2021

Examining Instructional Fidelity of State Standards in Project-Based Learning Units

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This is to certify that the doctoral study by

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Walden University
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Abstract

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by

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MA, Rhode Island College, 2017

BS, American Military University, 2016

Project Study Submitted in Partial Fulfillment

of the Requirements for the Degree of

Doctor of Education

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May 2021

Abstract

The problem investigated in this study was the decline in student achievement since the implementation of project-based learning (PBL) by the third- through sixth-grade teachers at the local elementary school. The purpose of this basic qualitative study was to investigate teachers' perceptions at the study location about their knowledge of PBL and its application in third- through sixth-grade classes. The study was rooted in Jean Piaget's cognitive learning theory of constructivism. The study location was an urban school district in the Southern United States. Data on teacher perceptions was gathered through structured interviews, conducted via Zoom, with eight elementary teachers in third- to sixth- grade. Inductive coding, code landscaping, and code mapping were used to generate five themes based on participating teachers' experience with PBL. Results indicated that experienced teachers were able to speak specifically to their instructional practices and beliefs, while inexperienced teachers felt they were unable to adequately provide information. One commonality was that all participants said they needed a strong formal training and ongoing support structure to ensure effective instructional fidelity of state standards in PBL units. A 3-day professional development was developed to support teachers in planning and implementing PBL to ensure instructional fidelity of state standards throughout their units. This study could create positive social change by assisting administrators with supporting teachers with planning effective PBL units.

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Acknowledgments

I want to thank my family for supporting me throughout this journey and accepting all the hours spent away, working towards completion. I want to thank my husband for understanding and accepting my dedication to my work, always picking up my slack so I could reach my goals. I want my children to know that they were my driving force every step of the way and they motivated me to be a better version of myself when I needed it. I love you, Grant, Ryan, and Ashlynn. Poppa, thanks for always pushing me to continue to succeed and showing me what working hard looks like, never allowing me to take the easy way out. Thank you to all my friends who encouraged me to keep going even when I wanted to give up. I also want to thank all participants for their willingness to share and for their dedication to improving practices. It is an honor to be able to work with such dedicated individuals, striving to better academics for their students.

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Section 1: The Problem

The Local Problem

The problem investigated in this study was the decline in student achievement since the implementation of project-based learning (PBL) by the third- through sixth-grade teachers at the local elementary school. The decline in student achievement prompts concerns regarding the fidelity of PBL instruction to the state standards. Cavendish et al. (2017) suggested that accountability and ratings have increased the emphasis on testing, which has shifted the focus from art and enrichment to test-taking strategies. In 2016, third- to sixth-grade teachers at the school incorporated PBL to balance the requirements of testing and student experiences. PBL was included in the curriculum because studies have shown that this form of learning results in improved student achievement, career readiness, and life skills (Duke & Halvorsen, 2017).

Although studies show that PBL increases student achievement, school ratings have decreased over the last 3 years at the local school, according to the network director. During the 2014-2015 school year, before the implementation of the PBL requirement, the campus met state standards and received distinctions in four areas (Texas Education Agency, 2015). The area of student achievement received a score of 80 out of 100, resulting in a school rating of "B." In 2018-2019, the school met the standard, but received no distinctions, and only received a student achievement score of 64 out of 100, resulting in a school rating of "D."

The school for this study follows an innovative school model allowing it to receive additional funding. If the school rating does not reflect success, the model could

be removed, as well as the additional funding, according to the network director. School rating systems provide information to the public, allowing them to make decisions about enrollment and neighborhood selections (Dalton & RTI International, 2017). If the school is perceived to be underperforming, enrollment will likely continue to decrease.

There are numerous instructional processes a teacher must effectively engage in to ensure student success during PBL. Currently, teachers at the school have autonomy in regard to how they plan, implement, and assess PBL units, and there is little accountability of student mastery, the network director noted. A few instructional processes that could lead to student success are intentional planning of required state standards; activity fidelity, which refers to the extent that activities are being carried out as planned; and continuous assessment of learning (Matriano, 2020; McKenna & Parenti, 2017) Throughout the intentional planning of the PBL, the learning standards must be at the forefront of planning and implementation. Price et al. (2019) observed that teachers must begin planning by looking at the required standards, then design a driving question that will engage students.

When considering activity dependability, a breakdown in planning and execution could result in students missing important information or having misconceptions that go unaddressed. According to Spaulding (2014), the determining activity is not meant to determine if students have met objectives but to clarify if the information has been presented in an accurate sequence. Last, elementary school students require high-quality teaching practices to support academic performance (Lekwa, et al. 2019). High-quality teaching is necessary to reach mastery of standards as well as inform instructional

decisions that support individual learning. Although studies show that PBL has positive implications for student achievement over traditional instruction (Chen & Yang, 2019), the campus is showing a decrease in student achievement on state standardized testing, providing support for the need to understand instructional fidelity of state standards during PBL units.

Rationale

The purpose of this qualitative study was to investigate the decline in student achievement since the implementation of PBL at the study location by exploring third- through sixth-grade teachers' perceptions of instructional fidelity of state standards during PBL. Styla and Michalopoulou (2016) suggested that today's teachers are facilitators versus providers of information and activities. PBL requires intentional planning through the design of learning experiences and learning communities, as well as the integration of a variety of instructional activities on content matter (Çakiroglu & Erdemir, 2019). Current state assessment results at the study location suggest that students are not mastering required state standards, although studies suggest that PBL improves student achievement.

I conducted this qualitative case study to address the gap between the research on PBL and understanding of instructional fidelity of state standards during such learning. This study's findings clarify possible reasons and areas of improvement regarding PBL units as a reason for a declining state rating. I conducted interviews to examine teachers' perceptions of state standards integration during PBL units. Results from the study may

be used to improve the instructional fidelity of state standards during PBL units at the study site.

Definition of Terms

This study includes terminology that is unique to the academic setting. Understanding these terms is essential to comprehending the study in its entirety. The following terms are used throughout the study:

21st Century skills: Skills relevant to current day workplace success including problem-solving, collaboration, organization, critical thinking, and technology usage (Worlitz et al., 2018)

Instructional fidelity: The extent to which teachers implement programs the way they were designed to be implemented (Stockard, 2020)

Project-based learning (PBL): A student-centered teaching approach built upon the constructivist theory where teachers act as facilitators (Genc, 2015). PBL incorporates real-world and authentic problem-solving through collaboration, sustained inquiry, and revision (Buck Institute for Education, n.d.)

School accountability: Systems that designate letter grades for each school, which are used to determine school performance in relation to other schools, most often determined from state assessment scores (Dizon-Ross, 2020).

Significance of the Study

I investigated the decline in student achievement since the implementation of PBL by the third- through sixth-grade teachers at the local elementary school under study. This study is significant because the decline in student achievement prompts concerns

regarding the fidelity of PBL instruction to the state standards. Better understanding the instructional fidelity may provide an opportunity for stakeholders to improve current instructional practices. Since implementation, the PBL program has not been examined, making this study important to leaders at the local elementary school because it provides evidence that they could use to evaluate the effectiveness of the PBL program. Because scores have decreased, it is important to master required state standards. To do this, these standards must be incorporated, with fidelity, throughout PBL units of study, especially in the areas of planning, activity implementation, and assessment. This study could enable positive social change by providing evidence of strengths in the PBL program, as well as areas of improvement. Price et al. (2019) mentioned that "a well-designed PBL combines curriculum and instructional activities to cultivate 21st Century skills in students to prepare them for future success in the workforce" (p.28). This study provides an understanding of where improvements to the PBL program at the campus could be made to ready students for success in the future.

Research Questions

The problem investigated in this study was the decline in student achievement since the implementation of PBL by the third- through sixth-grade teachers at the local elementary school under study. The decline in student achievement prompts concerns regarding the fidelity of PBL instruction to the state standards. The purpose of this qualitative study was to gain an understanding of the decline of student achievement at the school under study by examining instructional fidelity of state standards by third- to sixth-grade teachers during PBL. For this qualitative case study, I obtained information

by conducting interviews with teachers to address the following research questions (RQs):

RQ1: How do teachers perceive the instructional fidelity of state standards in third- to sixth-grade during project-based learning?

RQ2: How do teachers indicate that their training and support impacts their instructional fidelity of state standards in third- to sixth-grade project-based learning units?

RQ3: How do teachers indicate that the instructional fidelity of state standards is reflected in their instructional practices?

I used the study findings to develop a 3-day professional development for teachers (see Appendix A).

Review of the Literature

In the literature review, I will discuss research related to PBL and fidelity of instruction. Keywords that were used in the search of relevant peer-reviewed literature included *project-based learning*, *student achievement*, *21st Century skills*, *perception of project-based learning*, *fidelity of instruction*, *project-based learning + student achievement*, *project-based learning + elementary*, *primary + challenges*, and *issues or difficulties,* as well as a variety of combinations of these terms. The Walden University Library was used to access databases including Educational Resources Information Center (ERIC), SAGE Journals, ScholarWorks, and Education Source. All journal articles reviewed were published within the last 5 years. Research was conducted by reviewing over 40 peer-reviewed articles. Literature was reviewed until saturation had

been met. The literature review includes the following subsections: project-based learning, core components of PBL, 21st Century skills, and fidelity of instruction.

Conceptual Framework

The conceptual framework for this study was Jean Piaget's (1972) cognitive learning theory of constructivism. The premise of this theory is that students acquire knowledge from their experiences. John Dewey expanded on this theory by introducing the idea of actively engaging in the learning processes. Active engagement in learning emphasizes durability, portability, and practicality and that knowledge is better acquired when a learner is actively doing something (Chang et al., 2018). The success of teaching pedagogies, such as PBL, can be explained by constructivist theory, which indicate that students must be active participants in their learning rather than acquirers of knowledge from listening. The theory of constructivism explains how students make connections with what they already know and create new knowledge (Matriano, 2020). Teachers must facilitate learning while allowing a student to engage in discovery and expanding their prior knowledge. Throughout the learning process, teachers must provide scaffolds and specifically designed learning opportunities to master specific content, while ensuring that the experiences are authentic (Van der Graaf, et al., 2019; Weliwita & Witharana, 2019). Constructivist teaching methods have been found to increase student participation and motivation, resulting in more meaningful learning opportunities (Mahasneh & Alwan, 2018). PBL requires students to build their knowledge by investigating and solving real-world problems, activities that are therefore categorized as a constructivist

teaching method (Hairida & Junanto, 2018). The conceptual framework underpins the discussion and findings of the study.

Review of the Broader Problem

Project-Based Learning

PBL is a student-centered teaching practice that requires students to collaborate to solve real-world problems while integrating multidisciplinary academics (Genc, 2015). The practice is rooted in the work of educational theorist John Dewey who challenged the idea that students learn through listening, asserting rather that students must be actively engaged in their learning (Boss, 2011). School accountability became the focus of the U.S. education system with the implementation of No Child Left Behind Act of 2001 shifting the focus from personalized learning to ensuring success on standardized tests (Pieratt, 2010). Included in this shift was a focus on curriculum to ensure meeting the requirements covered in the state tests.

Dewey (1938) suggested that education should be grounded in the experiences of a child, ensuring meaningful learning by connecting education to the life of the child. Another important aspect of education proposed by Dewey was that the child's education should develop a skill set that would support the child throughout their lifetime. Dewey also stated that teachers should work towards creating educational experiences that meet the needs of each of their students through individualized learning, focusing on the needs of the individuals rather than teaching each student the same thing. Dewey's theories provide the basis for a student-centered classroom experience that allows students to engage in experiences that connect to their prior knowledge, through learning activities

that allow students to deeply engage in the material in a way that fits their needs. John Dewey is credited with the principles that were later implemented by his student William Herd Kilpatrick to develop the idea of PBL.

The first evidence of PBL came from an essay written by William Heard Kilpatrick in 1918 (MacMath et al., 2017). The essay, "The Project Method," challenges the then-current education system centered around memorization to shift to progressive ideas of providing meaningful learning experiences. Kilpatrick is credited with providing the basic structures that underlie the core components of PBL. Kilpatrick's project method included purposeful acts, dominating purpose, cooperative work, and redefined environments (Pinar, 2015). Each of the aspects of the project method can be found in PBL.

Currently, many countries including the United States, Finland, Germany, Israel, and Denmark have implemented PBL models within their education system (Miller & Krajcik, 2019). According to the Buck Institute of Education (n.d.), PBL provides students the opportunity to develop problem-solving and critical thinking skills, communication and collaboration skills, time management, efficient work habits, independence, confidence, and responsibility. The methods used during PBL require a higher level of cognitive learning, in addition to the development of intra-interpersonal skills (MacMath et al., 2017). When integrating PBL into the academic context, a teacher needs to take a facilitative role, guiding learning and negotiating conflicts while knowing the interests of the students to ensure a successful PBL (Styla & Michalopoulou, 2016). Styla and Michalopoulou (2016) interviewed 13 teachers in a study to gain insight into

the reasons for the success of the teachers' PBL. Results indicated that teachers engaged in interdisciplinary and discovery learning. They also stated that integrating ongoing collaboration was essential to their success. By following the requirements of PBL with diligence, they were required to alter their role as an educator, allowing students to take the leading role. Unlike traditional methods of teaching, where the teacher is the driving force in learning, PBL provides an opportunity for students to engage in the authentic application of the knowledge they gain (Bowen & Peterson, 2019). While exploring task authenticity in a study of two math classes, Bowen and Peterson (2019) discovered that even when student achievement did not greatly improve, students learned about important concepts when given authentic activities. Engaging in authentic application of skills and knowledge gained through PBL processes increases intrinsic motivation and student engagement, which can have positive impacts on student achievement.

Numerous studies support the integration of PBL into the curriculum as a method of improving student achievement. In a study conducted in a biology class, 172 students were able to increase their knowledge and depth of understanding of required concepts due to their ability to explore through their levels of curiosity (Syukriah, et al.2020). Students were divided into a control and an experimental group. Results of the quantitative study resulted in a significant increase in cognitive learning outcomes for the experimental group. During learning, students have an increased motivation to discover answers themselves, increasing their depth of learning, as well as their intrinsic motivation and independence (Farmer, et al.). Mahasneh and Alwan (2018) explored the effect of PBL. Project-based learning can provide a learning opportunity that decreases

inequities that exist in the education system by engaging all learners with rigorous and meaningful learning experiences (Miller & Krajcik, 2019).

In a study conducted by Jazuli et al. (2019) results showed that kinesthetic learners had an increase in achievement when engaging in PBL. The study randomly selected 15 kinesthetic learners, engaging them in PBL. This group scored higher on the targeted mathematical outcomes than kinesthetic learners that engaged in other teaching practices, such as brain-based learning strategies. Students were also better able to transfer their knowledge to other situations, compared to students who engaged in traditional instruction (Kastner, 2020).

Kastner (2020) conducted a study that evaluated PBL in the context of a large class size. In a study of 260 students, student perception towards PBL and student achievement within academics and social situations were explored. Academically, students who engaged in all the PBL activities scored higher on final exams than those who did not. It was determined that the importance of the tasks increased intrinsic motivation during learning. The results of the study determined that PBL increased students' ability to use higher-order cognitive skills, collaboration skills, organizational skills, and communication skills. Many of these are 21st Century skills which will be discussed further in the next section.

Studies have provided support for the improvement of student achievement through the integration of PBL. Chen and Yang (2019) conducted a meta-analysis of 30 journal articles to determine the impact of PBL on student achievement. Throughout this analysis, it was determined that there is a medium to large positive impact on student

achievement when implementing PBL over traditional instruction, due to specific components including subject area, integration of technology, and the amount of time spent. These impacts have increased as teachers have implemented PBL into the core subjects, even if combined with traditional instruction to cover standards. Educational setting and group size did not have an impact on the achievement of students, providing evidence that PBL can be an effective instructional practice for all educational contexts.

While reaching a variety of students, PBL can provide natural differentiation by allowing students to develop their knowledge through the integration of learning in a way that benefits each student. In a quantitative study conducted by Mahasneh and Alwan (2018) studied 79 students divided into two groups consisting of 42 students representing the control group and 37 students representing the experimental group. The study focused on teacher self-efficacy and academic achievement of students when implementing PBL. An achievement test provided pre and post-test scores that determined significant improvements in the post-test of students who engaged in PBL. The explanation for an increase in achievement during this study was an increase in students' active involvement throughout the learning process and unit cycle while encouraging creativity that allowed student autonomy. As studies show, PBL increases student achievement which could be due to the depth of exploration, a meaningful application, increased engagement, or better alignment with student learning styles.

In addition to student achievement, PBL provides students with essential 21st Century skills. These are skills that allow students to be successful in the current day workplace. These skills include the ability to solve problems, navigate technology, work

within a system and with a variety of resources, as well as working with others, which were included in the results of engaging in PBL through analysis of student achievement in a STEM program (Worlitz, et al., 2018). In a quantitative study conducted by Matriano (2020), 61 students engaged in PBL incorporating constructivist thinking, multisensory and reflective activities, while actively collaborating with others. The conclusions of the study determined that students must be actively involved in the exploration, research, interaction, and creation phases to be gain the skills and strategies necessary to the success in the 21st Century. PBL requires students to engage in authentic problem solving and collaboration with a variety of people while engaging in academic rigor in contents including mathematics and science (Priatna, et al., 2019). New teaching materials were tested in a study conducted by Priatna, Sispiyati and Lorenzia (2019) to determine the effectiveness and validity of the PBL materials in a STEM classroom. The results of the study showed that materials created in support of PBL were valid regarding content and construct. Student mastery of learning during the unit, implementing PBL methods, resulted in the mastery of academics and 21st Century skills. Skills such as critical thinking, persistence, self-efficacy, motivation, communication, responsibility, reasoning, self-management, and reflection are also essential to be successful in the 21st Century (Katlu & Kartal, 2018). Each of these skills can be acquired or strengthened while engaging in PBL due to the core components of PBL, which will be discussed later.

Another benefit of PBL is an increase in social-emotional skills. Twelve classrooms, across all grade levels, participated in a study to deeper understand the outcomes of PBL. Participants included 100 teachers and 850 students. In this study, the

most significant outcomes centered around social-emotional skills. Data collection methods included classroom observations and surveys from teachers and students. The results indicated that the classrooms participating in PBL showed higher ratings than national averages in the areas of personal responsibility, optimistic thinking, goal-directed behavior, social awareness, decision-making, relationship skills, self-awareness, and self-management. Another positive impact of PBL reported by this study was a decrease in out of school suspensions. Another study supporting student characteristic outcomes was conducted by Dole et al. (2017). The study interviewed 36 teachers to determine the impacts PBL had on their students. Teachers reported benefits that were categorized by learner behavior, learner attitude, and learning preferences. The surveys provided information that included an increase in a positive mindset toward learning, increased motivation, creativity, and perseverance. Teachers also stated that students became more autonomous learners and increased their ability and willingness to collaborate. Isham (2018) wrote an article about the ways that project-based learning has been able to fulfill John Dewey's vision of creating social change through education. Isham stated that PBL provides specific skills to students that allow them to be more capable of taking on the task of working towards social change. These skills included the ability to slow down and observe and consider the situation presented to them, rather than making quick decisions. Students that engage in PBL also have a greater sense of their identity, agency, and appreciate complexity. PBL has also shown to provide students the ability to deeply listen to community members and honor expertise. Lastly, they can test their ideas, building resiliency to redesign, bringing their task to the end, and following

up by continuously looking for the next challenge. Although the focus of education has been academic, PBL can have positive implications on educating the "whole child," providing them skills for their future, including the ability to create social change.

Core Components of Problem-Based Learning

PBL has become popular due to the shift in current education to student-centered teaching practices. Although there are a variety of models for PBL each model incorporates similar core components. These components include a driving question, student exploration, collaboration, engagement in authentic inquiry, and a tangible public outcome (Chen & Yang, 2019; Farmer et al., 2019). Chang et al. (2018) stated that PBL must also be multidisciplinary, integrated within academics, long term, and incorporate real-life tasks. This study focused on enhancing the educational sustainability of PBL through quantitative study methods of 232 student survey results. Through a multiple regression equation, it was determined that students learning motivation, product evaluation, self-efficacy, and experience perception can determine the acquisition of learning outcomes.

More detailed information for each of these sections provides important information to consider when developing and implementing PBL. Regarding product evaluation, the study determined that it was more important to focus on students' acquisition of knowledge and skills to produce the product, rather than compete academically with peers. Another important factor that was determined in the study was that students were better able to master outcomes if they had clear goals and empirical quality, which refers to the student's ability to reach a high level of quality by

understanding the expectations. Lastly, student motivation could be increased based on the activities that were presented during the learning.

For each of these components to be successfully implemented in PBL, there are a variety of teacher practices that must occur. Research conducted by MacMathet al. (2017) identified that the components necessary of the teacher practice fall into the following aspects: planning, classroom interactions, facilitating student inquiry, technology, and assessment. Planning, implementing, and facilitating PBL all have impacts on student achievement (Chen & Yang, 2019).

The first aspect of planning requires the development of a driving question that involves a phenomenon or a real-life problem that allows students to explore the complexities of the world around them (Miller & Krajcik, 2019). The question must capture student interest, requiring teachers to have relationships and understanding of their students. Dargham a Chin (2015) provided evidence that effective teaching requires a focus on aspects besides student learning, including positive relationships with students, to increase student achievement. While their study focused on the integration of a framework for PBL in an outcomes-based setting, results indicated a higher level of teacher capability provided higher student achievement in learning outcomes. Teacher capability included the ability to hold student attention and interest, connect different domains of learning, focus on the mental and emotional states of students and coworkers, engage in the ongoing review of effective teaching methods, and be knowledge-centered.

The teacher role during PBL is more facilitative in comparison to traditional instruction, allowing the process to be student driven. Teachers must become the leader,

while facilitating, modeling, communicating, and adapting, as well as being open to learning and growing as a professional willing to take risks (Nasrullah, 2019). During implementation, teachers need to balance collaborative work with independent work, incorporate a variety of heterogeneously based groups, and ensure a variety of complex activities that result in transferable skills (planning, problem-solving, critical thinking, etc.) (Styla & Michalopoulou, 2016).

Many studies provide evidence of the necessity of assessment integration into PBL. Rugen (2019) conducted a study on the success of PBL and the mastery of academic knowledge, noting that the lack of formative assessment during PBL had negative impacts on student learning, due to the importance of monitoring learning and providing feedback that addresses misconceptions. Without these teacher practices that require the use of formative assessment, student learning may not reach the necessary level of mastery. Continuous assessment allows students a better understanding of the material, as well as the ability to gain confidence, motivation, and self-evaluation skills (Iqbal, et al., 2017). Sixty students in a social studies class engaged in an achievement test analysis through T-test methods to determine that continuous assessment had significant impacts on all learners, including high and low achieving students. Although traditional assessment may be disconnected from the real-life context of PBL (Weliwita & Witharana, 2019), more authentic methods may be beneficial. One suggestion a study showed to be effective is performance assessments, which can incorporate the skills and knowledge students gain through a variety of authentic tasks throughout the PBL.

