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Teacher Preparation: Implementing Theory Into Practice

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TEACHER PREPARATION: IMPLEMENTING THEORY INTO PRACTICE

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ABSTRACT

Teacher preparation programs are mandated to prepare teachers that are ready for the changing landscape of the education profession. New accreditation requirements in preservice assessments and certification requirements for highly qualified teacher status are requiring teacher preparation programs to review their course plans. The purpose of the qualitative study was to examine how the graduates of a traditional teacher preparation program were implementing the PBL project design in their first year of teaching after receiving scaffolded instruction of the educational theory. The researcher explored which factors the graduate perceived allowed them to use PBL in their classroom. Using qualitative interviews, eight participants in their first year of teaching revealed that scaffolded instruction and the support of a mentor teacher provided them the confidence to implement elements of the PBL training in their classroom.

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CHAPTER 1

INTRODUCTION

Teacher effectiveness and accountability have placed tighter scrutiny on teacher preparation programs. With the implementation of No Child Left Behind (2001, 2006), and now the Every Student Succeeds Act (2015) to ensure students are career and college ready, teacher preparation programs are needing to ensure their graduates are prepared to meet the high standards required to be in the classroom. However, several studies have found new teachers to be underprepared concerning content knowledge and skills, based on reports by school principals, education school faculty and deans, and program graduates themselves (Kiuhara, Graham, & Hawken, 2009; Levine, 2006). Chesley & Jordan (2012) found that in their first three years of teaching, graduates from 17 universities reported that they lacked knowledge and skills related to content pedagogy, lesson design and preparation, classroom management, and other aspects of teaching.

The qualitative case study uncovered what teaching strategies first-year elementary teachers are implementing into their classrooms after receiving hands-on, scaffolded training in addition to their methods courses. The needs of the students align with the guidelines that drive accreditation, which was at the center of this study. The purpose of pre-service students attending a university is to earn a degree to obtain a teaching license. In 2014 the Education Department at a private university in a Midwestern state completed the accreditation process and will again submit the required paperwork for their next site visit in 2021, with the new focus on the implementation of the Council for the Accreditation of Educator Preparation (CAEP) standards.

CAEP's mission is to "advance excellent educator preparation through evidence-based accreditation that assures quality and supports continuous improvement to strengthen P-12 student learning" ("CAEP", 2015). The CAEP standards have required the Education faculty at teacher preparation programs to reassess courses offered through the Education Department. This reassessment has allowed the faculty to update classes to become more relevant and applicable when delivering content to the preservice teacher.

Overview of the Case Study

Preservice, elementary teachers are instructed to create lessons with real-world connections that follow theories of instruction that engage learners and guide them through active learning experiences. However, as pre-service teachers, they may view examples of the opposite of the theories taught in their methods courses when they observe teachers who use a less hands-on approach. Loughran (2013) suggests "teacher education must purposefully embed learning about the complexity of teaching within experiences of its problematic nature…this should be reflected in the manner in which learning about teaching is constructed" (p. 1178). Faculty of teacher preparation programs nation-wide need to explore alternative opportunities that allow their students to practice the methods they are learning in a more engaging approach.

Project-Based Learning (PBL) has become a buzz word in education communities and is considered a best-practice teaching strategy by many education professionals. Research shows that through PBL integration, K-12 students can more deeply connect to the curriculum (Berends, Boersma & Weggemann, 2003; Hopper, 2014; Lee & Breitenberg, 2010; Page, 2006). The Buck Institute for Education (BIE) is well-known in the education community as a leader in PBL professional development. The goal of the BIE is to "improve student learning outcomes by

making PBL accessible for teachers in K-12 in all grade areas" ("BIE", 2018). With a plethora of resources and supports for educators, BIE assists schools in creating a PBL culture. Teachers trained through the BIE can expect a hands-on learning experience with PBL. They are expected to participate in a PBL project and plan a project to implement in their classroom.

