this current study was challenging for teachers because of the lack of practical training with PBL. Aldabbus (2018) found that preservice teachers found it challenging to implement PBL due to a lack of practical training. More research by Alrajeh (2020) supported teachers' need for practical training in PBL. Alrajeh (2020) argued that prospective teachers are taking courses in college that are theory-based only. Without proper PBL training, Participant 3 stated that PBL was challenging because she was figuring it out as she went along. Participants who received PBL training received it at the beginning of the year. A lot of information was given at once, and the participants felt that "check-ins" from the administration throughout the year would be helpful. Many participants also commented that it would be beneficial to utilize other colleagues' PBLs as samples and starting points for new PBLs. Another article that supported the concept that teachers need more practical training in PBL was by Boss (2011). Boss stated that the idea of PBL benefits students' learning. However, the Boss (2011) study echoed that those teachers might not have the tools to succeed in a PBL classroom.

Findings for Research Question 5

In Research Question 5, participants were asked whether teachers receive(d) adequate support and resources to ensure PBL quality. Past literature and data from the current study discussed the importance of support through preservice training. Boss (2011) stated that the idea of PBL benefits students' learning. However, teachers may not have the tools to succeed in a PBL classroom. Participant 11 echoed this statement when she commented on how it takes constant practice to learn PBL. Participant 4 said they did not have any practical training.

Preservice training in PBL is essential for student and teacher success. Roessingh and Chambers (2011) noted that guiding principles helped train preservice teachers in PBL. Teachers, as a result, felt more prepared in the PBL classroom. Participant 11 said that a week of preservice training led to foundational knowledge, which helped with successful outputs in PBL in the classroom. Perspective teachers in training must be prepared with the pedagogical and subject knowledge required for teaching in the PBL method (Du Toit, 2017). Universities are beginning to see the benefit of practical training in PBL instead of just theoretical training, so teachers who intend to teach with PBL will be more prepared.

Findings for Research Question 6

In Research Question 6, participants were asked whether teachers perceive PBL as an effective teaching method. Past literature and all study participants agreed that PBL is an effective teaching method for today's students. PBL teaches students time management and life skills. The collaborative skills that PBL teaches are skills that students can take into future endeavors. Participant 5 stated that PBL is essential because today's kids are used to instant gratification and have technology in their hands. Therefore, because PBL gives them a choice, they are more apt to be interested longer in what we are trying to get them to learn. Students today need to stay motivated, and PBL does this. All participants agreed that PBL teaches students critical thinking skills and helps prepare them for careers. McKenna et al. (2018) comparatively stated that PBL enhances skills in students, such as critical thinking and communication. Students from PBL environments were stronger in communication and team skills and completed an entire project than students from traditional learning environments.

Table 7 shows the comparison between past literature and the current study. Both past literature and the current study correspond to each research question.

Table 7*Comparison Between Current Data and Past Literature*

RQ	Current data	Past literature
RQ1: What benefits have teachers perceived from using PBL in their classrooms?	Motivates students Self-regulated learners Increase in critical thinking skills Collaboration skills Real-life experiences	Turgut (2008) Agudelo and Morales-Vasco (2019) Cintang et al. (2017) Warr and West (2020) Wurdinger and Qureshi (2015)
RQ2: What are the perceived challenges for teachers regarding PBL?	Community involvement Time management Fall back into traditional teaching roles	Arantes (2019) Revelle (2019) Condliffe (2017)
RQ3: What are the perceived challenges for students as reported by teachers regarding PBL?	Group size Time management	Al Mulhim and Eldokhny (2020) O'Neill (2015)
RQ4: Do teachers perceive that they are (were) trained to provide instruction using Project-based learning?	Lack of practical training	Aldabbus (2018)
RQ5: Do teachers perceive that they receive(d) adequate support and resources to ensure project-based learning quality?	Preservice training	Roessingh and Chambers (2011)
RQ6: Do teachers perceive PBL as an effective method of teaching?	All participants agreed that PBL is effective	McKenna et al. (2018)

Limitations

The study's limitations included the time of the year trying to recruit participants. Research began at the end of the school year, so finding participants at the beginning of the summer break was a challenge. Therefore, some retired PBL teachers from the district schools and administrators were used in the study. I disclosed that a member of her immediate family had previously worked with some participants.

Another limitation of this study was that some participants felt they were just now able to begin to teach a "true" PBL classroom. Due to the COVID-19 pandemic, some teachers commented that their students have had difficulty coming back to school in person and learning how to work together.

Recommendations

It is recommended that more practical training in PBL is needed for teachers. Teachers know PBL in theory but feel practical training is required to succeed in the classroom. Teachers need to be trained in time management to succeed with PBL. Some teachers find the amount of planning with PBL can be daunting, so some practical ways to learn time management would be beneficial.

Many participants commented that having a library of PBL samples would be helpful. PBLs from past educators would help with planning time for current teachers. Incorporating curriculum into PBL can be challenging from the initial planning steps, so utilizing other educators and their work would be helpful.