Hairida and Junanto (2018) examined the effectiveness of incorporating performance assessments during PBL to determine if there was an increase in students' science literacy. The performance assessment was ongoing throughout the PBL while providing students the ability to participate in a variety of activities. These activities allowed students to make connections across activities, increasing student involvement in the learning process. This study determined that integrating performance assessment with inquiry, discovery, and decision-making during PBL resulted in a significant increase in students' science literacy.

Although assessment is an essential component of PBL, teachers may need to integrate a variety of methods, beyond the traditional assessments. These tasks must be authentic to the student learning, as well as capture the required knowledge students should be gaining. Methods of assessment are just one core component of PBL. While there are many models associated with PBL, each requires students to increase their knowledge through inquiry of a driving question, while collaborating with others to create or develop a product or solution to the question.

Challenges of Project-Based Learning

Although PBL has proved to be an effective teaching method, there are a variety of challenges found to be associated with effective implementation. These challenges can include a lack of structure in planning, lack of formative assessment, teacher ability, teacher perception of PBL, and the context of the situation. Challenges associated with PBL may impact the effectiveness of the program.

Rugen (2019) stated a lack of structure in the planning phase and inconsistent formative assessments during the units may be the cause of ineffective implementation. If the unit is not properly planned, students may struggle to master required learning standards during their time of autonomy due to their inability to manage their time. Rugen's study provided evidence that PBL required a mini-lesson to be incorporated into instruction to ensure student learning. The mini lesson was most effective when it was brief and narrowly focused, followed by a quick formative assessment to check for understanding. This study also provided evidence that the first class, sometimes called "the launch" in PBL had the most impact on the success of the unit. Ensuring proper formative assessment may help overcome these poor structures, as it provides an opportunity for teachers to monitor learning and address areas of struggle as necessary. If PBL is lacking both aspects, PBL may be an ineffective teaching method.

MacMath et al. (2017) provided evidence that classroom interactions, a teacher's ability to facilitate student inquiry, and effective integration of technology were proven to be challenges of implementing PBL. This study included interviews of teachers from a variety of experiences, contents, and age groups which provided support that although teachers believed that PBL had many positive benefits for students, it was not without challenges. Some of the challenges that arose during the execution of PBL included students' ability to collaborate and engage in curiosity as well as the grouping of students required to ensure these activities were successful. They noticed that high achieving students struggled more with being responsible for their learning, as they are used to following directions. After the PBL, each teacher stated that the support of the

administration and openness of the school culture was essential to the success of their PBL.

Additionally, teacher perception regarding the effectiveness of PBL has shown to have an impact on the effectiveness of PBL, which may require extensive professional development to successfully implement. Teachers with increased self-efficacy may exhibit improved organizational and instructional skills, leading to a higher rate of success in facilitating PBL (Mahasneh & Alwan, 2018). In a case study conducted by Maher and Yoo (2017) 3 teachers were unsure of the level of support they should provide to students during PBL. Teachers reported that they felt students were not receiving adequate scaffolding for required standards. While PBL requires ongoing feedback for students, teachers may feel as though they do not have enough training to ensure this is done in a way that encourages self-reflection to continue the student-driven outcome. Each of them also reported a fear of "losing control" of their classroom and the learning that was occurring. Observations showed that teachers were not keeping true to the authenticity of PBL due to their need to control and direct student learning. This occurred for a variety of reasons, including the fear that students would not learn intended outcomes and time constraints. The study provided evidence that PBL is an effective instructional method, but it requires the implementation to be followed correctly and the teacher to feel as though it is beneficial for students and believe that they are capable and supported throughout implementation.

Teacher perception of the commitment to PBL also determined to be an area of challenge. Odell et al. (2019) conducted a study in a charter district in Texas that was

implementing a STEM-based PBL program. Teachers received 6 weeks of training before the start of the school year, as well as additional planning periods throughout the school year to support implementation. The evaluation of the program resulted in the hiring of PBL instructional coaches to support teachers, redesigning of schedules to ensure more common planning time for teachers to collaborate when planning PBL and additional resources towards data analysis. Although student outcomes began to increase over 3 years, the study determined that teachers struggled with implementing PBL with fidelity due to a misalignment of district supports (such as walk-through forms) and program outcomes, providing teachers with assumptions that PBL was not an important priority. Once this misalignment was corrected, the fidelity of implementation increased. Teacher perception can impact teachers' desire to implement a program with fidelity or need for higher levels of support to ensure PBL is effectively integrated into the classroom.

Lastly, the context, or aspects that are not within the control of the teacher, may provide additional challenges. One main concern is the increased emphasis on standardized testing to meet school accountability requirements mandated in recent education reform (Dizon-Ross, 2020). Sumrall and Sumrall (2018) provided a solution to better integrating standards within PBL by incorporating the 5E learning cycle into the PBL. The 5E learning cycle includes engage, explore, explain, elaborate, and evaluate, providing the opportunity to directly teach the required standards during the explain and elaborate phases. To navigate these challenges, teachers must have administrative support for PBL. School wide structures, administration perspective, and allocation of resources allow successful integration of PBL into the school context, despite the increased

emphasis on testing, also noted in the study by MacMath et al. (2017). The lack of support in programs can lead to increased teacher stress, burn out, and turnover (Lekwa, et al., 2019). Without feeling supported in the integration of PBL, teacher perception can decrease the effectiveness of the program.

Fidelity of Instruction

Fidelity of instruction can be defined as the extent that teachers implement instructional programs the way they were designed to be implemented, which can have an impact on student achievement and provide insight into reasons behind a lack of expected outcomes (Stockard, 2020; Nelson, Pulles, Parker & Klaft, 2020). Launching new programs in the educational setting requires extensive planning and support of all stakeholders to ensure a program is launched with enough support and resources. If a program fails to produce the expected outcomes, an evaluation is necessary to determine where improvements can be made. Assessment of instructional fidelity of a program determines the main components and processes, the degree to which they are implemented, as well as the beliefs surrounding the program that could impact the implementation (Lakin & Rambo-Hernandez, 2019). Within the fidelity of instruction, there are two major components to consider.

Fidelity to structure includes the degree to which the components of the instructional program are included, while fidelity to process includes the quality of the implementation (McKenna & Parenti, 2017). Although these components involve separate procedures, teaching behaviors (fidelity to process) must support and align with the program's design (fidelity of structure) (Crawford, et al., 2019). Other areas to

consider when conducting fidelity of instruction assessments include the duration of the program and the participant responsiveness (Brigandi, 2019). Carla Brigandi (2019) conducted a study involving a single teacher to examine her fidelity of implementation of Renzulli's Enrichment Triad Model for 10 gifted students over 5 months. Throughout the study, the categories that were examined included adherence to implementation structure, adherence to process and quality of program delivery, participant responsiveness, and duration of implementation. The study determined that the teacher implemented the program with fidelity, but the duration of the program was a factor that impacted the effectiveness. The program, implemented for 1 semester, may have had greater impact if continued for a longer time, determined by student statements feeling as though they were rushed to meet program outcomes.

Although factors of process and structure are the main focus during the assessment of instructional fidelity, it is important to also consider the school and school characteristics to understand the context of the program including demographic and school-level systems, as they can impact the effectiveness of the program (Lakin & Rambo-Hernandez, 2019). Fidelity of instruction, or the extent a program is implemented as intended, can be the reason for program failure in the educational setting. Assessing fidelity of instruction or implementation requires analyzing a wide scope of the program to determine which areas are not being implemented effectively.

Consistent implementation of educational programs is essential in increasing student achievement. A study conducted by Lekwa et al. (2019) explored the relationship between observational assessments and student gains on MAP in reading and math. The

study consisted of 2,771 students in kindergarten through eighth- grade. The study determined that there was a correlation between higher-quality teaching and a higher increase in student gains. The application of consistent instructional and behavioral strategies was proven to be an indicator of higher success in student gains. This analysis provides support that when teachers implement high-quality strategies consistently student achievement and closing of educational gaps increases. Another study examined the relationship between fidelity of an algebra intervention with the increase in student understanding of 800 third- grade students (Stylianou Stroud, et al., 2019). Videotaped classroom observations and student assessments provided data to determine that students in the classrooms where teachers implemented the intervention with fidelity scored 16.5% higher than students in classes where the teacher did not implement with fidelity. The difference in assessment scores provides support that educational programs can increase student achievement when they are implemented with fidelity. If a program is inadequately implemented, without evaluating the fidelity of implementation, students could be incorrectly identified as needing higher levels of support, due to the lack of student success within the program (McKenna & Parenti, 2017). If fidelity of implementation was frequently evaluated, areas of improvement within programs would be determined, increasing the effectiveness of the program. Program effectiveness would then result in increased student achievement. There are a variety of factors that can impact the fidelity of instruction, including the complexity of the instruction or program, lack of resources, insufficient teacher ability or perspective, and ineffective professional development (McKenna & Parenti, 2017). Issues within each of these factors can lead to

poor structures, performance, outcomes, and a lack of sustainability (Bettencourt, Gross & Breitenstein, 2019). When teacher perception or self-efficacy is lacking, the program may not be implemented as intended. Dijkstra et al. (2017) conducted a study to determine the fidelity of differentiated instruction in kindergarten across 18 campuses. To determine the fidelity of implementation, data was collected through observation notes and logbooks as well as questionnaires from 35 teachers and 18 principals The study found that instructional fidelity was lacking in the schools where teachers stated they felt unsupported by their administration and the school board, lacked communication between individuals, had negative opinions of the program, low motivation, and little support and time among colleagues. Overall, the main driving force of failure in implementation resulted from a negative school culture. Additionally, the other main contributor to lack of fidelity was teacher attitude. The study determined there must be a desire to change teaching practices, and the teacher must be able to meet the complexity of the implementation process. When considering the fidelity of a program, it is also important to ensure program flexibility to support the needs of each student through differentiation and culturally responsive practices (Lakin & Rambo-Hernandez, 2019).

In a study conducted by Nelson et al. (2020), they determined that teachers met the expectations of the program regarding the fidelity but lacked organic discussions that allow students to reach their full potential. The study consisted of 1,340 students in fourth- through eighth- grade who participated in a math intervention. The implementation of fidelity was assessed using an adherence checklist, as well as student pre- and post-intervention scores. The study determined that there was an increase in

student achievement but determined that students were not able to meet their full potential. Fidelity of instruction studies have provided evidence that when teachers do not feel as though the program directly benefits their students, or they are not able to effectively adapt the program to their students, the program outcomes will be impacted. A pilot study focused on the integration of technology in small group mathematics instruction for students with a learning disability determined that technology had no impact on student outcomes over pencil and paper methods, possibly due to teacher values (Crawford, et al., 2019). The study did, however, determine that there were significant differences in the pre- and post-test scores of all groups in their understanding of fractions as numbers, the content that was taught during the study. The reason for this was determined to be the fidelity of the content that was taught to the students, providing evidence that although the method of delivery was ineffective, the fidelity of instruction still allowed an increase in student understanding. Teachers must feel that the program is acceptable regarding appropriateness, fairness, and reasonableness; they must also have a deep understanding of the program's goals and components. (Lakin & Rambo-Hernandez, 2019).

When implementing programs, teachers often receive professional development, but for effective implementation, teachers require ongoing support and training over a few years (Stylianou, et al., 2019). In a study conducted by Beecher, et al. (2017) it was determined that literacy instruction with preschool students was effective through instructional fidelity and the use of a language-rich classroom. The study used checklists to measure fidelity of instruction, as well as the quality of instruction. Results indicated

that the use of the specific checklist they were using was helpful yet simplistic enough that it was easily integrated into the walkthroughs. Conclusions from the study included integrating specific checklists through school-wide professional development, then integrating the checklist into feedback cycles to ensure areas of strength and improvement. It was also suggested that the results from the checklists from across campus be compared and used to develop ongoing professional development that would benefit the literacy initiative. This study provided support for the integration of observational checklists into administrative walkthroughs to ensure instructional fidelity to a specific program, which is a method that could be integrated into any program to provide ongoing support and training over time.

Fidelity of instruction assessment requires a thorough investigation of all aspects of the program. The first step requires stakeholders to define the program and goals. Next, evaluation of the structure of the program occurs through analyzing system-level support and structures, as well as the process through observations, interviews, student outcomes, and document analysis (Lakin & Rambo-Hernandez 2019). Once the assessment is complete, at both the systems level and implementation level, recommendations can be made to improve the program through specific strategies that can include modeling, direct training, and ongoing feedback (McKenna & Parenti, 2017; Sanetti & Luh, 2019). Evaluating instructional fidelity allows programs to continuously improve, recognizing the areas of strength, as well as areas that require improvement to ensure increased student achievement.

Implications

The purpose of this qualitative study was to investigate the decline in student achievement since the implementation of PBL at the study location by exploring teacher perception of instructional fidelity of state standards during PBL in third- through sixth-grade teachers. The problem investigated in this study was the decline in student achievement since implementation of PBL by third- through sixth-grade teachers at the local elementary school under study, which prompts concerns regarding the fidelity of PBL instruction to the state standards. The findings from the study lead to a project deliverable that could be used by the school of this study to incorporate into their PBL program.

Summary

Due to a decline in school rating, the study investigated the decline in student achievement since the implementation of PBL by the third- through sixth-grade teachers, which prompts concerns regarding the fidelity of PBL instruction to the state standards. The literature review focused on research regarding PBL, including the core components and the impact on student outcomes in the areas of academics and mastery of 21st Century skills. Literature was also reviewed concerning the fidelity of instruction. Findings from the literature review supported that PBL can have a positive impact on student achievement and the acquisition of 21st Century skills. The review also found that fidelity to instruction is essential to ensuring program success by evaluating implementation in comparison to program design. In Section 2, the research design and approach will be discussed, including the setting and sample, data collection and analysis,

assumptions, limitations, delimitation, measures used to ensure the ethical treatment of participants, and the outcomes will be discussed.

Section 2: The Methodology

Qualitative Research Design and Approach

In this qualitative case study, I investigated the local problem of a decline in student achievement since the implementation of PBL by third- through sixth-grade teachers at the local elementary school. The qualitative case study approach was appropriate because I sought to understand individuals in a specific setting and understand the meaning behind the events that are occurring (Ravitch & Carl, 2016). The case study method was appropriate for this study because numerous sources of data provide evidence related to a real-life situation and help to explain a problem or behavior (Yin, 2015). To assess the instructional fidelity during PBL units, I interviewed participants about their planning, implementation, and assessment processes. Interviews provided information on participants' perceptions of incorporation of standards into PBL units. Teachers may have high-quality resources and lesson plans, but if they result in poor implementation, student achievement may be impacted (McKenna & Parenti, 2017). The focus of this study was on grade levels that engaged in state testing, as their achievement determined the state rating.

I considered conducting a quantitative study to better understand the impact of PBL in which I would analyze the correlation of PBL assessment and state testing results, but I concluded that this method would not provide insight into the fidelity of instruction aligned with state standards and PBL units. Thus, I determined that a qualitative approach, with an emphasis on better understanding the perspectives of the participating teachers, was a better fit for the study. Discovering themes within the perspectives and

actions of the participants may provide insight on possible solutions for the study problem.

I considered but rejected grounded theory, the intent of which is to provide a better explanation of a phenomenon in due to a lack of an existing theory (Creswell, 2014). Grounded theory researchers collect data, then seek to determine the reason for the event by relating it to the current theory (Creswell, 2014). I did not seek to understand the events that were occurring and relate them to current theory. A case study involves gathering evidence of a problem and using that evidence to discover themes and possible solutions (Creswell, 2014). A case study was an appropriate fit for this study.

I also considered a phenomenological study design. Researchers conducting a phenomenological study seek to find the common trend among lived experiences of groups of people by immersing themselves in their culture and lifestyle (Yin, 2015). The purpose of the study was to understand participants' experiences and interpretations of those experiences. For this study, a case study was a better fit, as I targeted a specific group of people within the school context, as well as sought to understand the perspectives of others about the events.

Last, I considered an ethnographic study as it involves interactions and observations in the natural environment. These studies are focused on a group of people and seek to understand the lives that they live through social interactions, behaviors, and perceptions within the group (Creswell, 2014). Data sources for ethnographic studies consist of interviews, observations, and artifacts from the group (Rands& Gansemer, 2019). This method of study was determined to not be appropriate because the purpose of

the study was not to examine the overall culture of the group. After reviewing different types of studies, a case study was deemed to be the most appropriate because the purpose of the study was to gain an understanding about an event within a specific context.

Participants

The school site selected for this research study was an elementary campus serving around 400 students in prekindergarten through Grade 6 in an urban district in the southern United States. The neighborhood consisted of generational homes from diverse demographic backgrounds. Campus leadership applied to become an in-district charter school 5 years ago, prior to the beginning of this study, which allowed nontraditional methods of teaching and flexible funding sources. Campus leaders included PBL in the charter document to support authentic student experiences while participating in civic engagement. School leaders also established 30 additional school minutes to each school day to incorporate a social-emotional learning block. The school operates on a year-round calendar, allowing more breaks during the school year to reduce burn out, as well as reducing the amount of time off in the summer to reduce the impact on student achievement of not being in school. Enrollment allows students who live in the neighborhood automatic attendance, but students from all over the county can apply and are accepted into the school through a lottery of open seats after the neighborhood students have enrolled.

The participants in this study were teachers at the study campus who varied in age, years in education, and amount of training in PBL. There were 9 potential participants who taught third- through sixth-grade at the campus, which includes 1 ACE

unit, 1 dual language classroom, and 7 general education classrooms. The 9 teachers represent all teachers who met the study criteria. All teachers were invited to participate. Eight out of the 9 teachers agreed to participate, but the study was considered completed because data saturation was reached. The purpose of the study was to investigate the decline in student achievement, which has resulted in a lower school rating. School ratings are based only on the results of the State of Texas Assessments of Academic Readiness test, so the focus of this study was limited to these grade levels to ensure that a more thorough study could be conducted. Three of the participating teachers were new to the campus, with no experience in PBL; 2 participants had received extensive training and helped incorporate PBL into the school culture; and 1 participant was in her 3rd year, while the other 2 participants were in their 2nd year of PBL integration and received some training. In previous years, training was comprised of a 3-day training with the Buck Institute for Education, as well as campus-led professional development. The data collected was through 30-interviews with each participant. The interviews resulted in approximately 160 minutes of interview data. Table 1 includes a summary of participants' years of experience with PBL.

Table 1

Participant Experience

Participant	Years of Experience in PBL
Participant 1	3
Participant 2	7
Participant 3	6
Participant 4	2
Participant 5	0
Participant 6	0
Participant 7	2
Participant 8	0

The first step in gaining access to the participants was to request approval from the Walden University Institutional Review Board (IRB). The Walden University IRB approval number is 11-11-20-0971074. After receiving IRB approval from Walden University, I obtained approval from the network director and principal at the research site (see Appendix B for the permission letter to the network director). Next, each of the participants were introduced to the study after a staff meeting, then provided with documentation about the study through email detailing the problem, the purpose, and the questions for the study (see Appendix C). Once a participant provided informed consent, one-on-one recorded Zoom interviews were scheduled through email for a 45-minute time frame. During this time, questions were utilized to understand the teachers' perceptions regarding state standards during PBL, as well as their personal experiences with the process of implementation including training and coaching throughout the process. Interviews took place through a recorded meeting on Zoom due to current social distancing guidelines. During the interviews, participants were reminded of the purpose of the interview and notified that the interview would be recorded.

To ensure positive researcher-participant relationships all participants were notified of their rights of confidentiality and were asked to agree to a consent form prior to scheduling their interview. Each participant was encouraged to select a day and time for the interview that made them feel comfortable. Each interview began with a few minutes of conversation to make the participant feel at ease. Along with other strategies, this was utilized to make the participant feel respected and valued (Creswell, 2014).

Interview protocols were put in place to ensure that each participant was treated the same and felt safe in a positive environment.

Data Collection

Interviews were conducted with each of the 8 participants to gain information on the level of training and ongoing support and teacher perceptions of integrating required standards into PBL units. These interviews provided information on how participating teachers are integrating required standards into their PBL units. These interviews followed an interview protocol (see Appendix D). The alignment of the interview questions with the RQs can be found in Table 2. By analyzing the responses to these questions, participating teachers provided insight into their perception of instructional fidelity of state standards during PBL units. To ensure accurate information was gathered, all interviews were audio recorded and transcribed.

Table 2

Alignment of Interview Questions to Research Questions

	Interview Questions	Research Question
I.	How long have you been engaging in project-based learning?	RQ2: How do teachers indicate that their training and support impacts their instructional fidelity of state standards in third- to sixth-grade project-based learning units?
II.	What training have you received in project-based learning? Please provide specific organizations if possible.	RQ2: How do teachers indicate that their training and support impacts their instructional fidelity of state standards in third- to sixth-grade project-based learning units?
III.	Beyond your initial training, what supports have you received during the planning or implementation of PBL?	RQ2: How do teachers indicate that their training and support impacts their instructional fidelity of state standards in third- to sixth-grade project-based learning units?
IV.	Describe your process for planning a PBL unit.	RQ3: How do teachers indicate the instructional fidelity of state standards is reflected in their instructional practices?
V.	Describe the methods you use to teach and assess standards during project-based learning units.	RQ3: How do teachers indicate the instructional fidelity of state standards is reflected in their instructional practices?
VI.	What are your beliefs surrounding state standard during project-based learning?	RQ1: How do teachers perceive the instructional fidelity of state standards in third- to sixth-grade during project-based learning?
VII.	In what ways do standards inform your PBL unit?	RQ3: How do teachers indicate the instructional fidelity of state standards is reflected in their instructional practices?
VIII.	What are some ways you address the state standards during project-based learning?	RQ3: How do teachers indicate the instructional fidelity of state standards is reflected in their instructional practices?

To gain access to participants, the study was presented after a staff meeting by administration. Participants received an email reviewing the purpose of the study and inviting them to participate. Interested participants responded to the researcher through email. Participants were provided with a consent form. If they agreed, an interview was scheduled at a time that was convenient for the participant. Participants were then provided with the interview protocol. Interviews occurred through Zoom due to the current COVID situation to ensure the health and safety of all participants. Interviews were audio recorded and then transcribed by REV. A research log, in the form of a notebook, was utilized to record researcher thoughts during the interview, which included verbatim statements and potential codes. Reflections of researcher ideas and understandings, based on participant statements, were also included.