The BIE requires all schools who enter into a formal partnership to schedule Sustained Support Visits (SSV) to support their teachers. Throughout the year, the BIE offers multiple SSV to ensure teachers feel supported during the implementation of their PBL projects. Lamer (2016) sees the SSV as an essential element in the implementation of PBL. The SSV not only allows the teachers to ask questions about PBL, but it also ensures that the teachers are continuing to discuss the strategies throughout the year. Teachers continue to practice the PBL strategies even after the BIE instructors have left the campus, as it has become a part of their culture of learning through the multiple supports implemented by the BIE.

Alternative Training Opportunity. In 2017, the university highlighted in the study was one of four higher education institutions awarded a grant for their preservice teachers to receive PBL training typically reserved for licensed teachers. The grant provides explicit instruction on how to implement PBL into the classroom setting. Preservice teachers who received the training partnered with a master teacher who previously demonstrated successful PBL implementation in their classroom.

Starting in October of 2017, the teaching team (preservice teacher and mentor teacher) attended a series of rigorous training on the Essential Project Design Elements of a Gold Standard PBL by the BIE. Their first training together, titled Project Slice, allowed the team to experience firsthand what learning feels like during PBL from the student's perspective. The

team's challenge over the 2-day training was to update a space in the building to create a gathering space for students. Through team collaboration, a model was developed and presented to the school's administrator for consideration for implementation on campus. During the second training, PBL 101, the preservice teacher began to learn how to create a PBL lesson. The preservice teacher was guided through this process by nationally trained staff from the BIE and their mentor teacher. After the 3-day training, the preservice teacher had a complete PBL lesson that they would implement within the first three weeks of their student teaching experience. Finally, the BIE provided two half-day SSVs to the preservice teachers and their mentors. The SSVs allowed the team time to reflect on their PBL lesson and offered support on questions that arose during their projects. Through the training provided by the BIE, the preservice teacher was able to not only create a PBL project but to also form a relationship with their mentor teacher. This relationship allowed for a culture for learning, where the preservice teacher was comfortable asking questions and bringing ideas to their team.

Current Teacher Preparation Practices

Student teaching is a capstone experience for pre-service teachers to practice their pedagogy in the classroom. In an ideal placement, the preservice teacher is actively involved in the classroom by planning and teaching the curriculum. In the state the study took place, the preservice teacher is required to spend a minimum of ten weeks in the student teaching experience. If the preservice teacher is a double major (for example, Elementary Education and Special Education), the student spends six weeks in each experience with a total of twelve weeks participating in student teaching. A ten to twelve-week placement severely limits the scope of learning for the preservice teacher as they do not experience a wide variety of situations. The

preservice teacher in a ten-week placement slowly starts the experience by observing and taking on the responsibility of teaching the content one subject at a time. Therefore, in a ten-week placement, the preservice teacher is responsible for the entire class and all the content for typically two weeks.

Sahan (2016) surveyed 182 freshman education students from Bartin University to reveal what problems student teachers were experiencing. Of the 182 students, 27% stated that they felt the internship (student teaching) experience was insufficient, and 47% recommended more opportunities to apply their knowledge from lectures (Sahan, 2016). The expectation of the classroom teacher is evolving to move past merely teaching the content, and the need for more meaningful learning experiences for students to apply their knowledge is evident. With as many as 50% of teachers leaving the profession within their first five years in the field (Ingersoll, Merrill, & May, 2014) due to the high pressures of the classroom and other factors; are ten to sixteen weeks sufficient in preparing high-quality teachers? This lack of experience makes it easy to understand why teacher preparation programs are under attack for being an industry of mediocrity" (La Paro et al., 2014). During the limited experience during student teaching, the preservice teacher misses many opportunities to apply their knowledge. Providing the preservice teacher with the extensive PBL training allows more time to implement the knowledge not only from the PBL training but also from the methods courses.

To expect the preservice teacher to implement lessons and become confident in ten weeks is not a fair expectation. Teacher preparation programs need to discover more opportunities for their preservice teachers to experience realistic classroom settings. Elementary preservice teachers are trained to manage classrooms of students in the primary grades, for example, not

their peers. However, in traditional teacher preparation programs, many preservice teachers are required to present lessons to their peers (Stroupe & Gotwals, 2018). The experience is not comfortable or realistic as the preservice teacher has planned the lesson for students at a much lower level. Stroupe and Gotwals (2018) pointed out that the preservice teacher felt like it was "1000 degrees" in the classroom during this common scenario in teacher preparation.