More education about PBL is needed not only for educators but also for the community. Community involvement is an essential piece of PBL; without knowledge, there is no interest in investing in PBL. A database with community connections would be beneficial as well for

teachers. Community involvement is essential to PBL, so educating the community on PBL and getting them involved would save teachers time when planning.

More research from a broader scope of participants could help with PBL research and allow more schools to participate in PBL. Teachers from lower elementary schools were not included in this study, nor were teachers outside of this school district.

Recommendations from committee members to further this study included replicating the study with larger class sizes and including a similar study with a quantitative methodology. It would also be beneficial to obtain the assessment results of only the PBL students housed within the larger traditional school. Currently, the assessments are included with nonmagnet school students.

Conclusions

The purpose of this study was to study teachers' perceptions of PBL. Three themes emerged from past literature as well as recent experiences from educators. The themes included:

- benefits of PBL,
- challenges of PBL, and
- importance of support.

The study results emphasized the importance of PBL for students. Although there are some challenges with PBL, the benefits for students and teachers outweigh these challenges. The importance of practical training for teachers is essential for the success of PBL for both students and teachers. Overall, it was concluded that PBL is an effective method for teaching today's students.

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Appendix A: District Research Process

District Research Process,

The district supports high-quality external research that contributes to the field of education. However, the district has moral and legal obligations that require the oversight of external research projects utilizing district resources such as facilities and the time of employees and students.

In order to conduct any research (**this also includes any distribution of surveys to students, parents, teachers, and staff**) at the district, the research request submission process must be completed online. A review committee can accept 4–6 weeks to review and process submitted research requests.

Please note: The district will not collect data on behalf of or provide data to a researcher or researching organization. It is the responsibility of the researcher or researching organization to collect their own data.

Any individual from an external organization interested in conducting research **must** submit a research request during the designated window. **No exceptions will be made.**

Appendix B: Recruitment Survey Questions for Campuses

Tricia Haddad

Project-Based Learning

Survey Questions for Campuses

My name is Tricia Haddad, and I am currently studying educational leadership as a doctoral student at Abilene Christian University. I am researching the perspective of teachers regarding project-based learning. This survey consists of seven simple questions, which will take no longer than 10 minutes to answer. Thank you in advance for your help. All responses will be anonymous, and no one will be identifiable in the research. Once completed, please email it back to xxxxxxxxxx@xxxxx.xxx

1. Which campus do you currently work on?

___ xxxxx

2. How long have you been teaching?

___ First year teaching

___ 2–10 years

___ 10+ years

3. How long have you been teaching project-based learning?

First year teaching

2–10 years

10+ years

4. What grade do you teach?

5. What subject do you teach?

6. Please briefly describe below what you know about project-based learning.

7. What are your perceptions of your classroom management skills? Briefly describe below.

8. Would you be willing to be interviewed about your perspective on project-based learning?

Yes

No

Name _____

Phone _____

Email _____

Thank you.

Appendix C: Interview Questions

Tricia Haddad

Project-Based Learning

Interview Questions

Interviews will be conducted either through Zoom or in person after school hours. Interviews should last from one hour to one- and one and a half hours. Interviews will be recorded with the participants' permission.

Hi _____,

Thank you so much for taking the time today to meet with me. Your information will help my research tremendously. Everything you say will be kept confidential. No names will be used in my research. Please let me know if you need to take a break. This Zoom session is being recorded. Is this ok with you? Great. Let us begin.

1. Describe your teaching experience.
2. How would you describe your familiarity with project-based learning?
3. What benefits have you felt as a teacher with project-based learning?
4. What benefits have you seen in your students with project-based learning?
5. What learning behaviors have students shown when engaged in project-based learning?
6. What academic growth have you seen in your student with project-based learning?
7. What challenges have you experienced while using project-based learning in the classroom?

8. Do you find yourself integrating traditional teaching methods (falling into old habits, maybe) when teaching project-based learning? Please explain.
9. What challenges, if any, have students experienced using project-based learning?
10. Do the benefits of project-based learning for students outweigh the challenges? If so, explain your answer.
11. What training did you have to prepare you to teach in a project-based learning environment?
12. How did training prepare you to teach in a project-based learning classroom? Describe the assets and weaknesses of the training.
13. Was a specific training program best prepared you for teaching project-based learning?
14. Was a specific training program that did not prepare you for teaching project-based learning?
15. Is there something that could be done during preservice training or professional development to better prepare you for teaching in a project-based learning environment?
16. What process does your department utilize to evaluate the project-based learning process and its effectiveness?
17. Would additional resources be helpful to teach using project-based learning effectively?
18. Describe your school's method for educating the community about project-based learning.
19. How do you feel about the school's support of project-based learning? The district? The community?
20. Why do you think project-based learning is an effective educational method for teaching today's students?

Thank you, _____. Those are all my questions. Thank you again for taking the time to meet with me. If it is ok with you, I may follow up with you via email if I have any questions.

Appendix D: Focus Group Questions

1. What is your current knowledge of project-based learning?
2. What are the benefits for children when using project-based learning?
3. How did you begin teaching project-based learning?
4. What are the pros for you as a teacher of project-based learning?
5. What keeps you motivated to continue project-based learning teaching?
6. How would you compare project-based learning to traditional learning in the classroom?
7. What has been your best moment or project with the students teaching project-based learning?
8. Is there anything else you want to say about project-based learning?