The researcher is a previous teacher of the campus. Participants were not provided with information on who the researcher was before giving consent for the interview. Although the researcher may know a few of the participants, the data collection occurred in a professional, ethical manner following all data collection protocols. The researcher may have previous relationships with participants depending on current grade-level assignments, but all relationships have been collaborative and honest in the past. This helped participants feel safe to provide the most truthful responses during data collection. Approximately a third of the teachers at the campus are new and did not have any previous relationship with the researcher. A researcher journal was used to record any impressions as a way to control any biases that may have been present during research.

Data Analysis

After data collection, the interviews were transcribed, using an outside source, to ensure a proper analysis occurred. All interview transcriptions excluded any names or information that could identify the individual. The constant comparative method was used to analyze the data. This method of data analysis is used to discover concepts through a process of coding and analyzing (Kolb, 2012). This method provided the ability to begin with the information in the data, developing categories based on connections among the interviews. Through a comparison of codes, evidence was gained to support the common categories that begin to appeared. Data was reviewed after each interview, rather than at the end, to engage in an ongoing process of analysis. By engaging in ongoing analysis, Vander Putten and Nolen (2010) explained that the findings become more accurate due to new information challenging or supporting prior findings.

To support the process of the constant comparative method, a cycle of open coding occurred. Open coding, sometimes referred to as inductive coding, provides a method for the researcher to openly develop categories that emerge throughout the data (Fram, 2013). Inductive coding provides a method to examine sections of data, developing connections that emerge throughout the interview (Lodico, et al., 2010). The coding process occurred immediately following the transcription of each interview. As new data was gathered, interviews that have previously been coded were further examined to discover or challenge emerging trends. When all interviews were conducted, transcribed, and coded, code landscaping and code mapping occurred. According to Saldana (2015), code landscaping, using the program Wordle, allows a first draft visual

of the codes that were most frequently used, providing potential ideas for categories. Using Wordle, all open codes were entered to create a "cloud" that prioritizes more frequent words through text size. Next, code mapping occurred, which is a process that involves all open codes being divided up into categories that relate to sets of codes. Once this process was complete, the categories were narrowed further by categorizing all categories into three categories. The last step in code mapping is to use the three final categories to generate three concepts or themes (Saldana, 2015). The documentation that occurred during code mapping provided an auditing process that was used to validate the research.

A second round of coding occurred using MAZQDA, which is an online data analysis program that utilizes axial coding. The purpose of integrating axial coding is to ensure saturation had been met, meaning that no new information can emerge from the analyzing of codes (Saldana, 2015). During this process, the software developed categories that emerged during analysis of the interview transcriptions. Different queries were performed to determine the relationships among different words, resulting in emergent themes.

Validity and Accuracy of Research

To ensure the validity and accuracy of the research, strategies were utilized to meet the requirements of credibility, transferability, dependability, and confirmability. To ensure credibility, the transcripts and a summary of the findings were shared with each participant. This process allowed the participants to review the information in a member check and limits any potential bias by the researcher. Only information related to that

participant was shared. Participants had the ability to share their feedback by email. All participants agreed with the findings of the study. Numerous analysis methods were also implemented to ensure credible results.

Detailed descriptions of the context, process, and results of the study were provided to ensure the study can be transferable. Transferability is the degree to which the results can be generalized and transferred to other sites of study, which can be reached by providing detailed descriptions of each aspect of the study (Harati, et al., (2019). The details provided in this study provide the opportunity to replicate the study in a similar context. Detailed descriptions of the participants, such as their years of experience with PBL, and the study location have been provided. Detailed descriptions of the data collection methods, such as the interview process, and data analysis procedures have also been provided. Dependability was defined by Lodico et al. (2010) as the ability to follow the processes of data collection and analysis in the manner the researcher implemented. To ensure this study met the requirement of dependability, interviews were recorded and transcribed. Information on the data collection process was included in findings of the study. A peer reviewer examined the data analysis process and findings. An email exchange occurred between the researcher and the peer reviewer to confirm the findings of the study were accurate. A peer reviewer, as defined by Lodico et al. (2010), is an individual that examines and questions the data to ensure the researcher reflects and questions their analysis. The peer reviewer signed a confidentiality agreement (see Appendix E) upon agreement to participate. The peer reviewer was provided with 25% of

the data, selected at random, for review. After examination, the peer reviewer emailed questions about the findings.

Confirmability of the study was obtained by providing evidence from the data to support the interpretations and findings. Documentation was kept throughout the study, in the form of a journal, to document procedures, evolving ideas, and reasons supported with data. Throughout the analysis, a negative case analysis was considered. A negative case analysis allows for discussions of the data that challenge the interpretations (Patton, 2001). By addressing all aspects of the data, the study became more valid by ensuring that all data was evaluated.

Data Analysis Results

The purpose of this qualitative study was to investigate the decline in student achievement since the implementation of PBL at the study location by exploring teacher perception of instructional fidelity of state standards during PBL in third- through sixth-grade teachers. The problem that was addressed in this study was the decline in student achievement since implementation of PBL by third- through sixth-grade teachers at the local elementary school under study. The decline in student achievement prompts concerns regarding the fidelity of PBL instruction to the state standards. I implemented a qualitative research study to answer the following RQs:

RQ1: How do teachers perceive the instructional fidelity of state standards in third- to sixth-grade during project-based learning?

RQ2: How do teachers indicate that their training and support impacts their instructional fidelity of state standards in third- to sixth-grade project-based learning units?

RQ3: How do teachers indicate that the instructional fidelity of state standards is reflected in their instructional practices?

Although nine participants agreed to participate, only eight were able to follow through to the interviews (including representation from grades three to six, dual language, and special education). These participants elected to be part of the study by responding to the email and setting up an interview via Zoom. The ninth participant had scheduled their interview, but had to cancel due to health issues and did not wish to reschedule. This study relied on data gathered during individual interviews to gain insight into teacher perception regarding instructional fidelity of state standards during PBL units. Interviews were conducted via Zoom to ensure the health and safety of each participant due to the ongoing COVID situation. Participants had the opportunity to respond to the eight questions provided in the interview protocol, as well as an opportunity to share any additional information they wanted to contribute to the study. Although participants shared a range of experience and training with PBL, all teachers shared a positive perception of PBL as an effective and positive teaching practice. Teachers also shared general consensus on the struggles of the PBL program in regard to instructional fidelity of state standards.

In this section, I review the findings for each of the RQs. The correlation between the RQs and themes can be found in Table 3. Data analysis revealed five themes

associated with the RQs. The first and third RQs were divided into two themes based on the participating teachers' experience with PBL (i.e., whether they had experience with PBL or were new to PBL). Participants with less than 2 years of experience struggled to respond to questions about their perception of instructional fidelity and instructional practices of state standards during PBL, stating that they did not have experience enough to provide responses. For example, when asked about ways that the participant addressed state standards during PBL units, Participant 7 stated, "I have no experience doing this." Inexperienced participating teachers with PBL shared that they had engaged in PBL units focused around social emotional learning, rather than academic due to a lack of training and support to effectively implement the learning without sacrificing the mastery of standards. All participating teachers felt formal training and support systems were essential to ensure instructional fidelity of state standards during PBL units.

Table 3

Themes by Research Question

Research question	Theme
RQ1: How do teachers perceive the instructional fidelity of state standards in third- to sixth-grade during project-based learning?	Theme 1: Experienced PBL teachers believe standards are essential and drive the planning and implementation of PBL Theme 2: Inexperienced PBL teachers lacked experience to implement instructional fidelity of state standards effectively
RQ2: How do teachers indicate that their training and support impacts their instructional fidelity of state standards in third- to sixth-grade project-based learning units?	Theme 3: Teachers require formal training and ongoing support to support instructional fidelity of state standards in PBL
RQ3: How do teachers indicate the instructional fidelity of state standards is reflected in their instructional practices?	Theme 4: Experienced PBL teachers utilized a variety of teaching practices within PBL to support instructional fidelity of state standards Theme 5: Inexperienced PBL teachers lacked knowledge of standards and required training to incorporate instructional fidelity of state standards during PBL

The first RQ the interviews sought to answer was as follows: How do teachers perceive the instructional fidelity of state standards in third- to sixth-grade during project-based learning? Findings indicated that responses were divided based on experience. Each participating teacher that reported they had more than two years of experience with PBL reported that they believed standards were essential and the first factor to be considered when planning and implementing a PBL. The different responses to the RQs were put into Worlde, which prioritizes importance of concepts by frequency through the size of the text. Figure 1 shows that the most frequently mentioned responses were standards-first and lack of experience.

Figure 1

Wordle image created from codes relating to RQ1

After examining the Worlde, the original codes were reviewed by interview. It was noticed that "lack of experience," "how to integrate effectively," "not related to standards," and "lack of support" were from the interviews of participating teachers with less than two years of experience with PBL. In examining the interviews further, it was

determined that the participating teachers with under two years of experience believed they lacked experience to effectively implement standards into PBL, but felt it was a positive teaching practice for student achievement.

The next RQ was as follows: How do teachers indicate their training and support impacts their instructional fidelity of state standards in third- to sixth-grade project-based learning units? The phrases that were used were again entered into Worlde to develop an image that helped determine the most frequent responses, as shown in Figure 2. The most frequent words included, "inexperienced, or supports that had been provided to support their success (suggestive feedback, collaboration, assessment, being taught to plan interdisciplinary units, support on incorporating assessment, and being provided the driving question, planning document, training on their own, and different instructional practices they had been trained to incorporate)." Findings indicated that participating teachers felt strongly there was a direct correlation between the quality and length of training, as well as the ongoing support provided to instructional fidelity of state standards in third- to sixth-grade PBL units.

Figure 2

Worlde image created from codes relating to RQ2

The last reach question the interviews sought to answer was as follows: How do teachers indicate the instructional fidelity of state standards is reflected in their instructional practices? The responses to this question were also divided based on experience. As you see in Figure 3, the most frequent words included, "need-training, lack knowledge of standards, time, planning, timing, backwards planning, overwhelmed, support from experienced teachers, imbed, direct-teach, timing, spiral, and interdisciplinary." Experienced participating teachers (in regard to PBL) indicated they backwards plan, starting with the standards first. They also stated they include mini-lessons that include direct teach, develop interdisciplinary units, and utilize assessments to determine student mastery of the standards. Many participating teachers indicated they lacked knowledge of their current standards due to recent changes in teaching position, and they required more training and support from experienced teachers to be effective in their instructional fidelity of state standards during PBL.

Figure 3

Worlde image created from codes relating to RQ3

After interviews were coded, the codes were entered into Worlde to develop a visual representation that prioritized the codes based on text size. All codes were also put onto index cards, so they could be separated into categories and manipulated easily. Code mapping then occurred, which consisted of putting all of the codes into categories. The codes were examined to determine connections among them. Some of the categories that emerged included the following: teacher need, effective practices for PBL, and components of effective PBL. One categories were inclusive of all of the codes, they were reexamined to determine more narrow categories. Analysis of the categories determined there were five themes that emerged in regard to improving the instructional fidelity of state standards during PBL. All teachers interviewed believed there needed to be a strong initial training, as well as an ongoing support system for inexperienced teachers.

Themes from Findings

After analysis of the interviews through open coding, code landscaping, and code mapping, the data went through a second round of coding utilizing MAXQDA to confirm

the initial findings. Through this data analysis process, five total themes emerged in relation to the RQs. Information gathered regarding RQs 1 and 3 were divided in responses based on teacher experience, resulting in two themes for these questions. Participating teachers inexperienced in PBL felt they did not have the training, knowledge, capacity, or time to effectively implement instructional fidelity of state standards. Experienced PBL teachers had a strong belief in PBL being grounded in the state standards, and that utilizing best instructional practices throughout PBL units to ensure mastery of standards. All participating teachers felt a formal initial training and strong ongoing support from experienced teachers and coaches was essential and would improve the instructional fidelity of state standards during PBL units in grades three to six.

RQ1: How Do Teachers Perceive the Instructional Fidelity of State Standards in Third- to Sixth-Grade During Project-Based Learning?

Theme 1: Experienced PBL Teachers Believe Standards Are Essential and Drive the Planning and Implementation of PBL. Of the eight teachers who were interviewed, three had more than 2 years of experience. Each of these participating teachers spoke directly to grounding the PBL units in standards. Participate 2 stated, "They're the core of the PBL. I don't understand how you could do a PBL without them. They're basically your framework. They're like the frame of the house. We build the PBL around that and it just makes teaching so much easier." Participant 3 mirrored this belief, "I think the PBL has to be anchored to your standards and you have to be very dedicated to them and not let the project drive. So you have to continuously come back to

see if you're actually assessing the standard itself and the depth of it." Each of these participants had more than six years of experience incorporating PBL into their instruction. Although Participant 1 had a few years less experience (three years), they also stated, "So, for me, the standards come first. What we are supposed to be teaching this year and how can we incorporate that into a PBL verse here's a PLB, how can I make the standards fit?" While each of these participants were able to articulate the importance of the standards when asked their perception, they also were able to speak more technically about the implementation of standards within instructional practices during PBL, which will be discussed in later themes.

Theme 2: Inexperienced PBL Teachers Lacked Experience to Implement Instructional Fidelity of State Standards During PBL Effectively. Five out of the eight participants stated they had under three years of experience with PBL. Inexperienced participants stated that although they believe they should be a driving force, but they lacked the time to plan and execute well, which they did not currently have the capacity to do. Participant 7 felt that to incorporate standards effectively the units had to be interdisciplinary. "This is the first time in ten years I have taught elementary, so I think there's just a lack of experience doing that. If I were to do it, I would need a lot more help and guidance. I would rather just stick to what I know and do each content separately well, than try to do this combination of a big project." Participants also shared that they felt PBL should be grounded in their standards. Participant 5 felt that standards were essential to PBL, but currently that was not occurring, from her perception throughout the campus, and she had been sticking to PBL

for social-emotional learning only to ensure that standards were covered extensively since there has been a decline in the school's state rating. Other participants, who were in their first year of PBL implementation, were unsure how to effectively incorporate them into their instruction. For example, participant 8 stated, "I'm interested in learning how we could do that, because I don't want one to feel higher than the other." This idea of being worried about ensuring the standards were covered continued with, "I'm worried that if I give to PBL only, then I lose my students' academic part, which is concerning to me." When asked what the root cause of this sentiment was, the interviewee replied, "I don't have the training for it, so I don't know how it's been incorporated. I would rather give to my students the academic part and not take away from it, so it's difficult for me."

Being that PBL was incorporated into the charter as an essential and required piece of the campus instruction, participants who have been at the campus less than two years felt hesitant when discussing their personal beliefs about state standards being incorporated into PBL. They felt that this was due to their lack of experience and support in planning and implementation. Each of the participants felt that they could see how the standards being incorporated would be beneficial and possible, but did not personally know how to do this effectively, without student academics suffering.

RQ2: How Do Teachers Indicate That Their Training and Support Impacts Their Instructional Fidelity of State Standards in Third- to Sixth-Grade Project-Based Learning Units?

Theme 3: Teachers Require Formal Training and Ongoing Support Instructional Fidelity of State Standards During PBL. All participants in the study felt

that strong initial training, and ongoing support was necessary to be successful to ensure instructional fidelity of state standards during PBL units. When comparing interview responses, each of the participants that had formal training from an outside agency, or an extended training at the campus level, spoke more technical about their process for planning, implementing, and assessing a PBL unit. Participants were each asked about their process for planning a PBL unit (interview questions four). Participating teachers with PBL training each articulated a process that included standards, essential questions, a launch, and instructional activities. For example, participant 3 shared her process, "I plan with the standards in mind. I'll develop a driving question, which is generally pretty broad. We'll do some type of entry activity to engage the students. We then go into the knowledge component, inquiry process with the students." On the other hand, participating teachers who had little to no training stated, "From what I've gathered, we come up with a question that drives it. We just explore that question; I guess; I don't know that I have a process." Two other participants referenced an outline template, or planning document, that they had been provided with that they work through to plan, and then implement what they had provided on the document.

Although participants felt this document was useful, they still felt they needed a stronger support system in planning and implementation. All eight participants mentioned campus level support in the form of an instructional coach. Six of the eight participants stated that they received campus level support in the form of suggestive feedback. Three of the eight participants indicated that they received support in the form of collaboration for brainstorming and access to community resources. Participating teachers felt that the

feedback was helpful, but at times it was not timely enough to be supportive. Participant 6 stated, "It seems like I get a little bit of feedback; there's not really a process for it." Participant 4 added, "I think typically it looks like encouraging feedback, and maybe picking little areas that I can change or adapt to best fit my class or my setting. Bat a lot of just constructive feedback."

At the end of each interview, participants had the opportunity to share any additional thoughts they wanted to contribute to the study in relation to the instructional fidelity of state standards during PBL. 100% of the participants provided their thoughts on the need for more formal initial training, ongoing support structures, and the ability to collaborate with their team, as well as participating teachers with experience in PBL to be effective in their instructional fidelity of state standards during PBL. All participants shared a positive perception that PBL was an effective teaching practice for students, but six of the eight participants did not feel they had the amount of formal training or ongoing support to implement instructional fidelity of state standards effectively to ensure student achievement increased.

RQ3: How Do Teachers Indicate That the Instructional Fidelity of State Standards Is Reflected in Their Instructional Practices?

Theme 4: Experienced PBL Teachers Utilized a Variety of Teaching Practices Within PBL to Support Instructional Fidelity of State Standards.

Participants were asked about the ways they teach and assess standards during PBL units. Answers continued to provide insight into the amount of training teachers had received based on the depth and complexity of their responses. Each of the three experienced

participating teachers spoke about starting their planning process with the standards, backwards planning, and ensuring all activities connected back to the end result, which was mastery of the standards. Participate 2 discussed the planning process began with looking at the TEKS to be covered for the year, utilizing a backwards planning process, determining where did TEKS connect across contents, and aligning these first. Assessment and activities followed, but ensuring spiral of the TEKS continued throughout the unit.

Participating experienced teachers were able to speak to specific instructional practices they incorporated into their PBL units. Participant 3 spoke at great length about the different aspects of instructional practices that are incorporated into their PBLs, which included checklists for soft skills, self-assessments, pre-and post-assessments, formative assessments, rubrics, small group lessons, mini-lessons, and direct teach instruction. Participant 1 included thoughts about incorporating the TEKS and how it related to State of Texas Assessments of Academic Readiness by using check for understandings, mini-lessons, as well as student inquiry. All three experienced participating teachers felt that it was essential to incorporate mini-lessons, with some form of assessment to ensure instructional fidelity of the standards during their PBL unit. These participants (all three) also discussed the importance of spiraling skills until students mastered them, and providing scaffolding supports for struggling students to aid them in reaching mastery of the required standards.

All three experienced PBL participating teachers also emphasized the importance of developing PBL units that were interdisciplinary to ensure that they could cover as

many standards as possible within the PBL. Participant 1 discussed a PBL around the reading standards for folk tales around the world, deepening their understanding of other cultures. They were able to incorporate social studies, reading, comprehension, and research standards. Other participates discussed finding of articles that related to the PBL to incorporate reading standards which lead into the inquiry based activity. The inquiry based activity would incorporate assessment, most often around a science or social studies standard. Lastly, Participant 3 added to be effective and master standards they have incorporated writing, science and reading so the learning is not in isolation, which has lead the students to a higher level of mastery due to ongoing spiral of standards for an extended period of time. It was also noted that the standards provide action steps for the teacher by utilizing assessments to determine what students need scaffolded supports, and what areas need to continue to be spiraled throughout the PBL.

Each of the experienced PBL teachers spoke in detail about their instructional practices during PBL to incorporate instructional fidelity of state standards throughout the unit. Many of these practices are best practices for instruction, even outside of PBL, but the participants had incorporated them into the unit to ensure academic success of their students. They felt that integrating best practices into PBL had allowed them to ensure student mastery of the required standards. Throughout the interview participants also continuously mentioned an emphasis on the standards throughout the planning and implementation of PBL units.

Theme 5: Inexperienced PBL Teachers Lacked Knowledge of Standards and Required Training to Incorporate Instructional Fidelity of State Standards During

PBL Units. Experienced participating teachers with limited experience were able to provide some insight into their instructional practices that supported instructional fidelity of state standards during PBL units. Participant 4 discussed incorporating mini-lessons in support of student inquiry. They also stated that state standards are addressed through assessments. The participant later stated that formal training was lacking, the ideas that were shared were gained from interactions with other teachers, but felt that they were unsure how to incorporate the standards into PBL properly to ensure instructional fidelity. Although the participant was able to speak to the instructional practices, they had yet to execute these ideas.

Inexperienced teachers found questions relating to their instructional practices in regard to instructional fidelity of state standards during PBL more difficult to respond to. Four of the eight participants stated that they had only incorporated PBL into social-emotional lessons. "I hadn't considered it previously (when asked about how standards inform PBL). I just assumed that PBL went along with SEL, but looking at it now I can see there might be some sort of an alignment there," stated Participant 6. When asked how this participant would address standards during PBL they stated, "I guess I don't have an answer for that question."

Another participant had shared that they attempted a PBL previously in the year but ended up not continuing. When asked about how they would incorporate instructional fidelity of state standards into their instructional practices, they replied, "I think in order for myself as a first timer doing it, I think I would have to do it separate just to be able to do a good PBL. They should have to be separate in the beginning, at least for a first timer

just so that I can see how it's going to work without worrying about taking away from teaching the students." Participant 5 replied, "In terms of where I think my priorities are, I don't think I have the bandwidth in order to do that well, from what I know…." These statements indicated that the teacher did not have training or guidance on how to effectively incorporate standards into PBL. Although all five inexperienced teachers felt that they should be incorporated into instructional practices, they lacked the training and support to ensure that they were able to incorporate the standards into their practices effectively to ensure student achievement, which has discouraged them from attempting to following through on engaging in PBL in the way it was intended.

Discrepant Cases

To ensure validity of the research, the findings were reviewed for discrepant evidence and negative cases, which help determine rival explanations (Yin, 2015). There was no data collected in this study that challenged the interpretations, which was confirmed by participants verifying transcripts and summary of findings, as well as a peer reviewer. All codes fit into the themes that were discussed in this section. All responses from participants were aligned to the responses from other participants. Discrepant data did not emerge during analysis.