Zeichner articulated a need for the creation of a "hybrid" classroom setting for the preservice teacher to experience a realistic classroom setting (2010, p. 89). In Zeichner's thirty-year career as a university-based educator, he saw a disconnect between the teaching strategies presented in the methods courses on campus and what the student was expected to practice in the general education classroom (Zeichner, 2010). The alternative training from the BIE allows the student-teacher to explore instructional resources that empower a level of effectiveness and will improve their future students' learning in the classroom.

Statement of the Problem

Hall, Quinn, and Gollnick (2014) recognized the importance of providing preservice teachers with high-quality experiences to implement their knowledge before entering the field. However, teacher preparation programs weave theory concepts into their coursework but traditionally provide little opportunity for preservice teachers to apply the information in relevant settings (Darling-Hammond, 2010). Teacher preparation programs are mandated to prepare teachers who are ready for the changing landscape of the education profession while addressing new accreditation requirements in preservice assessments and certification requirements for highly qualified teacher status.

In 2008, the National Council for Accreditation of Teacher Education (NCATE) President Cibulka stated, “All young people in America deserve an effective, well-prepared teacher who can help them achieve their full potential and prepare them to meet the demands of a competitive global marketplace” (p. 2). As the push for accountability in pre-K-12 education grew, so did the expectation for a streamlined accreditation process for teacher preparation programs. Therefore, in 2010 the NCATE and the Teacher Accreditation Education Council (TAEC) combined to form the Council for the Accreditation of Educator Preparation, Inc., or CAEP (NCATE & TEAC Design Team, 2010).

CAEP created a list of five standards in 2013 to serve as a basis for the annual accreditation review process of teacher preparation programs. Further description of the CAEP standards is discussed in chapter two, as CAEP evaluates the student, faculty, and all stakeholders involved in developing high-quality teachers. CAEP Standard 2 addresses the need for teacher preparation programs to provide evidence of high-quality clinical practices (“CAEP”, 2015). The standard requires the provider to ensure “effective partnerships and high-quality clinical practice are central to preparation so that candidates develop the knowledge, skills, and professional dispositions necessary to demonstrate a positive impact on all P-12 students’ learning development (“CAEP”, 2015).” CAEP’s Standard 2 requires the teacher preparation program to continually evaluate the clinical practice opportunities that their preservice teachers receive. CAEP Standard 2.1 evaluates explicitly teacher preparation programs on their ability to “ensure that theory and practice are linked” (2015).

The private university featured in the study must provide evidence that their preservice teachers are meeting the rigor of the CAEP standards or face the loss of their accreditation. The

university's next accreditation cycle is in 2021, and they will be evaluated using the CAEP standards. As the PBL training was linked to a short-term grant, it allowed for an ideal situation to observe the consequences of the training. Are the graduates linking theories and practices? Is there a gap in the instruction the graduates are receiving and their first-year classroom?

Purpose of the Study

The purpose of the qualitative study was to examine how the graduates of a traditional teacher preparation program were implementing the PBL project design in their first year of teaching after receiving scaffolded instruction of the educational theory. If they are, the Elementary Education Department is interested in reviewing their current practices to update their current course plan to allow new experiences to reflect the findings of the study. The study is significant at a local level, as it will drive future teacher preparation practices at the private, Midwestern, university where the researcher serves as the Elementary Education Program Director.

Requirements of accreditation are not going away. Accreditation standards were created to require higher-education institutions to prove that they are preparing teachers who demonstrate they are ready to impact student learning. Chapter two will further explore how the CAEP Standards evaluate teacher preparation programs. The study focuses on the implementation of the CAEP standards at a private, Midwestern, university, and the effectiveness of the graduates' preparation. However, through a broader lens, the study assisted in finding the gaps in teacher preparation programs to ensure that first-year teachers are successful due to the training they received in their post-secondary education.