Appendix E: Expert Panel

Panel of Experts

Xxxxx, PBL teacher

Xxxxx, former executive director of XXXXXXXXXXXXXXXXXX

Xxxxx, owner of PBL School

Xxxxx, PBL assistant director

Appendix F: Interview Question Suggestions From Panel Members

1. How long have you been teaching? Suggestion from Xxxxxx: I might reword this to How many years have you been teaching or Describe your teaching experience. (I would change this because it would be helpful to know if they have taught other grades/subjects from what they are teaching now. May not be relevant, but it came to mind as I was reading.)
2. How long have you been teaching using PBL?
3. How would you describe your familiarity with PBL? Suggestion from Xxxxxx: I might put this as question #2. Does it make more sense to ask about their familiarity before asking how long or if they have used PBL?
4. What grade do you teach?
5. What subject do you teach?
6. What campus are you currently teaching at? Suggestion from Xxxxxx: In order to not end a sentence with “at,” I would reword it to On what campus do you teach?
7. What benefits have you seen from your students while using the PBL method?
Suggestion from Xxxxxx: Instead of using “benefits,” would using the words “types of learning behaviors have students shown when engaged in PBL?” To me, this might get more of the types of answers you are striving for. Just an observation.
8. What challenges have you experienced as a teacher using PBL in the classroom?
9. Have you seen any challenges for students using PBL? If so, what are they? Suggestion from Xxxxxx: Reword to: What challenges, if any, have students experienced using PBL?
10. Do the benefits of PBL outweigh the challenges? Suggestion from Xxxxxx: Do you

mean the teachers' or students' challenges here? This is technically a "yes" or "no" question. If you want more than a yes or no answer, you might want to reword or add: "If so, explain your answer" ... or something similar.

11. Do you integrate traditional teaching methods (falling into old habits) when teaching PBL? Suggestion from Xxxxxx: Another technically, yes or no question. Do you want to know what old habits they might be reverting to? I think this would be an interesting observation but it may not be what you want for the study.
12. Do you feel prepared to teach in a PBL classroom? If not, in what ways do you feel unqualified to lead a PBL classroom? Suggestion from Xxxxxx: If you move this to #13, I would say, "How did this training prepare you to teach in the PBL classroom?"
13. What training did you have to prepare you to teach in a PBL learning environment? Suggestion from Xxxxxx: I might put this question as #12 and make #12, #as #12 and make #12, #13.
14. Is there something that could be done during preservice training or professional development to help you better prepare for teaching PBL? Suggestion from Xxxxxx: Technically, "yes" or "no" questions. Reword: Give specific examples of what kind of professional development preservice training that would better prepare you for teaching in a PBL learning environment.
15. What were the assets and weaknesses of your training program? Suggestion from Xxxxxx: I would move this to #13 or it is not needed ... you would get this info from #12 (new #13).
16. Describe your school's method for educating the community about PBL.
17. How do you feel about the school's support of PBL? The district? The community?

18. What process does your department utilize to evaluate the PBL process and its effectiveness? Suggestion from Xxxxxx: Would it be better to put this question after #15 to keep program-related questions together?
19. Do you feel as though you have the resources you need to teach effectively using PBL? Suggestion from Xxxxxx: I would also move this question to other program-related questions ... before asking about community and district support. This is also another “yes” or “no” question. Reword: “What additional resources would be helpful to teach effectively using PBL?”
20. Why do you think PBL is an effective educational method for teaching today’s students? (This may not be something you want to ask, but again, it might give some insight into the effectiveness (or not) of PBL with today’s students ... especially the age group you are researching. It might also help with getting info on teachers’ perceptions of PBL and if they are willing to move to more nontraditional pedagogies!)

Appendix G: IRB Approval

ABILENE CHRISTIAN UNIVERSITY

Educating Students for Christian Service and Leadership Throughout the World

Office of Research and Sponsored Programs
320 Hardin Administration Building, ACU Box 29103, Abilene, Texas 79699-9103
325-674-2885



April 11, 2022

Tricia Haddad
Department of Organizational Leadership
Abilene Christian University

Dear Tricia,

On behalf of the Institutional Review Board, I am pleased to inform you that your project titled "Project Based Learning: Teachers' Perceptions",

was approved by expedited review (Category 6 & 7) on 4/11/2022 (IRB # 22-035). Upon completion of this study, please submit the Inactivation Request Form within 30 days of study completion.

If you wish to make any changes to this study, including but not limited to changes in study personnel, number of participants recruited, changes to the consent form or process, and/or changes in overall methodology, please complete the Study Amendment Request Form.

If any problems develop with the study, including any unanticipated events that may change the risk profile of your study or if there were any unapproved changes in your protocol, please inform the Office of Research and Sponsored Programs and the IRB promptly using the Unanticipated Events/Noncompliance Form.

I wish you well with your work.

Sincerely,

Megan Roth

Megan Roth, Ph.D.
Director of Research and Sponsored Programs