Review of Key Findings

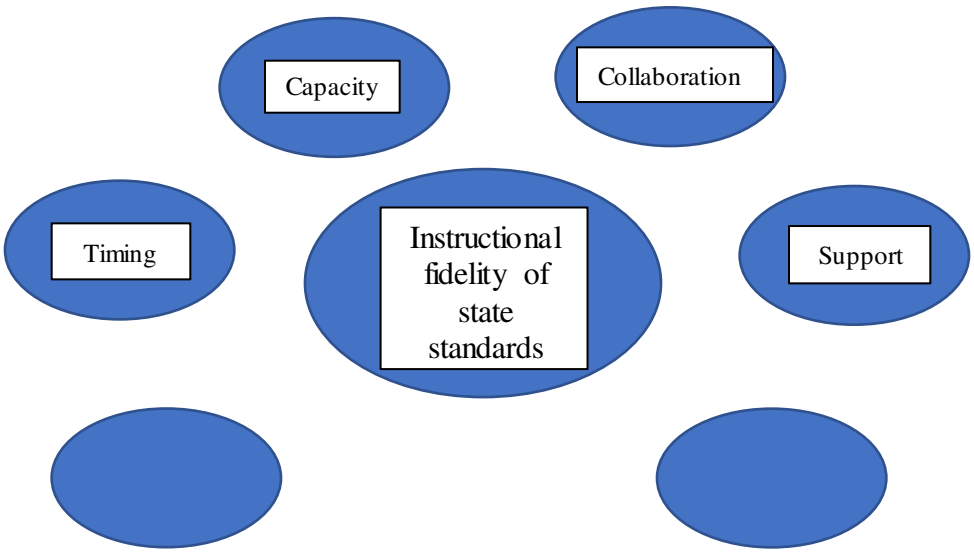
The study focused on discovering teacher perception of instructional fidelity of state standards during PBL units in grades three to sixth. Eight interviews were conducted via Zoom due to the COVID crisis to ensure the health and safety of all participants. Data determined that teachers felt there was a need for a formal initial training around PBL, to

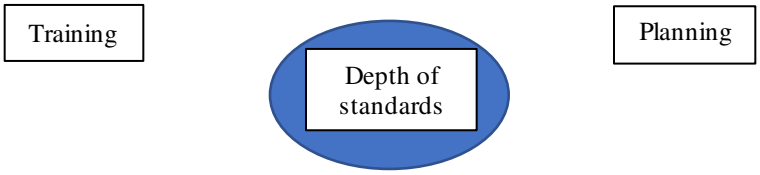
effectively implement instructional fidelity of standards during PBL units by grades three to six.

During the interviews, teachers provided insight on reasons why instructional fidelity had not been successful in relation to state standards during PBL units, which lead to the development of the themes. These reasons include a lack of training, capacity, planning time, support, and collaboration. Teachers also articulated the timing of the required PBL hindered their ability to implement instructional fidelity of state standards due to adjusting to the context of the campus and learning the depth of their standards. Figure 4 provides a visual representation of the reasons that emerged from the data in regard to teacher perception of teacher need to successfully implement instructional fidelity of state standards during PBL units. These reasons support the themes within this study, which provide evidence for the development of a professional development for teachers coming to the campus.

Figure 4

Representation of teacher need to ensure instructional fidelity of state standards during PBL units





The professional development plan would improve the current PBL program, by providing a training that allows teachers to deeper understand what PBL is, how to incorporate state standards into the planning process, and how to execute instructional fidelity of the standards during the facilitation of PBL. Knowles's theory of andragogy identifies the learning needs and methods for teaching adults. This theory guides the development of the professional development, which will ensure they feel respected and take ownership of their own learning (Smith & Robinson, 2020). By developing a strong professional development plan for new teachers to the campus, they will receive comprehensive training to support instructional fidelity of state standards into PBL units. Ensuring all teachers receive a formal training prior to planning and implementing a PBL unit could provide them with the tools to ensure instructional fidelity of state standards during their PBL units.

Summary

The purpose of this doctoral study was to investigate the decline in student achievement since the implementation of PBL at the study location by exploring teacher perception of instructional fidelity of state standards during PBL in third- through sixth-grade teachers. In Section 2, the methodology was reviewed for the gathering of the data for the proposed project study which required exploring teacher perception of

instructional fidelity of state standard during PBL units through interviews with teachers in grades three to sixth at the study location. The interviews provided information on teacher perception of state standards being incorporated during PBL units, support and training in implementation of state standards during PBL, as well as how the state standards are reflected in their instructional practices. Also within Section 2, procedures, data collection, and data analysis methods have been discussed. Following data analysis, a project to address the need for a formal training plan has been planned.

In Section 3 of this study a project will be presented that addresses the need determined within this study. The project consists of a 3-day professional development plan that supports teachers by allowing them an opportunity to engage in learning around PBL, as well as how to incorporate standards into the planning and implementation process to ensure instructional fidelity of state standards during PBL units. It could serve as a possible solution for the problem explored within this study.

Section 3: The Project

Introduction

The purpose of this qualitative study was to investigate the decline in student achievement since the implementation of PBL at the study location. To do so, I explored third- through sixth-grade teachers' perceptions of instructional fidelity of state standards during PBL. Findings from the study indicate that teachers required capacity, collaboration, support, planning, training, appropriate timing, and knowledge of the depth of the standards to ensure instructional fidelity of state standards during PBL units. I created the project, which I present in this section, to address the research problem. The project incorporates learning components of PBL, as well as planning structures and instructional practices that support instructional fidelity of state standards. The goal of the professional development is to deliver a comprehensive training that provides structures that incorporate the elements teachers need to be successful in regard to instructional fidelity of state standards during PBL. Throughout the training, teachers will have the opportunity to engage in learning. The training will also foster a structure of support to encourage ongoing support outside of the professional development sessions for inexperienced teachers by incorporating collaborative learning and work time.

In Section 3, I present the project. This section includes the details of the project including a description, goals, and rationale. A literature review is also presented that incorporates the conceptual framework and research to support the project deliverable. Details regarding the implementation of the professional development are provided, including the resources and supports, potential barriers, suggested time frame, and roles

and responsibilities of instructional leaders. Section 3 also includes discussion of the project evaluation and implications of social change at the study location.

Description and Goals

I developed the professional development to provide a resource for the study location to support their PBL program. The training may ensure effective implementation regarding instructional fidelity of state standards during PBL units. The professional development provides a resource that includes an overview of PBL, including the components and the benefits, as well as the opportunity to engage in planning and collaborative structures that support the planning and implementation of instructional fidelity of state standards during PBL. The purpose of this qualitative study was to investigate the decline in student achievement since the implementation of PBL at the study location. I explored third- through sixth-grade teachers' perceptions of instructional fidelity of state standards during PBL.

Findings indicate that instructional fidelity of state standards during PBL was challenging for teachers due to a lack of training and experience. Other factors that impact the instructional fidelity of state standards, as suggested by the findings of the study, include a lack of support, collaboration, planning time, capacity, and a lack of knowledge about the grade-level standards. Data analysis and collaboration with my committee resulted in my determination that a professional development training was the best project deliverable for the study location. The audience will include all teachers at the campus to ensure consistent, ongoing professional development that incorporates collaborative structures from a range of experienced teachers. The professional

development may ensure instructional fidelity of state standards during PBL, which could impact student achievement and the state rating (see Appendix A). The main goal of this project is provide teachers with the skills and knowledge they need to successfully integrate state standards into their PBL units, as well as execute lessons that include instructional practices focused on these standards.

The project deliverable is a 3-day training that could be implemented in Summer 2021 with campus approval. Each of the 3 days of training could be executed during contracted work days and include informational training, activities, discussions, planning time, and feedback sessions. The main goal of the professional development is to improve the PBL program at the campus to increase instructional fidelity of state standards during PBL units to increase student achievement. Goals for the professional development are as follows:

- Goal 1: Teachers will gain a deep understanding of the PBL teaching practice, as well as the core components and benefits.
- Goal 2: Teachers will backwards plan (starting with the state standards) to develop interdisciplinary PBL units.
- Goal 3: Teachers will begin to develop collaborative relationships that can support them throughout the PBL implementation process.
- Goal 4: Teachers will understand a variety of instructional practices that can be utilized to deliver state standards during PBL units.
- Goal 5: Teachers will engage in feedback protocols to improve instructional fidelity of state standards during PBL units during the planning process.

Rationale

Section 2 includes the findings of the study, which indicate a need for an initial training and ongoing supports for inexperienced teachers in PBL. Interviews with teachers revealed a variety of reasons that instructional fidelity of state standards had not been achieved at their campus. These reasons were barriers for them to move forward and included the need for ongoing support, collaboration, training, capacity, better timing, time for planning, and knowledge of their standards. I selected the project genre to address the research problem and each of these barriers for new or inexperienced PBL teachers. The project provides an initial comprehensive training based on best practices for adult learners.

In their interview responses, the participants stated that they had not received enough training to be able to integrate state standards into their PBL units. There were 3 participants who had received extensive training, while the remaining 5 participants had little to no formal training. These participants felt as though PBL should be kept out of academics until they had further training to ensure that student academics did not continue to suffer. Developing a comprehensive training for teachers would decrease this gap in experience for current teachers and provide a structure for new teachers coming to the campus to begin gaining skills and experience necessary for success in instructional fidelity of state standards during PBL.

Experienced teachers in the study felt strongly that PBL units should begin with consideration of the standards that needed to be covered. They also identified specific instructional practices that were useful in ensuring instructional fidelity of state standards

during PBL. Inexperienced teachers felt they did not have enough experience or training to speak to these questions. Although participants provided responses, they lacked the terminology and experience to be able to articulate their beliefs or practices. The professional development encompasses the need to gain experience in developing PBL units that are standards based, as well as incorporate instructional practices during the implementation to ensure instructional fidelity of the state standards.

The audience of this project consists of elementary teachers in Grades 3 to 6 who are lacking in their knowledge and/or skills about PBL and instructional fidelity of state standards. I incorporated andragogocial methods because the professional development will be presented to adult learners. In addition to presenting content, adult learners must have opportunities to engage with their learning that features purposeful learning transfer by incorporating application objectives (Roumell, 2019). The study findings indicate a need to support teachers in gaining and practicing instructional fidelity of state standards during their PBL units. This professional development will be necessary for them to engage in learning and practicing these skills, as well as fostering a collaborative and supportive structure across the campus.

Martin et al. (2019) determined that mandated professional development only has positive outcomes when it is directly related to teacher and/or student needs. When the professional development is responsive to the needs of teachers, it has a positive impact on student achievement (Balta & Eryilmaz, 2019). A professional development was considered to be the best solution to address the concern of instructional fidelity of state standards during PBL units, as it addressed the teacher needs relating to the RQs. All

outcomes of the professional development are responsive to the data gathered during the study on the reasons the teachers have not been able to implement instructional fidelity of state standards during PBL units.

Review of the Literature

The purpose of this qualitative study was to investigate the decline in student achievement since the implementation of PBL at the study location by exploring teacher perception of instructional fidelity of state standards during PBL in third- through sixth-grade teachers. I created a 3-day professional development to address the RQs, the focus of which was on determining whether participating teachers felt they needed a formal initial training and ongoing support structure to effectively implement instructional fidelity of state standards during PBL units. The professional development created provides teachers with a deeper understanding of what PBL is, as well as planning and implementation structures that support instructional fidelity of state standards during PBL, utilizing best instructional practices. Scholarly literatures related to the findings and project genre were reviewed. The focus of the literature review was on adult learning and professional development. The following key words were used to conduct the literature review: *adult learners, adult learning theory, andragogy, professional development, teacher development, instructional practices, teacher collaboration, teacher capacity building, teacher self-efficacy, and student achievement.*

Scholarly literature in the form of peer-reviewed articles were retrieved from the following Walden University library databases: Academic Search Complete, Education Source, ERIC, and ScholarWorks. The topics discussed in this section are a direct result

of the themes that emerged throughout the study. These topics include professional development, teacher self-efficacy, and collaboration.

Conceptual Framework

The conceptual framework for the project was Knowles' (1970) theory on adult learning, which provides an explanation of how adults engage in learning. Andragogy, or the study of adult learning, proposes the idea that adults are self-directed learners, which requires specific principles or processes to be incorporated into adult learning experiences (Knowles, 1970). Knowles' ideas evolved into a framework for adult learning that incorporates six driving principles. The six principals are: adult learner's need to know (developing the "why" behind the learning), self-concept of the learner (allowing the learner to have the opportunity to engage in self-directed learning), prior experience of the learner (adult learners have a wealth of knowledge and experiences that should be built on and shared) readiness to learn (learning provides a benefit that advanced the learner), orientation to learning (real world and current application), and motivation to learn (an intrinsic desire to learn exists) (Mews, 2020). Knowles' theory and the six driving principles were the foundational basis for this project, as they provide information on how teachers will be able to gain the knowledge they need to successfully plan and implement instructional fidelity of state standards into PBL units. Adult learners are self-directed, which means they are capable of engaging in the techniques to teach themselves in certain areas, and they should be provided autonomy, or the ability to take control of their own learning (Van der Walt, 2019). The adult learning theory and the driving principles were utilized to develop the professional development for this study,

ensuring that the professional development met the needs of the learners to ensure that the educational outcomes were met (Remenick & Goralnik, 2019). DeNoyelles et al. (2012) incorporated adult learning theory into their courses, which provided a balance between autonomy and support, encouraging active participation, incorporating and acknowledging priori experiences, and included a community based learning environment. These courses were found to be more mindful of the adult learning experience. The success of these previously conducted studies provided support for utilizing Knowles' theory as the driving framework for this project. Knowles' theory provided an understanding of how adults are different learners than K-12 students, which was utilized to develop the project solution proposed to support the findings of the study that teachers require formal training to better implement instructional fidelity of state standards during PBL units.

Professional Development

As presented in Section 2, the findings of the study showed a need for a formal initial training with ongoing support structures to ensure effective instructional fidelity of state standards during PBL units. Teachers felt PBL could be positive for the student experience and achievement if they were provided with comprehensive training. A study conducted by Martin et al. (2017) indicated that change in student achievement can take time, but must ensure focus on improving classroom instructional every day, while providing teachers with professional development that meets the needs of individual teachers. The study also stated that if teachers were not provided with the proper policies and an effective plan for supporting teachers, implementing changes in instructional

practices could have a negative impact on student achievement. Martin et al. (2019) agreed that changing instructional practices that could result in increasing student achievement can be a messy process. They also provided support that identified teachers as the direct target for any changes within educational policies, which requires professional development. The study brought forth issues that were often not considered when planning professional development, which included ensuring the professional development met the educator's instructional needs to impact student learning. Teacher input in the professional development allows the opportunity for teachers to voice their learning needs to meet the required changes in practice, which are determined to be the method for increasing student achievement. These studies provide evidence for gathering teacher input on their areas of needed professional development to achieve student achievement when looking to change instructional practices.

The effectiveness of professional development on changing teacher practices to increase student achievement has been proven effective in numerous studies. For example, Andersson and Palm (2017) conducted a study to determine the effectiveness of a professional development on formative assessment. Desimone (2009) provided the framework for the study indicating four core components to implement during professional development for teachers. These components included the following ideas: the professional development experience must be effective for teachers, it must increase teacher's knowledge and skills, or change attitudes/beliefs, knowledge and skills gained in the professional development must improve their instruction, and the change must increase student learning. The RQs for the study focused on determining if the

implementation of the formative assessment processes taught during the professional development had an impact on student achievement and student processes. Twenty-one teachers participated in the professional development program, while the control group consisted of 24 teachers, which encompassed data from 738 students. Pre- and post-assessment data showed that students who were taught by teachers who engaged in the professional development greatly outperformed students who were taught by the control group teachers. This study provides evidence that professional development, when the learning is implemented with fidelity, has positive impacts on student achievement.

In another study consisting of 6 high school teachers and 306 students, the objective was to determine the effectiveness of teacher-led professional development over 7 weeks. School improvement can be achieved utilizing professional development by providing supports and resources necessary to increase knowledge or develop practices that positively impact student achievement (Balta & Eryilmaz, 2019). Each of the teachers taught one class prior to the delivery of the professional development, then taught their other classes after the professional development. In each case, the classes taught after the professional development outperformed the control group on their posttests. The results of this study indicate that professional development has positive impacts on student achievement. A study conducted by Gupta & Lee (2020) also provided support for professional development as a method to increase student achievement in elementary literacy. The focus of the study was a low performing, Title I school in an urban area. The school was partnered with a local university to support intervention for struggling students. The study focused on the professional development

of 12 teachers in Grades 4 and 5. The teachers engaged in a professional development facilitated by professors at the partner university. Data was gathered to determine teacher's perception of the professional development, the degree of fidelity they implemented the training materials, and student achievement. Significant increases were found in fourth- grade reading and fifth- grade writing, as well as student growth across all classrooms. This study supports the effectiveness for professional development as a method for increasing student achievement.

Professional development that positively impacts student achievement can also have long term impacts for students. A study conducted in South Carolina aimed to determine the immediate and long-term effectiveness of their STEM Institute. The professional development supported teacher skills and knowledge surrounding PBL with cross content units. The STEM Institute trained over 475 teachers over 11 years

Another factor to consider when implementing professional development is the length and level of support to ensure effectiveness. Nichol, et al. (2018) conducted a study to determine the effectiveness of a year-long professional development for science teachers by examining student achievement on the mandated fifth- grade state assessment. One finding of the study that is important to note is that the data indicated that teachers being out of the classroom for 20% of the instructional minutes (one day a week) did not have a negative impact on student achievement. This is important because administration and teachers often believe that student achievement will be impacted if the teacher is out of the classroom too often (Nichol, et al., 2018). The study compared the impact on student achievement in the year professional development was occurring, as

well as the following year. Findings indicated that student achievement was not impacted in the first year, but significantly increased in the second year. This data indicates that teachers need time to process and effectively implement their learning. This study provides support for extending time frames for mandating effective implementation of new programs, as well as providing time for teachers to engage in effective professional development.

On the other hand, Basma and Savage (2018) conducted a study surrounding the impact of teacher professional development and student growth in literacy. The study recognizes that the teacher is the determinate of effectiveness in changing practices to increase student achievement. The study focused on determining the best length of ongoing professional development to ensure student achievement increases. The review was conducted by analyzing the data from 17 previous studies. The study reviewed professional developments ranging from 10 hours to 17 hours. It was determined that the professional development had the most impact on student achievement when the total hours of professional development were under 30. This provides evidence for extended professional development to equal approximately 5 days, but longer than 30 hours (5 days) did not have an increased impact on student achievement.

Teacher Self–Efficacy

Teacher self-efficacy was first introduced by Bandura's (1977) social cognitive theory, stating that a teacher's belief in themselves will guide them to supporting the needs of students. Commonly, experienced teachers are found to have self-efficacy, while new teachers are still gaining confidence in their skills and abilities. Martin and Mulvihill

(2019) explored different beliefs teachers had surrounding self-efficacy. A common theme among the different beliefs was that teachers must have efficacy to meet student outcomes. Without belief in themselves, they may not have the confidence to perform to their highest potential, in turn not providing the best learning experiences for students. Related to needing to have efficacy, another theme was that professional development and ongoing support led to increased self-efficacy. Providing teachers with quality learning experiences would provide them with skills, knowledge, and confidence to effectively implement their learning into their instructional practices.

Granger et al. (2019) conducted a study of 129 teachers and 2,694 students, selected at random, to investigate the impact of professional development and curricula fidelity. The study compared those who engaged with more professional development and fidelity with a specific curriculum, with those who received limited professional development and a traditional curriculum. One of the findings indicated that teacher self-efficacy had an impact on the effectiveness of the professional development and fidelity of the curriculum. The study connected the learning back to the theory presented by John Dewey (1916), that self-doubt can have an impact on one's ability to integrate new learning into current schema. Ultimately, this study provided evidence that professional development and implementation of curriculum fidelity is only successful if a teacher has moderate to high self-efficacy.

Another study conducted by Whitworth et al. (2020) focused on the impact of a professional development for mathematics teachers. The study consisted of examining 6918 participants that span 26 different mathematics focused professional developments.

This study was considered phase II of a larger study on the effectiveness of mathematics professional development. Data was gathered on teacher's content knowledge and their self-efficacy. Conclusions drawn from the study indicate that professional developments that were more adaptable to the needs of the participants were more likely to develop higher self-efficacy. This study prompted questions in consistency of the delivery of professional development sessions, but provided evidence for meeting the needs of individual participants rather than delivering the professional development with fidelity to the design. Another conclusion of the study indicated that teachers who scored higher on the mathematical knowledge assessment also attended professional developments that were more adaptive to the needs of the participants. This study provided evidence that when professional developments are more responsive to the needs of participants, they are able to build self-efficacy, which can provide confidence in the ability to deliver new materials or instructional practices within the classroom.

The design of the professional development experience can also impact teacher self-efficacy. A study examined 350 science teacher self-efficacy during science inquiry based professional development to determine which experiences were more successful (Seneviratne, et al., 2019). A questionnaire was completed by participants. Findings indicated that providing teachers with experiences similar to what they would be asking students to do was the most effective experience during professional development to increase self-efficacy. The other experience that rated highly was collaborative structures, which allowed teachers the opportunity to work and learn from other teachers. Reasons proposed for these experiences leading to self-efficacy include an increase in the

teacher's confidence in implementing an experience they had experienced themselves, as well as having a positive experience resulting in a belief around the practice. The findings from this study provide insight into experiences that can be incorporated into professional development sessions that result in increasing teacher self-efficacy.

When developing professional development, it is essential to incorporate practices that will increase teacher self-efficacy. Glackin (2019) conducted a study to determine what structures can be incorporated into professional development to support self-efficacy. There were 6 participating teachers who engaged in semi-structured interviews, classroom observations, and various surveys over a two-year period. Data collected from the study indicated 4 areas that can improve self-efficacy during professional development, which include role playing, providing resources and props, engagement, and driving theories incorporated by session facilitators. Teachers felt that they were more likely to feel successful when implementing practices into their classroom when they had opportunities to role play, as well as be provided with all resources necessary to execute the materials. Teachers who were encouraged to be engaged and actively participate into the professional development sessions left feeling confident about implementing their learning into their classroom. Lastly, when facilitators connected the professional development to theoretical frameworks, findings indicated a higher success in their implementation. These driving practices can support the development of professional development sessions.

A study conducted in South Carolina by Havice et al. (2018) aimed to determine the immediate and long-term effectiveness of their STEM Institute. The professional

development supported teacher skills and knowledge surrounding PBL with cross content units. Although the STEM Institute trained over 475 teachers over 11 years, the study aimed at teachers who were training in 2015 and 2016 resulting in evaluation data from 42 participants. Data gathered determined that the immediate outcome of the Institute was an increase in teacher self-efficacy. Participants felt like they knew their content area better, as well as had developed skills to implement effectively. Similarly, Polly et al. (2017) conducted a study to determine the impact of a yearlong professional development supporting Kindergarten mathematics. Fifteen Kindergarten teachers from two different Title I schools attended 80 hours of professional development. These sessions included 48 hours of summer learning, 12 hours of afterschool sessions, and 20 hours of integrated professional development into classroom activities. Data indicated that there was an impact on student achievement, especially in the area of number sense, but the largest impact was on teacher self-efficacy. Teachers felt that they learned a great deal about their content area and instructional practices, providing them confidence and skills to better support their students. It was assumed that teachers would continue to improve their skillset, having a larger impact on student achievement in the future.

Another practice to incorporate into professional development that increases teacher self-efficacy is ensuring opportunities for reflection. Activities that enhance professional development experiences through reflection include opportunities for feedback, collaboration to share knowledge, learning from mistakes, and trying new and different strategies (Leicher & Mulder, 2018). A study was conducted by Leicher and Mulder (2018) to determine the effectiveness of using vignettes within professional

development sessions. The theory behind vignettes is to incorporate smaller groups to encourage discussion and reflection. In turn, individuals can learn from the experiences of others, reflecting on their learning. Professional development incorporating twelve professionals determined that vignettes had the ability to encourage reflection, which lead to higher self-efficacy in the areas that were discussed. Another study that focused on reflective practices to decrease emotional internalization and increase teacher self-efficacy was conducted by Roberts et al. (2020). Teachers in this study had an average of 8.5 years of experience in the preschool classroom. Teachers participated in interviews that gathered information on different practices that lead to self-efficacy. Teachers felt that engaging in coaching and reflection writing provided an outlet for emotion, which could reduce stress, while allowing them an opportunity to reconsider the situation they were reflecting on. This can lead to higher self-efficacy as a teacher continues to engage in practices that encourage reflection and committing to making changes in the context of the reflection. As a teacher feels they are making positive changes in their practices to support the needs of students, their self-efficacy increases.

Collaboration

Vygotsky's (1978) sociocultural theory emphasizes the importance of social interactions on the development of cognition. According to this theory, the community surrounding an individual has an impact on their ability to make meaning of the experiences they engage in, furthering develop their abilities. Teachers develop their professional identity by overcoming challenges and engaging in supportive experiences with their peers (Tsybulsky, & Muchnik-Rozanov, 2019). In a study of 17 student

teachers engaging in PBL during their internships, data was gathered from interviews and reflective surveys to determine if professional identity was shaped through their internship experiences. Results indicated that sharing their experience with another educator, and engaging in reflective practices had a greater impact on their professional identity, indicating that collaboration was an essential part of engaging in and successfully implementing new instructional practices.

Hargreaves (2019) details different opportunities that should be integrated into education to ensure teachers are provided with the chance to collaborate with others. He states that providing collaborative professionalism is when educational professionals share knowledge, skills, and experiences to work together to improve student outcomes (Hargreaves, 2019). One way to incorporate collaborative professionalism is through professional learning communities (PLCs). These are meetings that allow teachers to meet together on a regular basis. PLCs have a defined purpose and structures, which ensure the objective of collaboration occurs. During this time teachers examined student work or discuss students directly. Through these structures, teachers are able to reflect upon their practice, student learning, and problem solve to ensure students continue to increase achievement. Another studied aimed to explore teacher learning groups (TLGs) of 39 teachers. All teachers reported changes in their teaching practices and better understanding of teaching (Van Schaik, et al., 2019). Conducting over three years, the study gathered information from structured interviews with the participants. Information gathered also determined that TLGs were most effective when an administrator facilitated the session, but teachers were able to co-construct knowledge among them with research-

based practices. Both studies reviewed provide strong evidence for the incorporation of ensuring there is time set aside for collaborative work time.

In a study conducted by Yu (2018) with 150 teachers and principals, it was determined that teachers require an opportunity to reflect on their learning and experiences with a group of peers to increase collaborative processes. Within this study a critical incident framework was utilized to help guide teachers through reflection process on experiences in their classroom. Findings from the study provided information that teachers took for granted the opportunity to learn from sharing stories about their experiences, or in listening to experiences from others. It was also determined that teachers were able to gain awareness of the knowledge they held when having to articulate their experiences.

Another method used to integrate reflection to increase the collaborative structures are to incorporate peer observations and feedback sessions. Teachers are more likely to be receptive to feedback from their peers than from administrators (Ridge & Lavigne, 2020). The feedback sessions found most useful were focused on incorporating new practices or planning lessons. Coaching conversations among peers were found to be more descriptive rather than analytical, as well as more equal talk time. When teachers felt more equal, they were more open to having a collaborative conversation, resulting in a higher level of self-efficacy and follow through.

Kent (2019) conducted a study investigating the effectiveness of professional development that spread over a three-year period. The professional development focused on incorporating the standards into mathematics instruction in kindergarten to eighth

grade. The professional development and implementation included all teachers in the district, and was supported by three instructional coaches. Results of the study indicated that student achievement increased, and the main factors were attributed to peer classroom observations and sharing of student work samples for examination. This study provides support for ongoing professional development, but also provides support for incorporating collaborative structures within teacher professional development sessions.

Murai and Muramatsu (2020) sought to determine effective collaboration techniques in online professional development due to the COVID crisis. The study aimed to report successful practices to harbor a sense of community during online professional development. The professional development session consisted of 14 teachers. Some of the recommendations that were proposed as a result of the study include the following: begin with a fun shared experience, provide objectives while ensuring opportunity for exploration, incorporate low-risk check-ins with participants, provide multiple ways for participants to share knowledge, ensure access to materials, and allow ways to connect after the professional development. Conclusions of the study indicated these practices had a positive impact on teacher moral by providing them a system of collaboration during shared experiences.

Project Description

I designed a 3-day professional development for teachers inexperienced in PBL to support instructional fidelity of state standards during these units. The first implementation of the professional development will be in the summer of 2021, but the training will be hosted annually to support new teachers to the campus. The study

location currently incorporates two additional weeks of professional development for teachers, so this professional development will be executed during 3 days of these additional training days. The professional development will be hosted at the location of student and include informational training, activities, discussions, planning time, and feedback sessions. Each of the sessions will have a different focus, then incorporate work time for teachers to begin implementing their learning to their own context. The professional development will open on Day 1 with learning on PBL to include what project-based learning is, the components, and the benefits. The afternoon session will focus on backwards planning by examining state standards that must be covered. Teachers will work with their grade level teams to begin to identify standards across content areas that could be connected to develop a PBL. Day 2 will continue with learning the planning process, focused on interdisciplinary units that incorporate standard based lessons, activities, and assessments. Groups will also have time to work together to apply their learning to their teaching context. Day 3 will provide quick a learning session around the entry event and predicting potential project outcomes, but will consist mostly of collaborative work time and a feedback session.

To effectively implement the professional development, there are a variety of roles and resources that must be accessible. The professional development will be facilitated by the instructional coach assigned to PBL, but will have the assistance of the three experienced PBL teachers and administrators to ensure a collaborative and supportive environment is fostered. This will begin to develop a future support system for teachers throughout the school year. Prior to the professional development, access to a

Smartboard and copier will be necessary to facilitate the session and to provide paper copies of materials for teachers. Chart paper, markers, Post-It notes, copy paper, and access to the library will also be required. Teachers will need access to their computers so they can gain access to their standards and planning documents. Breakfast and lunch have been provided each day during the additional work days by a local church, but will be provided by the campus if not. Water, coffee, tea, and snacks will be available throughout the day. Although these are additional professional development days, they are contracted work days at that study location, so no additional pay for participants or substitutes will be required.

There are a few potential barriers that must be considered. Although the teachers will be on contracted days, one potential barrier to the professional development would be the preparation time for the facilitators. Due to the study location already implementing a unique school calendar, the summer is shortened and facilitators may be unwilling to return to work early to prepare. A potential solution is to meet prior to the end of the current school year to prepare. Another solution could be to run this professional development in the second half of the week to ensure preparation time is built into the first reporting day. Another potential barrier could be other professional development sessions that need to be delivered. To ensure this training is prioritized, it will be addressed during leadership meetings when the scheduling of the summer professional development occurs. The connection to the in-district charter, school rating, and study results will be provided to administration as support to help norm on the importance.

The goal of the professional development is to provide a learning experience for teachers about PBL and the planning and implementation practices that can ensure instructional fidelity of state standards during PBL. Although this study is targeting third- to sixth-grade teachers, all teachers will engage in the training in case of grade level changes, and to continue to strengthen the PBL program. The responsibilities of teachers and administrators are to engage in the sessions with a focused, outcomes based mindset. Participants will be expected to maximize their learning and work time, as well as collaborate with colleagues. The professional development will provide to the campus leadership to implement during the summer training days, but my responsibility will support them in any capacity they feel they need. These supports could include planning with facilitators, executing sessions, and/or providing additional support capacity during the training. The study results and the professional development outcome has been discussed with campus administration, who have agreed the professional development would support the needs of the campus and have positive impacts on the PBL program. The professional development has been added to the list of summer professional development needs.

Project Evaluation Plan

Evaluation of any professional development is essential to ensure the intended outcomes are being met. Formative assessments take place during the learning to provide feedback on areas of support needed in the learning process, while summative assessment takes place at the end to provide information on what has been learned and if the learning went well (Mastagli, et al., 2020). The evaluation plan for this project focuses on

determining if teachers feel they have met the intended goals of the professional development as well as their feedback on the delivery of the professional development, therefore utilizing summative assessment. Teachers will be provided with a reflection sheet at the end of the day that asks the teachers to provide their feedback on the effectiveness of the training that day, as well as insight into their perception of whether they had met the learning objective for the sessions delivered. Information gathered from these surveys will be utilized to make improvements to the professional development sessions to ensure the sessions provide the most value for teachers.

Reflection writing and Likert scale questions will be utilized in the evaluation surveys. Summative assessments that incorporate Likert scale questions provide data on whether the teachers were successfully in the learning process on a numerical scale (Ahmed et al., 2019). Reflection writing is a process that provides an opportunity to surface knowledge that may not be shared otherwise, which can have impact on the practical knowledge necessary to improve the professional development further (Kaaba et al., 2020). Combining these two methods will provide a well-developed evaluation plan for the professional development that will allow an understanding of teacher perception of meeting the intended outcomes, while also providing a documentation of learning. Shared responses will provide feedback that will be taken into consideration to make improvements to future professional development sessions.

The professional development will include 3 days during contracted workdays in the extended summer learning time for teachers. The professional development will include informational learning, discussions, activities, collaboration and feedback

sessions to support teachers in ensuring instructional fidelity of state standards during PBL units. The goals of the professional development will be reflected in the evaluation surveys. The first goal of the evaluation plan is to determine if teachers gain a deeper understanding of PBL as a teaching practice. A second goal that will be evaluated is if teachers feel they are able to backwards plan interdisciplinary PBL units and understand a variety of instructional practices that can be utilized in the delivery of state standards during PBL. Another goal will be if teachers feel they have developed collaborative relationships throughout the professional development that can support them throughout the PBL implementation process. The overarching goal of the professional development sessions is to improve the PBL program at the study location, to include instructional fidelity of state standards, which will in turn increase student achievement.

Key stakeholders for this professional development are the teachers and administrators at the study location. Administrators and teachers will work collaboratively in the training and be asked to complete a summative evaluation to improve the effectiveness of the professional development sessions in the future. Summaries of the surveys will be shared with the administrators and instructional coaches. The purpose of sharing the evaluation results with the campus leadership is to provide them information about the effectiveness of the professional development and to help them drive decisions about ongoing support throughout the year.

Project Implications

The findings of this study provided strong evidence for the reasons behind the decrease in student achievement since the implementation of PBL at the study location.

The data indicated a strong need for a formal training regarding instructional fidelity of state standards during PBL units. As a solution, I developed a 3-day professional development that can be implemented to provide teachers with the information and skills they currently feel they are lacking. The professional development was designed to meet the needs of the inexperienced teachers, as well as providing ongoing improvement for experienced teachers, and collaborative structures to ensure ongoing support throughout the year. Each of these factors will contribute to the improvement of the PBL program, ultimately increasing student achievement at the study location.

The outcomes of this project include increasing teacher skills and knowledge about PBL, which can improve current instructional practices at the study location. The instructional practices include backwards planning aligned to state standards, developing interdisciplinary units, and incorporating teaching methods and assessment into PBL. PBL provides students with opportunities to build skills that prepare them for their future including engaging in constructivist thinking, multisensory and reflective activities, and collaboration (Matriano, 2020). Using the additional skills teachers gain, they will better be able to deliver the PBL program, which has positive social implications for students by better preparing them for future success.

The project deliverable also has implications that reach outside of the local context. The professional development that was created can be implemented in any context to build success within any PBL program by improving the instructional fidelity of state standards. Improving instructional fidelity of state standards aligns with greater student achievement, which can have wider implications on funding and enrollment for

any school. PBL training can be improved by utilizing this professional development which extends the emphasis on the student achievement and adjusting the agenda to incorporate more teacher collaboration.

Summary

Section 3 included an overview of the project deliverable that resulted from the data analysis in Section 2. I developed a professional development, which spans 3 days, in response to the data. Comprehensive information about the professional development was provided including information on the project, the goals, the rationale, and the evaluation plan. A literature review reviewing related topics for the project was also included. Section 3 also included a discuss of the implications this project has on social change on the study location, as well as the larger context. Section 4 discusses the project strengths, limitations, alternative considerations, and possible future research. The section will close with reflections on scholarship, project development and evaluation, as well as leadership and change.

Section 4: Reflections and Conclusions

In Section 4, I provide my reflections and conclusions on the project study. I also discuss alternative approaches to the project study that I considered to assist with the research problem. I consider development in the areas of scholarship, project development and evaluation, and leadership and change. Section 4 concludes with a discussion of the study's implications and applications and directions for future research.

Project Strengths and Limitations

I examined instructional fidelity of state standards during PBL units in Grades 3 to 6. I undertook to the study because of a decline in student achievement at the study site. After analyzing the data that I collected from my interviews with the participating teachers, I concluded that formal training was necessary to ensure effective implementation of instructional fidelity of state standards during PBL units. In response to the results of this study, I created a 3-day professional development to provide support for the study location. The professional development will address each of the topics that participants identified as necessary to incorporate instructional fidelity of state standards into their PBL units. These needs included training, support, collaboration, planning, time, capacity, and knowledge of their grade-level standards. The professional development was developed to provide the skills and knowledge surrounding instructional fidelity of state standards to support teachers in their planning and implementation of PBL units. The structure of the professional development also provides time for teachers to plan and work together, fostering a supportive and collaborative environment that is designed to carry into the school year. When teachers

work together, they are provided with the ability to engage in continuous improvement that has a beneficial impact on student achievement (Little, 2020). The professional development was designed to provide teachers with the skills and knowledge they need to effectively implement instructional fidelity of state standards during PBL, while also fostering a collaborative environment for ongoing support. The professional development sessions were designed using research-based practices for adult learning. (Smith, et al., 2020)

A strong professional development has been developed for the study location to provide the skills and knowledge for effective planning and instructional practices surrounding state standards during PBL. Despite being research-based, there could still be flaws on the implementation of instructional fidelity of state standards during PBL units. One of the most important factors impacting effective implementation of instructional practices is a positive classroom culture (Rasid et al., 2020). This factor could hinder the effectiveness of the implementation of instructional practices in PBL due to the high degree of collaboration and teacher facilitation, rather than direct teaching methods, required within the classroom. Campus administration are the driving force for creating a positive school culture and offering structural supports for effective teaching to ensure learner outcomes (Fourie, 2018). Without a strong classroom culture, instructional fidelity of state standards during PBL could suffer. This professional development does not address classroom culture or culture building at the campus.

Recommendations for Alternative Approaches

Teachers must continue to engage in their learning, applying it to their practice to build self-efficacy in their ability to implement instructional fidelity of state standards during PBL units. An alternative approach that I considered was to develop a PLC structure focused on monthly sessions for grade-level teacher teams to learn and plan together. Another alternative was to develop a coaching and mentorship plan that allowed teachers to mentor one another by modeling instructional practices and engaging in classroom observations, co-plan units, and feedback sessions. This approach could build teacher leaders by providing them with the opportunity to share their successful practices across the campus. This approach might also increase the collaborative structures within the study location, which could improve school culture. Developing a comprehensive implementation plan would provide ongoing support that participants indicated was lacking. The professional development that was developed incorporates collaborative structures, while providing teachers with the skills and knowledge they lacked in regard to instructional fidelity of state standards. The professional development incorporates similar features of a PLC structure and coaching and mentorship plan into the sessions, while also allowing teachers to engage in learning and reflect on their practices and learning experiences.

Scholarship, Project Development and Evaluation, and Leadership and Change

Engaging in this educational experience has given me a deep understanding of scholarship. I have always considered myself to be a lifelong learner, and this experience confirmed that to be true, as I have always looked for ways to grow and expand my

knowledge. Entering the education field made me realize how much there is to learn. Being a lifelong learner is especially important in education, as the educational landscape continues to evolve and change with society and the 21st Century (Ng, 2019). The doctoral journey has provided me with skills to engage in academic research that will support my success in my profession for years to come. My ability to engage in academic research has provided me the ability to implement educational systems that are respected by colleagues. I found the journey challenging at times, but determination and natural desire to continue to improve and learn drove me to success. I entered the doctoral program knowing I would focus on PBL. The experiences I had during the program gave me a specific focus: exploring instructional fidelity of state standards during PBL.

I have grown immensely as a professional by engaging in academic research. The research process strengthened my perseverance, patience, and determination to overcome challenges. My writing skills now mirror those of a scholar, by utilizing scholarly language. I have engaged in researching, reading, writing, editing, and revising until my study was complete. I will continue to improve these skills in the years to come, always looking to improve.

After so many hours spent researching and learning, engaging in project development allowed all of the hard work to culminate to something that contributed to an education system. The focus of the 3-day professional development is on providing teachers with the skills and knowledge necessary to implement instructional fidelity of state standards during PBL. The focus of this project was something I felt strongly about when I first entered education, having sought alternative teaching methods in a very

challenging year. Over time, I became passionate about the success of PBL, but realized there were many areas that required improvement. Developing this professional development to support teachers in ensuring PBL leads to student outcomes feels like a great accomplishment. The project is rotted in Knowles' adult learning theory to insure that best practices for adult learning were utilized during the development of the project. The evaluation methods incorporated into the professional development provide an opportunity to gather information on the effectiveness of the sessions, while allowing teachers a change to reflect and share their learning. Improvement of the study location's student achievement and school rating will also provide an evaluation of the effectiveness of the professional development.

Throughout the doctoral journey I have gained flexibility, patience, responsibility, and accountability. The process has allowed me to engage in self-reflection. I have gained self-confidence, believe with hard work and increased effort, anything is attainable. Oftentimes, I had to engage in problem-solving to overcome challenges within the process. In a study conducted by Chase et al. (2020), transferable skills of a leader include the ability to motivate others (leadership), collaboration/teamwork, problem solving, overcoming challenges, and self-confidence. All of the skills gained during the doctoral process has had great impact on my leadership abilities. With greater leadership skills, and the ability to accept and overcome challenges, I feel more prepared and ready to work towards continuous improvement of the educational system to ensure all students receive a high-quality education that results in student achievement. By ensuring the

education system effectively increases student achievement, we are better preparing students for future success.

Reflection on Importance of the Work

The doctoral process has allowed me to strengthen my dedication, resilience, and wisdom. Although many times I found the process challenging, reaching each milestone increased my sense of accomplishment and determination to reach the final outcome. Beyond strengthening my resilience, I was able to gain valuable academic skills. I feel confident in my ability to engage in academic research. My ability to gather and analyze data has been strengthened and I am confident I can continue to engage in academic research to support different programs within my profession. In my current position, or any future positions I may hold, I feel assured I can contribute to the academic programming of any educational context as a result of the skills I have gained through the doctoral process. The idea of continuing to strengthen my skills, while providing a unique skillset to my field, motivates me to seek opportunities that allow me to continue to contribute to positive changes in education.

After engaging in data analysis, I was able to develop a project that can be utilized to better a program in my local context. I entered the doctoral journey knowing I wanted to have a focus around PBL. Throughout the journey I was able to articulate the problem I wanted to solve, and ultimately develop a project as a proposed solution to the research problem. The campus is excited to implement the professional development, which provides me even more encouragement to continue building the skills I have gained. The doctoral journey taught me self-reflection as I questioned myself and my abilities

numerous times. It taught me to use my strengths as my guidance. My strength during this process was rooted in passion for my field. My passion for PBL drove me to begin this process, but the outcome has given me the skills to make greater changes in the programs within the education system. Improving programmatic pieces of education will result in increasing student achievement, which can, in turn, improve the future for all students.

Implications, Applications, and Directions for Future Research

The professional development project that resulted from this study presented a possible solution to the teacher perception that they felt they lacked training in support to be able to effectively implement instructional fidelity of state standards during project-based learning (see Appendix A). Findings from the study provided evidence to support the development of a 3-day professional development plan to provide teachers with the skills and knowledge to understand PBL as a teaching practice and effectively implement instructional fidelity of state standards through planning and implementation practices. The professional development also aimed to foster collaborative relationships among staff that could provide as an ongoing support structure throughout the school year. The positive implications of the professional development for teachers is to improve their instructional practices surrounding PBL, specifically by better incorporating state standards. If teachers are able to better implement the program, the study location will see an increase in student achievement, which has positive impacts on the students. An increase in student achievement could also have positive impacts on the study locations' state rating which can impact funding and enrollment. Positive social change can result

due to a more effective PBL program, as this practice better prepares students for their future by providing 21st Century skills such as collaboration, critical thinking, and problem solving.

The professional development deliverable resulting from this project study was focused on providing teachers the skills and knowledge to effectively implement instructional fidelity of state standards during PBL units. Future research could expand into monitoring the effectiveness of the professional development over time. Research could be gathered through classroom observations and teacher planning documents to determine instructional fidelity during implementation. Student achievement could be monitored to determine the impacts the professional development has on student achievement, as well as on the school rating. In discussions with administration at the campus, the project could also be expanded to include ongoing support. The support plan could include mentoring and coaching structures across the campus. Research could be gathered on effectiveness of the support plan.

Conclusion

The purpose of this qualitative study was to investigate the decline in student achievement since the implementation of PBL at the study location by exploring teacher perception of instructional fidelity of state standards during PBL in third- through sixth-grade teachers. The problem was investigated to determine teacher perception of instructional fidelity of state standards in PBL units, to determine a potential solution to the problem. Teachers provided insight into the reasons they were unable to effectively implement instructional fidelity of state standards into PBL units. These reasons included

a lack of training, planning, support, collaboration, capacity, and knowledge of their grade level standards. Teachers felt that a formal training would provide many of the skills and knowledge they needed to be more successful in the PBL program. These results drove the creation of a professional development that aimed at the following goals:

- Goal 1: Teachers will gain a deep understanding of the PBL teaching practice, as well as the core components and benefits.
- Goal 2: Teachers will backwards plan (starting with the state standards) to develop interdisciplinary PBL units.
- Goal 3: Teachers will begin to develop collaborative relationships that can support them throughout the PBL implementation process.
- Goal 4: Teachers will understand a variety of instructional practices that can be utilized to deliver state standards during PBL units.
- Goal 5: Teachers will engage in feedback protocols to improve instructional fidelity of state standards in PBL units during the planning process.

The professional development provides comprehensive initial training and begins to establish collaborative structures that will continue within the campus. Although a strong training is provided, the administration and instructional coach must continue to provide a space for these collaborative structures. This will require an ongoing support plan to be created to support teachers during the implementation process of the PBL.

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Appendix A: The Project

Purpose and Rationale

The purpose of the professional development is to provide teachers with the skills and knowledge to implement instructional fidelity of state standards during PBL units. The professional development was created in response to the data collected that identified main reasons teachers were struggling to implement instructional fidelity of state standards during PBL. These reasons include a lack of training, support, collaboration, planning, capacity, and knowledge of the depth of grade level standards. By providing a professional development that takes these concerns into account, teachers will be better prepared to incorporate state standards into their PBL units. 100% of the teachers that participated in the interviews felt that a strong training was necessary to better support the PBL program. To continue improving student learning, teachers must feel they have a sense of ownership in their professional learning experiences (Toom, Pietarinen, Soini & Pyhalto, 2017). Teachers provided input that they felt a formal training was necessary, and would be of great value at the campus, which led to the creating of this professional development. By improving the instructional fidelity of state standards during PBL units, student achievement can be increased, which could have a positive impact on the school rating, funding, and enrollment.

Goals and Timeline

The main goal of professional development is to improve the PBL program at the campus by increasing instructional fidelity of state standards during PBL units, leading to an increase in student achievement. The goals of professional development are in direct

response to data gathered during interviews about reasons teachers struggled with instructional fidelity of state standards during PBL. Goals for professional development are as follows:

- Goal 1: Teachers will gain a deep understanding of the PBL teaching practice, as well as the core components and benefits.
- Goal 2: Teachers will backwards plan (starting with the state standards) to develop interdisciplinary PBL units.
- Goal 3: Teachers will begin to develop collaborative relationships that can support them throughout the PBL implementation process.
- Goal 4: Teachers will understand a variety of instructional practices that can be utilized to deliver state standards during PBL units.
- Goal 5: Teachers will engage in feedback protocols to improve instructional fidelity of state standards during PBL units during the planning process.

The professional development will be implemented during the extended summer learning for teachers in July of 2021. The goals of each session are presented in Table A1.

Teachers will begin each day with breakfast and mingling, followed by learning sessions combined with collaborative work time, lunch, learning and/or work time in the afternoon, and conclude each session with an evaluation to provide insight into their level of mastery of the objectives, as well as ways to improve the professional development sessions in the future.

Table A1

Professional Development Alignment of Objectives

Date of Session	Objectives
Summer 2021: Day One	Goal 1: Inexperienced PBL teachers will gain a deep understanding of the PBL teaching practice, as well as the core components and benefits. Goal 2: Teachers will backwards plan (starting with state standards) to develop interdisciplinary PBL units. Goal 3: Teachers will begin to develop collaborative relationships that can support them throughout the PBL implementation process.
Summer 2021: Day Two	Goal 2: Teachers will backwards plan (starting with state standards) to develop interdisciplinary PBL units. Goal 3: Teachers will begin to develop collaborative relationships that can support them throughout the PBL implementation process. Goal 4: Teachers will understand a variety of instructional practices that can be utilized to deliver state standards during PBL units.
Summer 2021: Day Three	Goal 2: Teachers will backwards plan (starting with state standards) to develop interdisciplinary PBL units. Goal 3: Teachers will begin to develop collaborative relationships that can support them throughout the PBL implementation process. Goal 4: Teachers will understand a variety of instructional practices that can be utilized to deliver state standards during PBL units. Goal 5: Teachers will engage in feedback protocols to improve instructional fidelity of state standards in project-based learning units during the planning process.

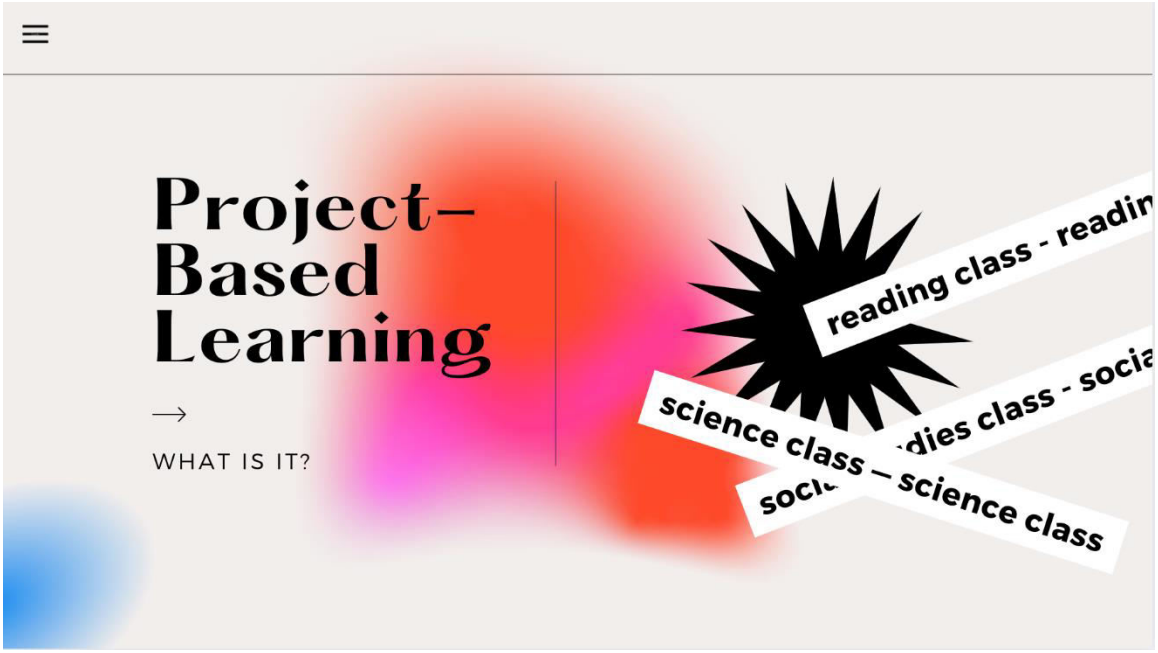
Day One

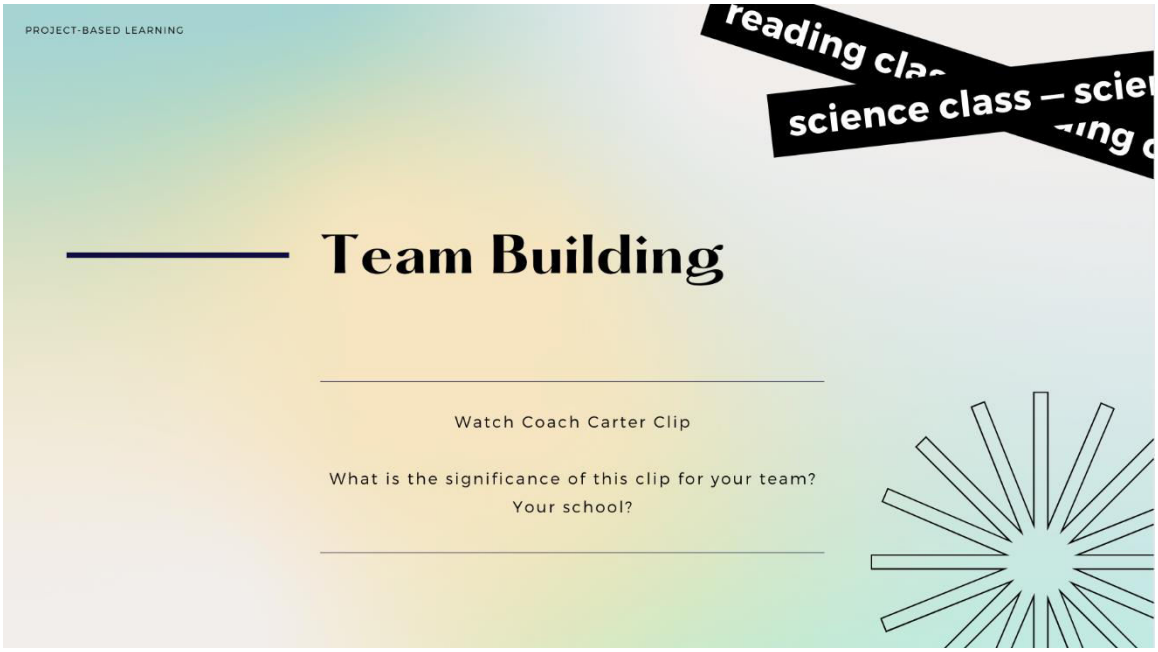
Session Outcomes
Goal 1: Teachers will gain a deep understanding of the PBL teaching practice, as well as the core components and benefits. Goal 2: Teachers will backwards plan (starting with state standards) to develop interdisciplinary PBL units. Goal 3: Teachers will begin to develop collaborative relationships that can support them throughout the PBL implementation process.

Session Materials	
Facilitator: • Smartboard • Computer • PowerPoint • Coffee • Water • Breakfast (fruit salad, muffins)	Participants: • Charged laptop • Access to grade level standards

Agenda	
8:30 – 9:00	Breakfast provided for participants
9:00 – 9:15	Welcome and Introduction
9:15 – 9:30	Team Building Activity
9:30 – 10:45	Learning Session: What is Project-Based Learning?
10:45 – 11:30	Collaborative Share
11:30 - 12:30	Lunch
12:30 – 1:00	Learning Session: Backwards Planning with State Standards & Developing Interdisciplinary Units
1:00 - 3:00	Collaborative Work Time
3:00 – 3:30	Closing & Session Evaluation

Collaborative Work Time – Although these are designed to be grade level teams, the three experienced teachers, instructional coach, and administration will all be assigned to a group. The experienced teachers will provide PBLs from within the past few years that they felt were most successful. These PBLs will be the groups level exemplars throughout the professional development to support their learning and planning.


Project–
Based
Learning
WHAT IS IT?
reading class - readin
science class – science class

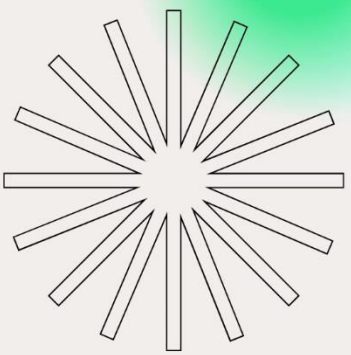

PROJECT-BASED LEARNING
science class – scie
Team Building
Watch Coach Carter Clip
What is the significance of this clip for your team?
Your school?

PROJECT-BASED LEARNING

Welcome!

TODAY'S AGENDA

Team Building Activity
Learning Session - Project-Based Learning
Collaborative Share
Lunch
Learning Session - Backwards Planning & Interdisciplinary Units
Collaborative Work Time
Closing



PROJECT-BASED LEARNING

Daily Objectives

LEARNING OUTCOMES

Objectives

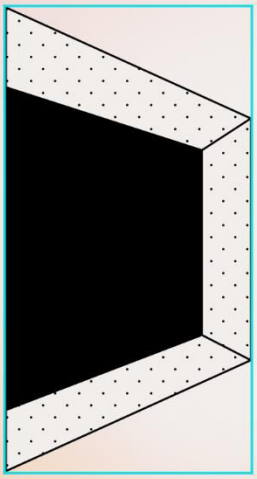
Morning Session:
Goal 1:
Teachers will gain a deep understanding of the project-based learning teaching practice, as well as the core components and benefits.

Goal 3: Teachers will begin to develop collaborative relationships that can support them throughout the PBL implementation process.

Afternoon Session:
Goal 2: Teachers will backwards plan (starting with state standards) to develop interdisciplinary PBL units.

Goal 3: Teachers will begin to develop collaborative relationships that can support them throughout the PBL implementation process.

PROJECT-BASED LEARNING



What is Project-Based Learning?

BRIEF INTRODUCTION

Project-based learning is a student-centered teaching practice that requires students to collaborate to solve real-world problems while integrating multidisciplinary academics.

PROJECT-BASED LEARNING

Understanding PBL Deeper

Background

Jean Piaget - Constructivism - gain knowledge from experiences

John Dewey - Learn by doing

William Kilpatrick - Project-based learning - meaningful learning experiences that are rooted in purpose and incorporate cooperative structures

→

Teacher Role

Facilitator - guides learning

Provide scaffolds as necessary

Intentional planning of content

Create authentic learning experiences

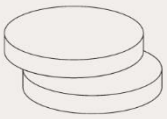
→

?????????

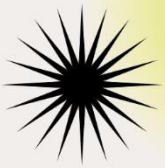
Take the discussion further by talking about the lesson's key concepts and its corresponding definitions. Duplicate this page as many times as needed to give you more space for discussion.

→

PROJECT-BASED LEARNING



Benefits



Increase Student Achievement

- Reaches a variety of learning styles
- Increases student engagement
- Natural differentiation

Develops 21st Century skills

- Problem Solving
- Navigate technology
- Working within structures and systems
- Collaboration
- Critical Thinking
- Self-efficacy
- Communication
- Responsibility
- Reflection

Increase Social-Emotional Skills

- Personal responsibility
- Optimistic thinking
- Goal-directed behavior
- Social awareness
- Decision-making
- Relationship skills
- Self-awareness
- Self-management

PROJECT-BASED LEARNING

Core Components

What makes PBL unique?

- Open-Ended Driving Question
- Launch (Entry event)
- Engagement in Authentic Inquiry
- Interdisciplinary Units
- Integrated into Academics
- Student Exploration
- Collaboration
- Long-Term
- Incorporates real-life tasks/problems
- Assessment
- Facilitative teacher practices
- Student voice and choice
- Tangible Public Outcome


PROJECT-BASED LEARNING
science class – scie
Collaborative Share
Turn to the person next to you
Share one thing you have learned, found interesting/intriguing, surprising, or something you are hoping to dive deeper into this year
BREAK TIME!
math class - math cla
science class – science class

PROJECT-BASED LEARNING

Where do I begin?

STEPS TO DEVELOPING A STRONG PROJECT-BASED LEARNING UNIT

Standards First & Cross Content Connections

Start by examining the standards you need to cover in different content areas to determine how they can be crossed to develop an interdisciplinary unit

Driving Question

Develop an open ended question that requires exploration and inquiry, that focuses on a challenge or problem

Assessment

Create and plan assessments that align with the standards being covered, but also connect to the PBL question

Instruction and Activities

Determine what areas will need mini-lessons and what can be covered by student exploration and inquiry. Plan the activities that will lead students to learning the standards and mastering assessments.

Launch

Plan a fun way to introduce to students that draws their curiosity to the focus of the driving question.

End Product

Brainstorm potential ideas for end products. This will ultimately be authentic based on the students.

PROJECT-BASED LEARNING

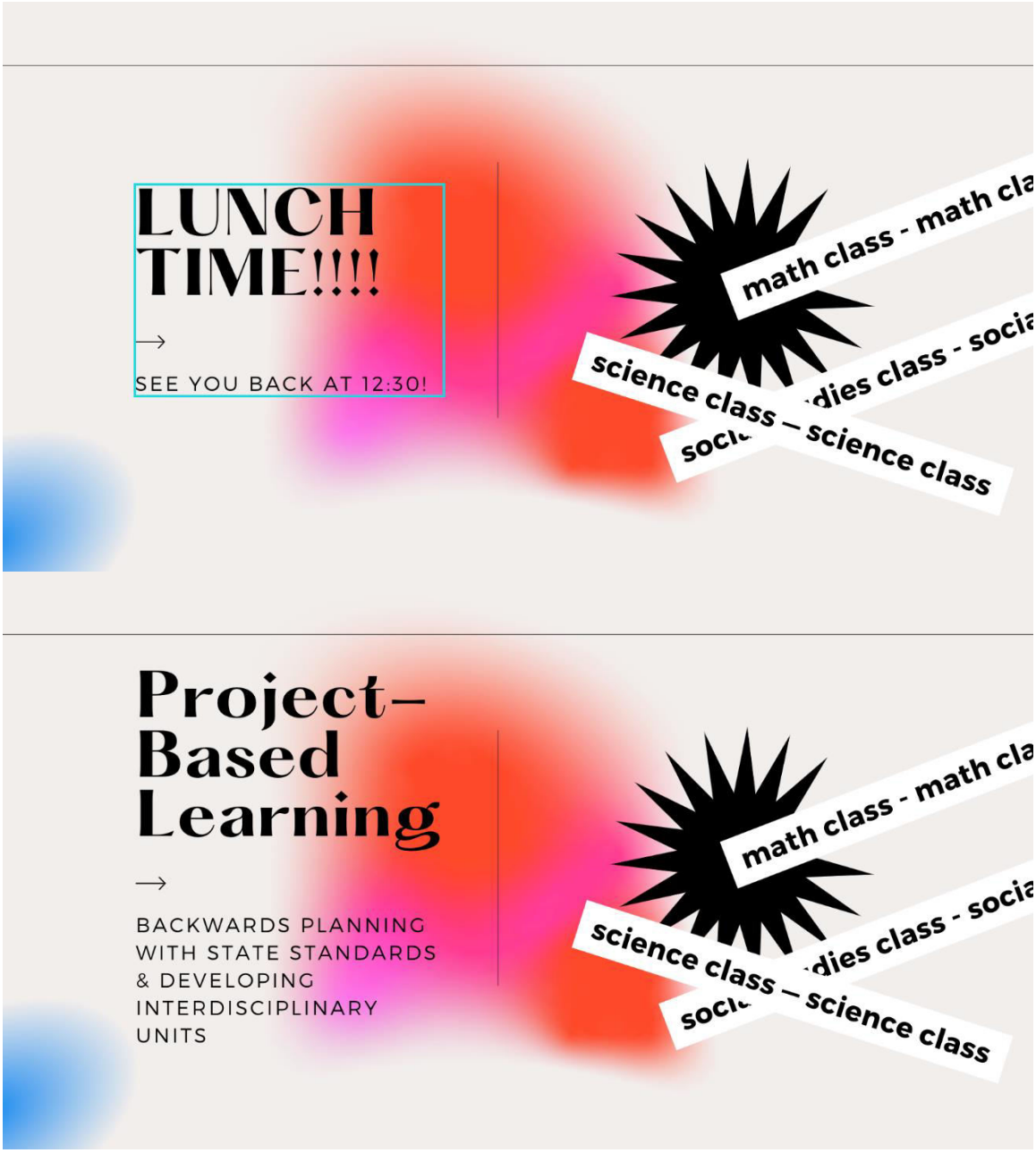
Today: Focus on Standards First and Cross Content Connections

BUT FIRST.....

Divided into groups

Experienced PBL teachers are going to share one of their successful PBLs. Included in their share will be examples of each of the componets to allow you to see what they could look like before we dive in.

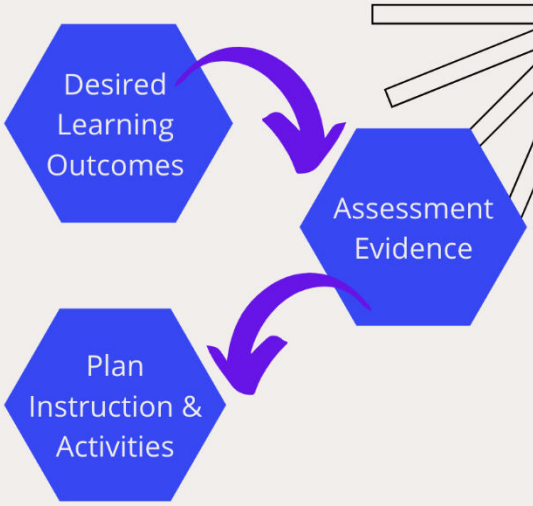
Three teachers - 3 PBLs - 15 minutes each


LUNCH TIME!!!!
→
SEE YOU BACK AT 12:30!
math class - math cla
science class – science class
Project-Based Learning
→
BACKWARDS PLANNING WITH STATE STANDARDS & DEVELOPING INTERDISCIPLINARY UNITS
math class - math cla
science class – science class

PROJECT-BASED LEARNING

Backwards Design Process

How is this similar or different than your current planning process?



PROJECT-BASED LEARNING

Interdisciplinary Units - Connect related topics across content to allow deeper connection to understanding

PROJECT-BASED LEARNING

Where do we start?

Examine Standards

Read through the standards that you need to cover this year for ALL contents

Consider Real Life Problems/Challenges related to the standards

What areas of science, social studies, and math connect to a larger problem or challenge?

*Begin to consider the driving question

Connect Relevant Connections

What other standards can be connected to support the unit? *Think reading, writing, social studies

PROJECT-BASED LEARNING

Examine Standards

Read through the standards and consider which ones could connect to real world problems or challenges that can lead to the creation of student inquiry and student based solutions.

Discuss

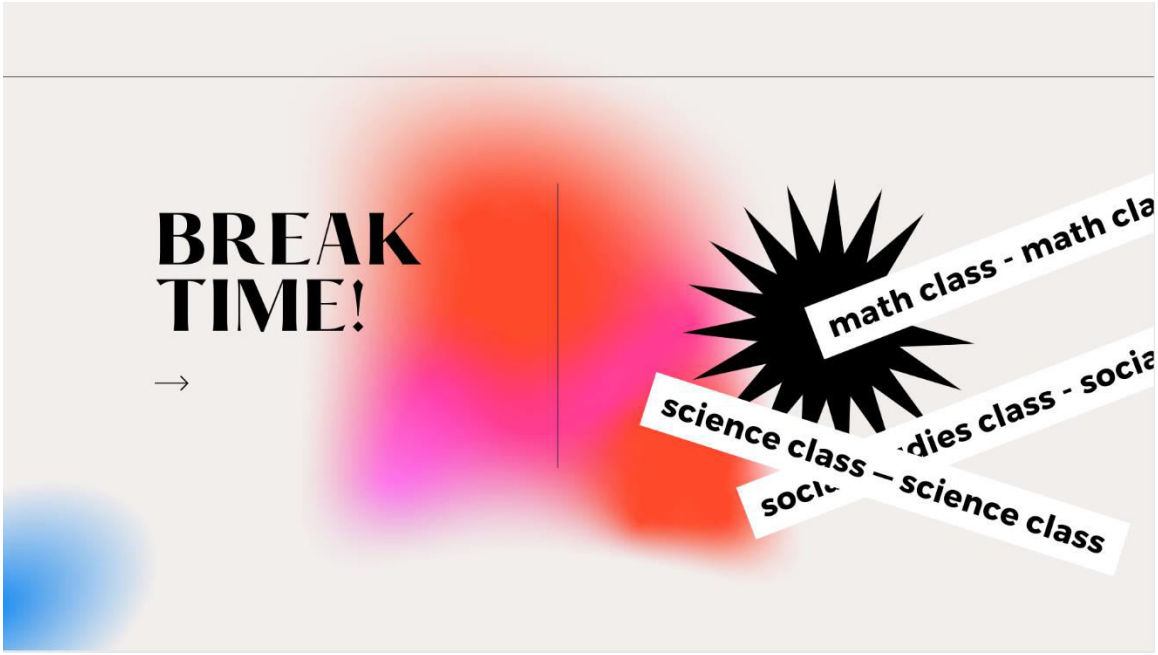
Once everyone has read through the standards - each person will take 5 minutes to share their ideas. Other team members will listen. When everyone has shared, the group can openly discuss.

Group must determine what the focus standards will be and begin to toss ideas around for driving question.

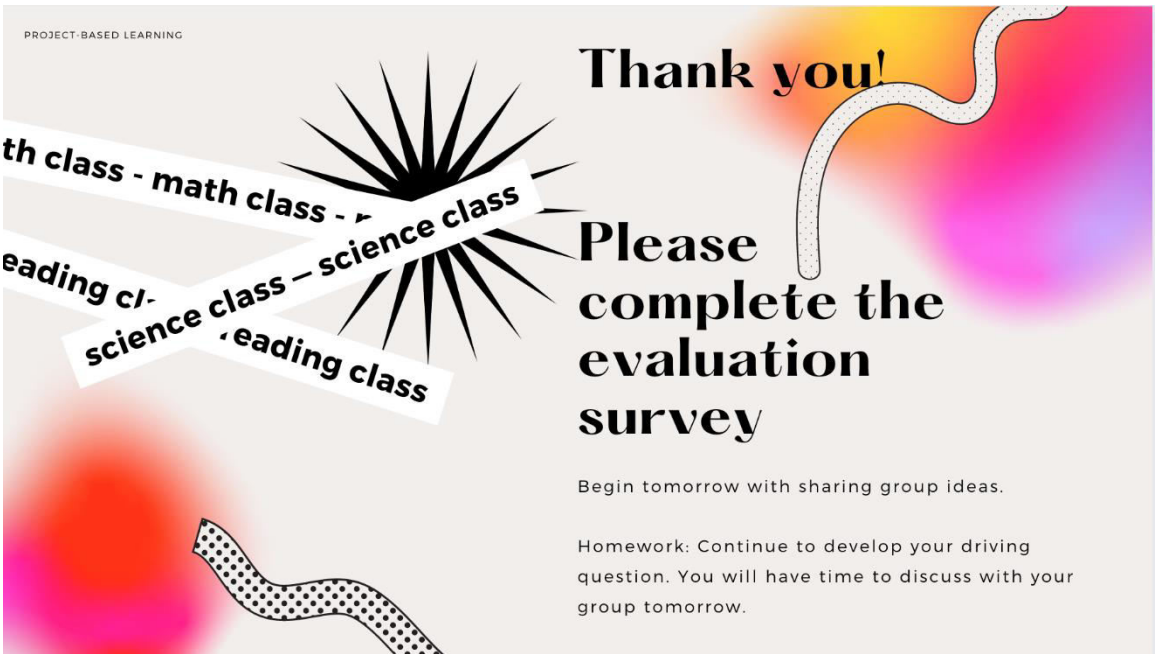
Collaborative Work Time

WORK IN GRADE LEVEL TEAMS TO BEGIN TO DEVELOP A PBL BY DETERMINING FOCUS AND SUPPORTING STANDARDS.

GOAL: DETERMINE THE FOCUS STANDARD(S) FOR THE PBL


BREAK
TIME!
math class - math cla
science class – science class


PROJECT-BASED LEARNING
science class – scie
What standards could support this focus?
Considering the focus area - what standards from other contents could be tied into the PBL to support interdisciplinary learning?


PROJECT-BASED LEARNING
Thank you!
th class - math class -
eading cl-
science class – science class
eading class
Please complete the evaluation survey
Begin tomorrow with sharing group ideas.
Homework: Continue to develop your driving question. You will have time to discuss with your group tomorrow.

Evaluation Survey
Project-Based Learning
Day One

Please circle the number correlating with your experience with today's sessions. with 1 being the lowest and 5 being the highest. 1 represents the lowest, while 5 represents the most positive.

1. The outcomes for the day were clear.

   1 2 3 4 5

2. The activities I engaged in supported my learning of project-based learning.

   1 2 3 4 5

3. As a result of my learning, I feel more confident in my ability to implement state standards into project-based learning units.

   1 2 3 4 5

4. Implementing what I've learned will have a direct benefit on student achievement.

   1 2 3 4 5

5. What key take away will you implement in the future?

-
_____
_____
_____
_____
_____

6. What recommendations do you have to improve today's professional development sessions?

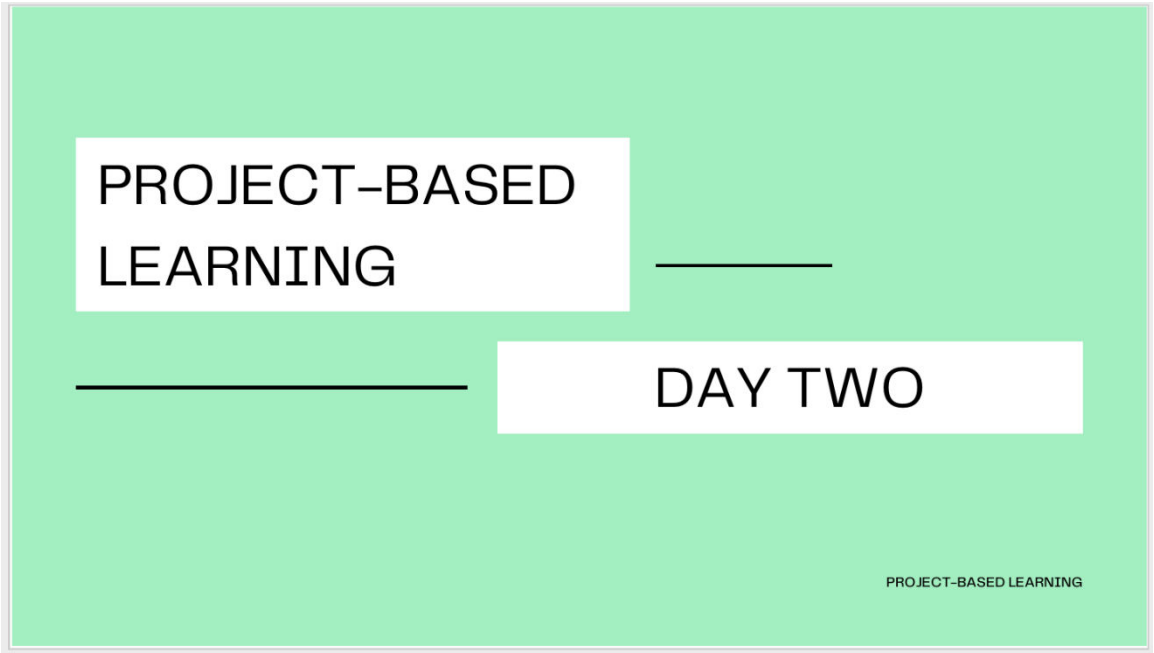
_____
_____
_____
_____
_____

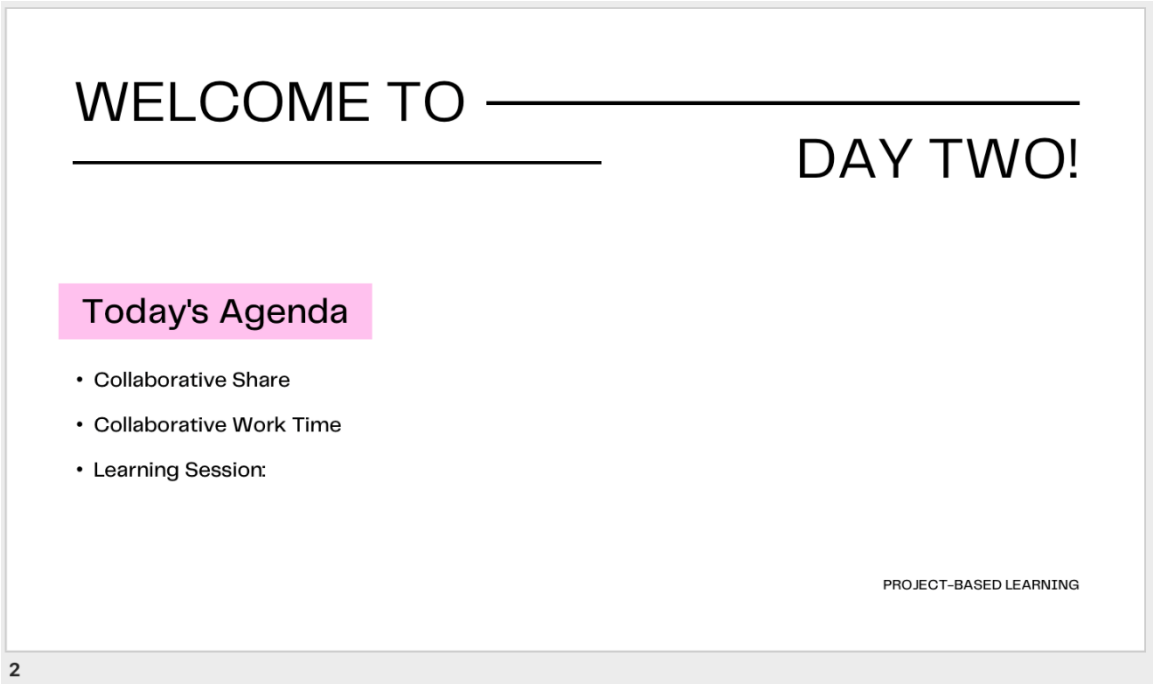
Day Two

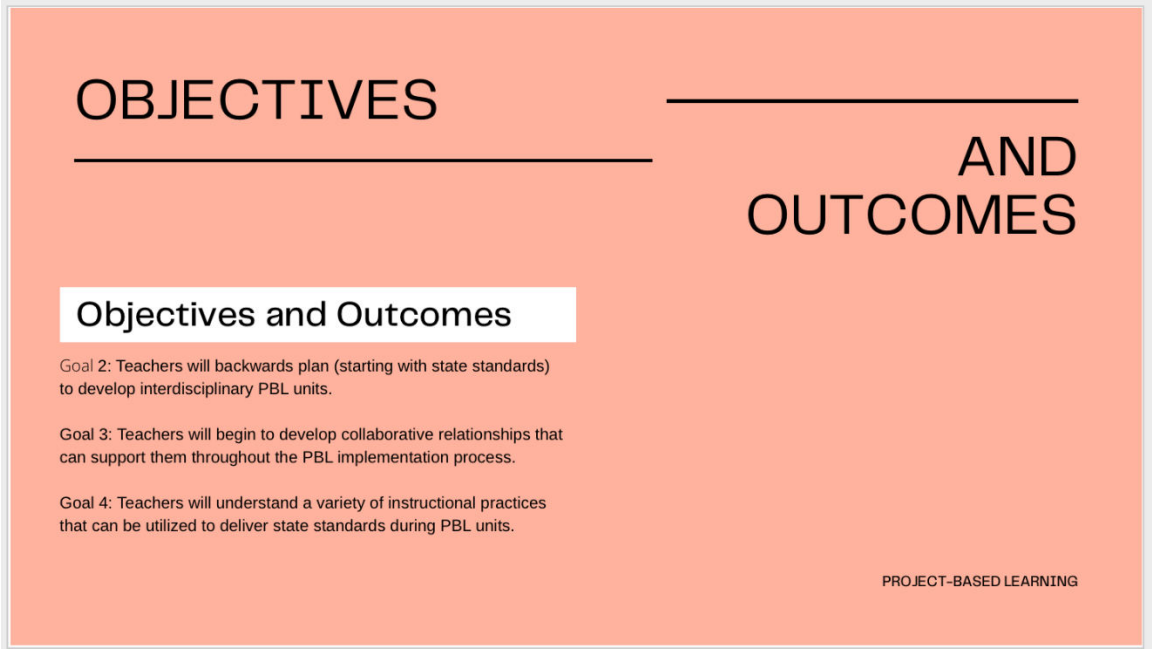
Session Outcomes
Goal 2: Teachers will backwards plan (starting with state standards) to develop interdisciplinary PBL units. Goal 3: Teachers will begin to develop collaborative relationships that can support them throughout the PBL implementation process. Goal 4: Teachers will understand a variety of instructional practices that can be utilized to deliver state standards during PBL units.

Session Materials	
Facilitator: • Smartboard • Computer • PowerPoint • Coffee • Water • Breakfast (fruit salad, muffins) • Sticky Notes	Participants: • Charged laptop • Access to grade level standards • PBL Planning document

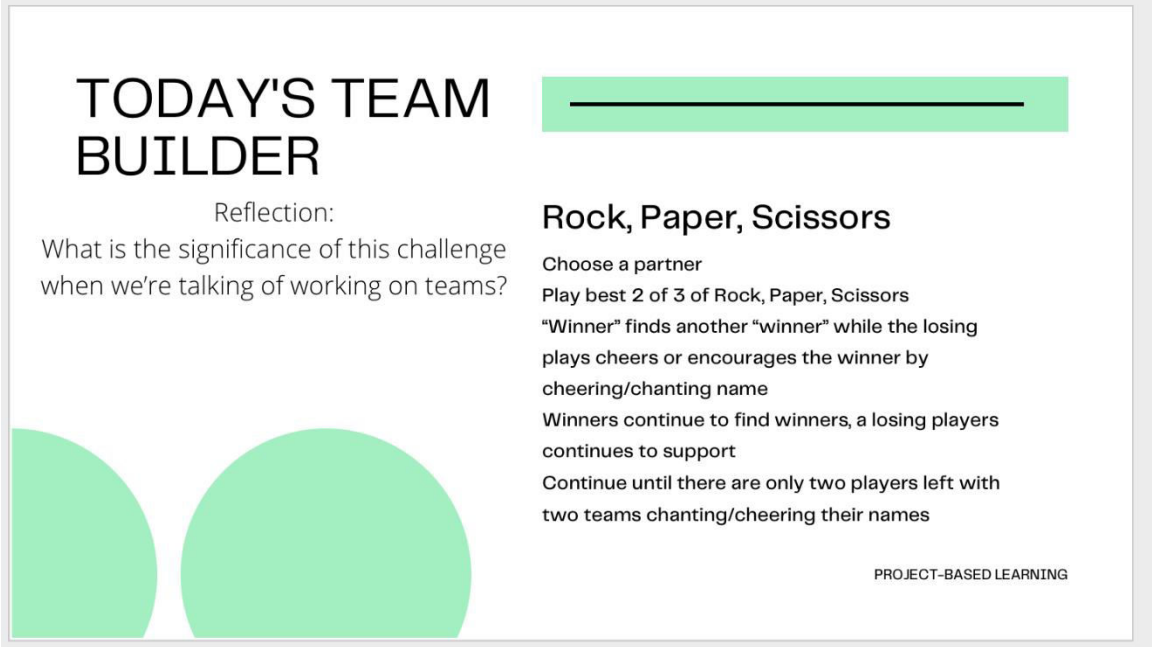
Agenda	
8:30 – 9:00	Breakfast provided for participants
9:00 – 9:15	Welcome and Introduction
9:15 – 9:30	Team Building Activity
9:30 – 9:45	Collaborative Share
9:45 – 10:15	Collaborative Work Time
10:15 – 10:45	Learning Session: Instructional Practices during PBL
10:45 – 12:00	Collaborative Work Time
12:00 – 1:00	Lunch
1:00 – 1:30	Learning Session: Progressions & Planning Template
1:30 - 3:15	Collaborative Work Time
3:15 – 3:30	Closing & Session Evaluation


PROJECT-BASED LEARNING
DAY TWO
PROJECT-BASED LEARNING
1


WELCOME TO
DAY TWO!
Today's Agenda
• Collaborative Share
• Collaborative Work Time
• Learning Session:
PROJECT-BASED LEARNING
2


OBJECTIVES
AND OUTCOMES
Objectives and Outcomes
Goal 2: Teachers will backwards plan (starting with state standards) to develop interdisciplinary PBL units.
Goal 3: Teachers will begin to develop collaborative relationships that can support them throughout the PBL implementation process.
Goal 4: Teachers will understand a variety of instructional practices that can be utilized to deliver state standards during PBL units.
PROJECT-BASED LEARNING

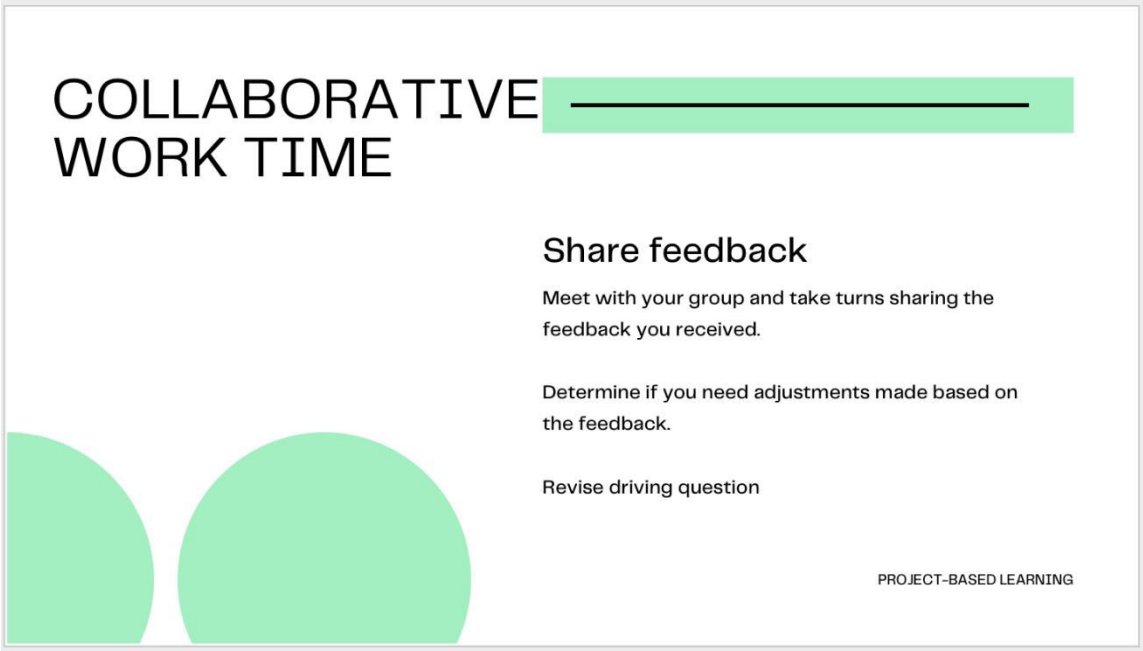
3


TODAY'S TEAM BUILDER
Reflection:
What is the significance of this challenge when we're talking of working on teams?
Rock, Paper, Scissors
Choose a partner
Play best 2 of 3 of Rock, Paper, Scissors
"Winner" finds another "winner" while the losing plays cheers or encourages the winner by cheering/chanting name
Winners continue to find winners, a losing players continues to support
Continue until there are only two players left with two teams chanting/cheering their names
PROJECT-BASED LEARNING

4


COLLABORATIVE SHARE
WHAT – presenter
You are going to share the focus standard and what connection to a real life challenge or problem your group connected it to. You will also share what supporting standards you can incorporate. Lastly, you will share current draft of driving question.
WHAT – listener
Using sticky notes, write ideas or thoughts you have while listening. When presenter is done, give them the sticky notes
WHO
You will find people who are not in your grade level group and share with them. You will have 5 minutes to share, then you will find another person.
We will do this 3 times.
PROJECT-BASED LEARNING

5


COLLABORATIVE WORK TIME
Share feedback
Meet with your group and take turns sharing the feedback you received.
Determine if you need adjustments made based on the feedback.
Revise driving question
PROJECT-BASED LEARNING

6

BREAK TIME~

PROJECT_BASED LEARNING

7

UNDERSTANDING HOW TO TEACH

PROJECT-BASED LEARNING

Assessment

Assessment is essential to determining a student's mastery of the learning objective. This is still the case during PBL. A variety of formative assessments should still be incorporated throughout the unit. Students should be provided with opportunities to self and peer assess.

Instructional Practices

Best practices should still be incorporated into PBL units. Mini lessons and direct teach should still be utilized to introduce or address common misconceptions of standards. Spiraling of already covered standards should also be incoporated.

Scaffolded Support

Teachers should still provide scaffolded supports for students who are struggling. When considering grouping of students for collaborative work groups strengths and needs should be considered.
Grouping is an essential part of PBL to ensure students have opportunities to work collaboratively.

8

WHAT'S DIFFERENT?

Student Inquiry

Once the driving question is presented, students are tasked with answering the question. Although mini lessons are incorporated to ensure necessary learning occurs, students are then tasked to dive deeper into the content, utilizing skills based on process standards.

Collaboration

The driving question should be deep enough that it requires students to work together to develop a solution. Students should be grouped to build on the strengths of all students, allowing everyone the opportunity to contribute.

Student Voice and Choice

Students are tasked with developing a solution to the question. Their creative ideas and problem solving skills drive their solution. As they work to answer the driving question, they will need to engage in research and developing their ideas in collaboration with other students.

Long Term

The driving question and the information students need to gather, analyze, and use to propose solutions should be in-depth and encompass a variety of standards covering multiple content areas.

Public Outcome

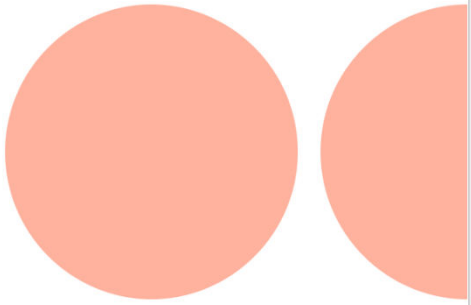
Students are expected to determine and create a solution the driving question. Although the teacher should have an idea of where students will take the outcome, it should be authentic to the research and ideas from students.

9

COLLABORATIVE WORK TIME — ACTIVITY

Within your group map out what aspects of the standards within your PBL will need to be explicitly taught and what will be covered during student exploration

Examples: Students may need a mini lesson on identifying the main idea in an article about how human actions are impacting the environment.



PROJECT-BASED LEARNING

10

LUNCH TIME!!!!

PROJECT-BASED LEARNING

11

ASSESSMENT

Throughout the PBL formative assessments should occur to ensure mastery of the standards throughout the process.
These can be in the form of pre/post tests, quizzes, and exit tickets .
BUT
Within those assessments, students should also be making progress towards the final product. There are times these will be intertwined, and sometimes they will not be.

Reflective writing and justifying decisions are great ways to show mastery of content.

PROJECT-BASED LEARNING

12

PROGRESSIONS TO END PRODUCT

Determine what smaller tasks students need to complete to reach the end product.

As often as possible, incorporate your supporting standards into these progressions

Remember the final product will be public. Students need progressions to build upon their ideas and work to reach a final product. Throughout progressions students should be showing mastery of standards, while revising and improving their end product idea.

Step One

Step Two

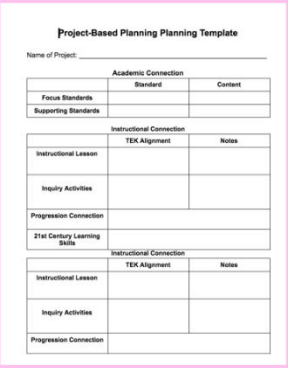
Step Three

Step Four

Writing is a great way to incorporate assessment into progressions. Students can write proposal ideas, reports and letters. Incorporating reading standards through research, supporting evidence, main ideas, compare and contracting perspectives through text, (etc) while ensuring the topic remains focused on the focus standards and the driving questions, students are able to reach higher cognitive abliities.

PLANNING TEMPLATE

Now that we focused the PBL on standards driven practices, we will begin to piece together the unit in a template that will organize your work and guide you through remaining pieces



Project-Based Planning Planning Template

Name of Project: _____

Academic Connection

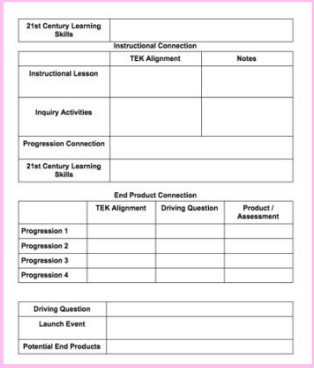
	Standard	Content
Focus Standards		
Supporting Standards		

Instructional Connection

	TEK Alignment	Notes
Instructional Lesson		
Inquiry Activities		
Progression Connection		
21st Century Learning Skills		

Instructional Connection

	TEK Alignment	Notes
Instructional Lesson		
Inquiry Activities		
Progression Connection		



21st Century Learning Skills	

Instructional Connection

	TEK Alignment	Notes
Instructional Lesson		
Inquiry Activities		
Progression Connection		
21st Century Learning Skills		

End Product Connection

	TEK Alignment	Driving Question	Product / Assessment
Progression 1			
Progression 2			
Progression 3			
Progression 4			

Driving Question	
Launch Event	
Potential End Products	

COLLABORATIVE WORK TIME!

Goal

- Determine assessments and progressions
  - Align to the standards
  - Focus on the end product (proposing a solution for the driving question)

- Fill in the template provided with the following:
  - Focus standards
  - Supporting standards
  - Driving Question
  - Instructional Lessons
  - Progressions and Assessments

PROJECT-BASED LEARNING

15

CLOSING

YOU are amazing!

Please complete the daily evaluation survey!

PROJECT-BASED LEARNING

16

Project-Based Planning Template

Name of Project: _____

Academic Connection

	Standard	Content
Focus Standards		
Supporting Standards		

Instructional Connection

	TEK Alignment	Notes
Instructional Lesson		
Inquiry Activities		
Progression Connection		
21st Century Learning Skills		

Instructional Connection

	TEK Alignment	Notes
Instructional Lesson		
Inquiry Activities		
Progression Connection		

21st Century Learning Skills	

Instructional Connection

	TEK Alignment	**Notes**
Instructional Lesson		
Inquiry Activities		
Progression Connection		
21st Century Learning Skills		

End Product Connection

	TEK Alignment	**Driving Question**	**Product / Assessment**
Progression 1			
Progression 2			
Progression 3			
Progression 4			

Driving Question	
Launch Event	
Potential End Products	

Evaluation Survey
Project-Based Learning
Day Two

Please circle the number correlating with your experience with today's sessions. with 1 being the lowest and 5 being the highest. 1 represents the lowest, while 5 represents the most positive.

1. The outcomes for the day were clear.

   1 2 3 4 5

2. The activities I engaged in supported my learning of project-based learning.

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3. As a result of my learning, I feel more confident in my ability to implement state standards into project-based learning units.

   1 2 3 4 5

4. Implementing what I've learned will have a direct benefit on student achievement.

   1 2 3 4 5

5. What key take away will you implement in the future?

-
_____
_____
_____
_____
_____

6. What recommendations do you have to improve today's professional development sessions?

_____
_____
_____
_____
_____

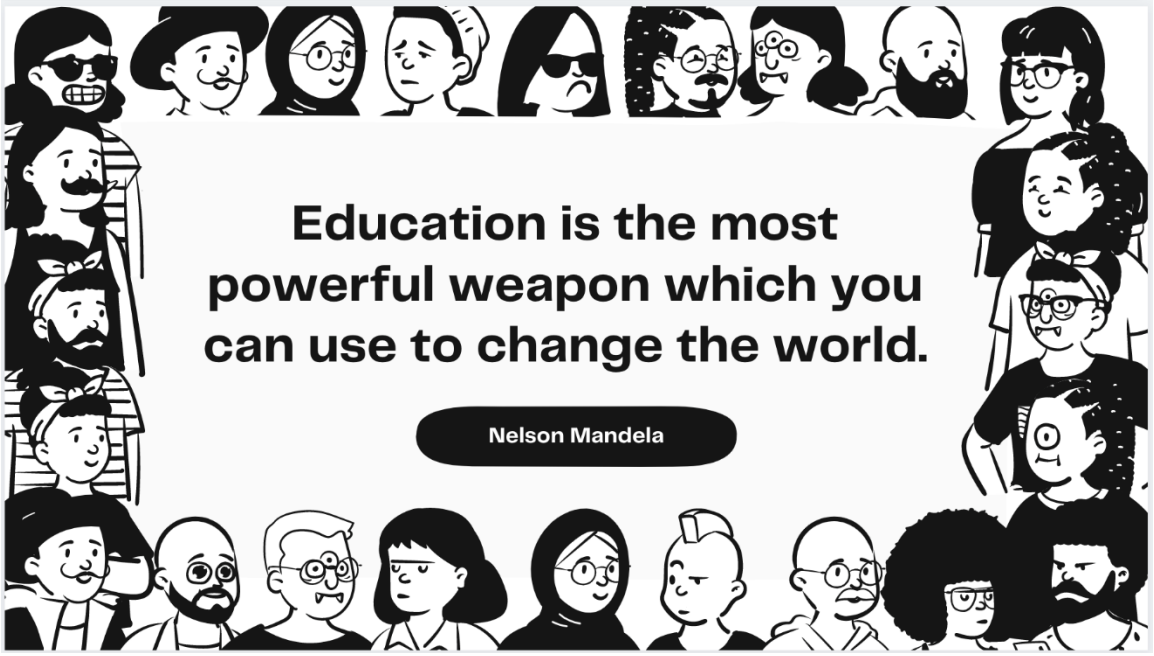
Day Three

Session Outcomes
Goal 2: Teachers will backwards plan (starting with state standards) to develop interdisciplinary PBL units. Goal 3: Teachers will begin to develop collaborative relationships that can support them throughout the PBL implementation process. Goal 4: Teachers will understand a variety of instructional practices that can be utilized to deliver state standards during PBL units. Goal 5: Teachers will engage in feedback protocols to improve instructional fidelity of state standards in project-based learning units during the planning process.

Session Materials	
Facilitator: • Smartboard • Computer • PowerPoint • Coffee • Water • Breakfast (fruit salad, muffins) • Sticky notes • String • Different size balls (beach balls, tennis ball, golf ball, etc.)	Participants: • Charged laptop • Access to grade level standards • Planning template

Agenda	
8:30 – 9:00	Breakfast provided for participants
9:00 – 9:15	Welcome and Introduction
9:15 – 9:30	Team Building Activity
9:30 – 10:00	Learning Session: Launch Event
10:00 – 11:30	Collaborative Work Time
11:30 - 12:30	Lunch
12:30 – 1:30	Collaborative Feedback
1:30 - 3:15	Collaborative Work Time
3:15 – 3:30	Closing & Session Evaluation


Project-Based Learning
DAY THREE!


Education is the most powerful weapon which you can use to change the world.
Nelson Mandela

Have a Ball!

Guiding Question: Why did you enter education?

Once the web is complete:

What does the web signify?

Toss in different size balls. Debrief:

What would happen if someone let's go of the web?

How do we keep the web in the face of obstacles or issues that arise unexpectedly.

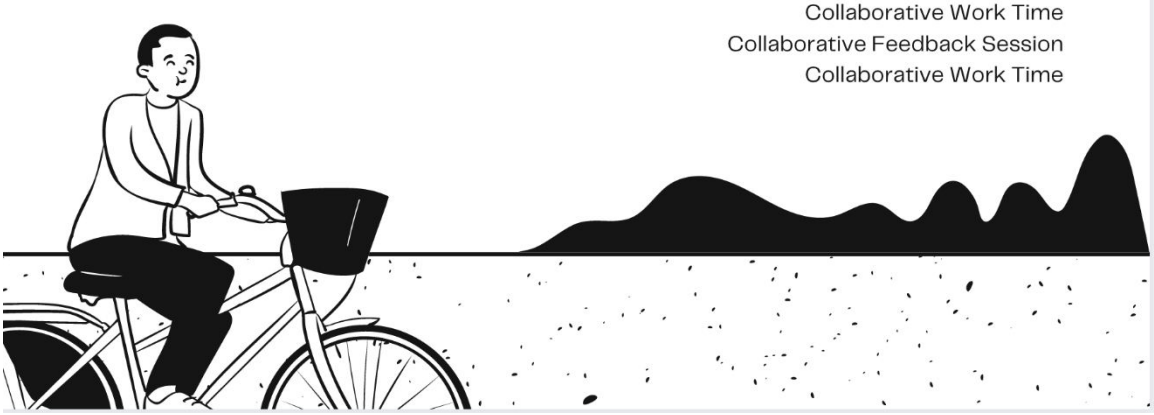
Agenda

Learning Session: Entry Event and Project Outcomes

Collaborative Work Time

Collaborative Feedback Session

Collaborative Work Time



Objectives

Goal

Teachers will backwards plan (starting with state standards) to develop interdisciplinary PBL units.

Goal

Teachers will begin to develop collaborative relationships that can support them throughout the PBL implementation process.

Goal

Teachers will understand a variety of instructional practices that can be utilized to deliver state standards during PBL units.

Goal

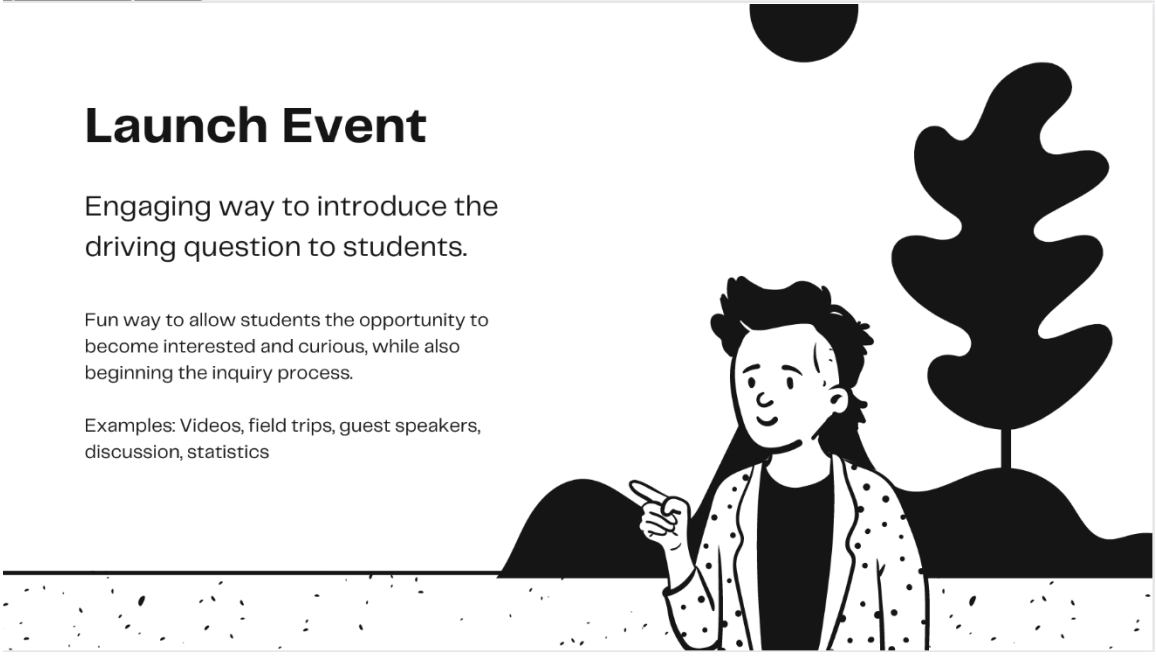
Teachers will engage in feedback protocols to improve instructional fidelity of state standards in project-based learning units during the planning process.

Launch Event

Engaging way to introduce the driving question to students.

Fun way to allow students the opportunity to become interested and curious, while also beginning the inquiry process.

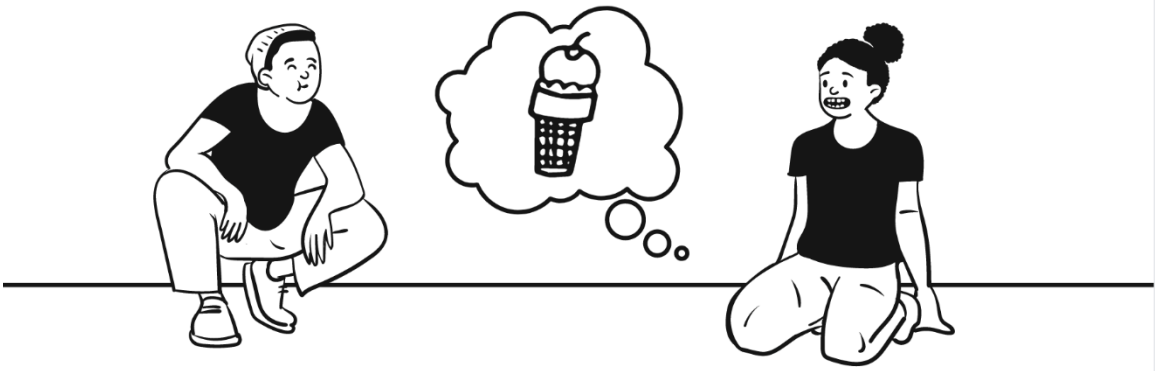
Examples: Videos, field trips, guest speakers, discussion, statistics



Project Outcomes

End product should be student driven

To ensure you are prepared for where the PBL could go, brainstorming some ideas will be helpful. They can also present a support for struggling students. To be authentic, though, students must have the voice in the end outcome.



Collaborative Work Time

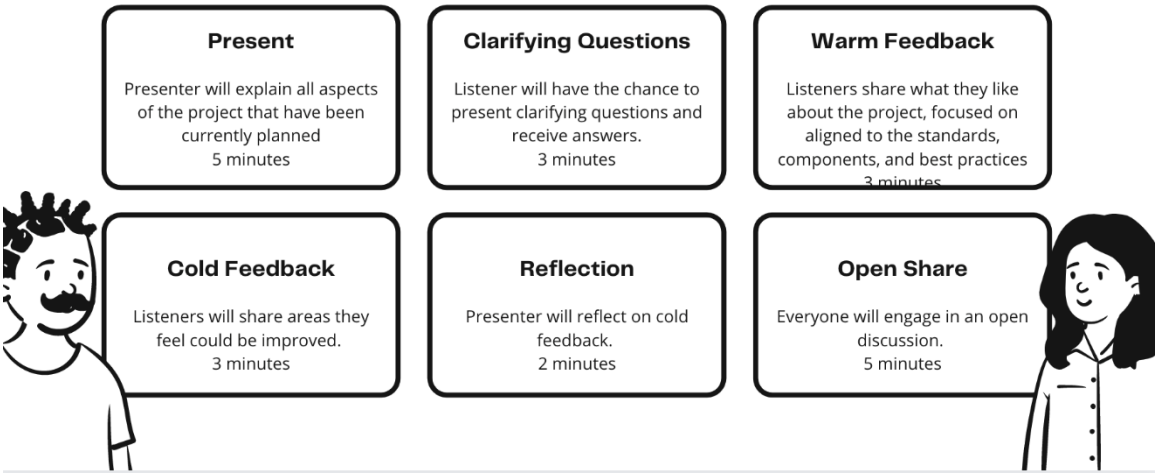
Remember to keep the standards at the forefront!

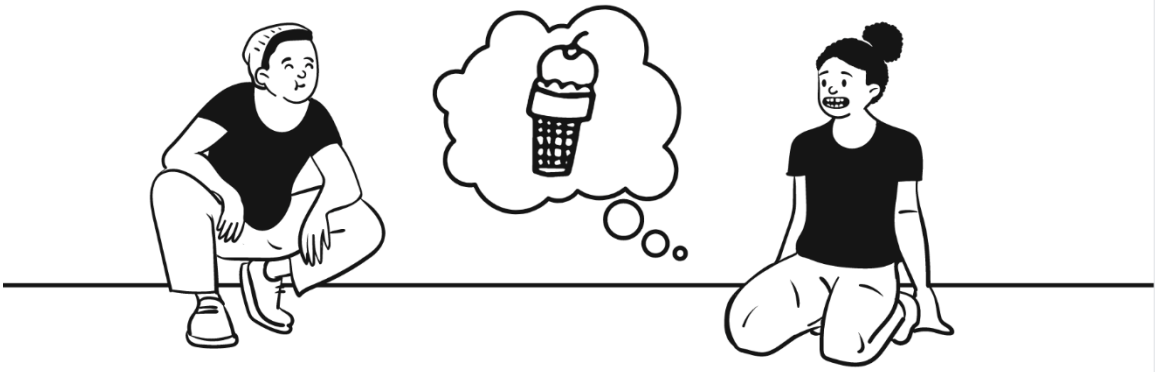
Work to catch up
Discuss and determine entry event and possible end products

LUNCH TIME!!!!!

Collaborative Feedback

Groups of 3 - each round/presentation will be 20 minutes each





Collaborative Work Time

Share the feedback and reflections that occurred during the feedback sessions with grade level team.

What adjustments need to be made based on the feedback?

Continue planning over the next few days.

Meet with instructional coach. Look for PLC agendas.

Thank you for taking the time to engage in learning that will support student achievement and skills that will prepare them for their future.
Your hard work and dedication is appreciated.
Please make sure to complete the evaluation before you leave.

Evaluation Survey
Project-Based Learning
Day One

Please circle the number correlating with your experience with today's sessions. with 1 being the lowest and 5 being the highest. 1 represents the lowest, while 5 represents the most positive.

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   1 2 3 4 5

5. What key take away will you implement in the future?

-
_____
_____
_____
_____
_____

6. What recommendations do you have to improve today's professional development sessions?

_____
_____
_____
_____
_____

Appendix B: Letter to Network Director

Megan Correia
Walden University
Phone: [redacted]
Email: megan.correia@waldenu.edu

Dear _____,

My name is Megan Correia, and I am conducting a research project to understand the instructional fidelity of state standards during project-based learning. I am the Dean of Academics for _____, a partner organization for the district and a doctoral student at Walden University. The title of my project is: *Examining Instructional Fidelity of State Standards during Project-Based Learning Units*. The purpose of this qualitative study was to investigate the decline in student achievement since the implementation of project-based learning (PBL) by exploring teacher perception of instructional fidelity of state standards during project-based learning in third- through sixth-grade teachers at the study location. The study would consist of a recorded interview through Zoom. The participation of the teachers will be voluntary, and all participants will be able to end their participation at any time. There will be private participant informational meetings in which all the details of the study will be discussed. I am asking your permission to conduct the study at _____ Elementary School. If you have any questions, please feel free to contact me at [redacted].

Thank you,

Megan Correia

Appendix C: Recruitment Email

Dear ,

My name is Megan Correia, and I am a doctoral student at Walden University. I started my coursework in February of 2018 to achieve a doctorate in Curriculum, Instruction, and Assessment.

I am looking to understand teachers' perceptions of the instructional fidelity of state standards during project-based learning. To do this, I will be conducting thirty to forty-five-minute interviews with teachers in grades three through six through Zoom. These interviews will be focused on learning about the perceptions of teachers regards standards and instructional practices during project-based learning units. The questions for this interview are attached.

I would like to invite you to participate in one of these interviews, as I understand you are an educator in one of these grade levels and have participated in project-based learning at the elementary school where the study is being conducted. You are in no way obligated to participate and may decline in doing so.

If you decide to participate, your identity and the information you provide will be kept confidential. The results of the study will assist in improving the project-based learning program at your campus.

Thank you for your consideration. I look forward to working with you.

Sincerely,

Megan Correia

Appendix D: Interview Protocol

Name of Participant:

Date of interview:

Time of Interview:

I. Introduction

A. Discussion of the Rationale

B. Discussion of Confidentiality

C. Order and organization of the interview

II. Interview Questions:

1. How long have you been engaging in project-based learning?
2. What training have you received in project-based learning? Please provide specific organizations if possible.
3. Beyond your initial training, what supports have you received during the planning or implementation of PBL?
4. Describe your process for planning a PBL unit.
5. Describe the methods you use to teach and assess standards during project-based learning units.

6. What are your beliefs surrounding state standards during project-based learning?
7. In what ways do standards inform your PBL unit?
8. What are some ways you address the state standards during project-based learning?

III. Follow-up Questions

1. These will be developed based on teacher response to the questions.
2. Possible probing questions include, "Tell me more about that." "What lead you to do that? "What was the outcome?"

IV. Conclusion of Interview

Appendix E: Confidentiality Agreement

CONFIDENTIALITY AGREEMENT

Name of Signer:

During the course of my activity in acting as a peer reviewer for this research: "Examining Instructional Fidelity of State Standards during Project-Based Learning Units." I will have access to information, which is confidential and should not be disclosed. I acknowledge that the information must remain confidential, and that improper disclosure of confidential information can be damaging to the participant.

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

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

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

Signature: **Date:**