Research Question

Teacher preparation programs engage their students in many teaching strategies. The purpose of the experiences is to develop graduates' pedagogy to implement with their future students, with the understanding that everyone has a different learning preference. The PBL training provided a unique opportunity to look at a specific group of graduates and further explored how they perceive they are implementing strategies from previous high-quality instruction into their practice. Therefore, the study will explore the following central question: How are traditionally prepared elementary education graduates implementing theory into practice during their first year of teaching?

Sub-questions were included in the study to further explore the effect of the PBL training on the recent graduate at the private, Midwestern university. Sub-questions refine the central question and narrow the focus of the study (Creswell, 2015). The following sub-questions addressed during the study included:

1. How did the first-year teacher implement the Gold Standard PBL model in their professional practice?
2. How does the graduate perceive their ability to translate theory into practice, particularly in the implementation of the PBL project design during their first-year experience in the general education classroom?

The PBL training provides a lens for the study but was not the focal point of the study. Preservice teachers received high-quality training, from nationally distinguished faculty, while receiving support from their mentor teachers. The researcher explored the factors the graduate perceived allowed them to implement PBL in their classroom successfully. Discovering these

factors can support teacher preparation programs across the nation in developing teacher candidates who are prepared to meet the needs of all learners in their future classrooms.

Conceptual Framework

Higher education, politicians, and professional educators are all pushing for a cultural shift in education that is student-centered. Constructivism theory focuses on the active engagement of the learner and is student-centered. Brunning, Schraw, and Ronning (1995) identified four focal characteristics believed to influence all learning on the constructivist model;

- Learners construct their own meaning
- Learning is dependent on existing understanding
- Authentic learning tasks are crucial for meaningful learning
- Social interaction plays a vital role

Project-Based Learning is rooted in the constructivist theory as the learner is in charge of their learning. The central characteristics that Brunning et al. (1995) recognized are evident in the Gold Standard PBL Teaching Practices. Students begin each PBL project with an essential question or driving question that they would like to answer. Depending on the student interest, the question could address a wide variety of topics. After identifying the question, the students work as teams to think and solve the problems critically, potentially forcing the student to work with others and manage their own time and resources. Managing their time is essential to the PBL project as the students will be presenting their plan or answer publicly. When students present to the public, the rigor of the learning increases and students typically become more engaged in the outcome of the project. As the millennial generation moves into the workforce, there is a need to discover the best practices for this generation to develop their skills. Sinek

(2009) suggests that the millennial generation needs to feel a connection to the project or task they are expected to complete, and the PBL training will provide teams strategies or approaches to establish this connection.

Assumptions, Limitations, and Scope

A limitation of the study is due to the small population of the study. The grant has only recently been awarded, starting in 2017. Thus only one class of students have received the training and are now licensed teachers. The university observed in the study had the largest class (out of the four universities awarded the grant) of 22 students. However, of those 22 students, many of them chose to continue their education by immediately enrolling into graduate school (i.e., Occupational Therapy, Physical Therapy) and are not in the classroom. The graduates who chose to enter the school system immediately may not be in the regular education classroom. The students from the university in the study received double and triple majors; many graduates may have positions as special education teachers or other areas of specialized instruction, thus further limiting the population of the participants.

Additionally, as graduates seek employment across the Midwest and the globe, they had different access to resources. Many areas in the Midwest are rural, with limited access to updated technology. However, as the researcher pursued how the first-year teacher utilized any elements of the Gold Standard PBL, this was not a concern. As explained in detail in chapter two, a Gold Standard PBL does not require technology.

A final limitation of the study was that the researcher only discovered the beliefs of the graduates from the private university, which has a unique culture. Students at the university are encouraged to actively engage in community collaboration through servant leadership

experiences beginning their freshman year, for example. These students tend to have a higher expectation to collaborate with their peers.

Significance

Teacher preparation programs are striving to meet the requirements of the CAEP Standards (2015) to retain their accreditation status to confirm that their graduates are having a positive impact on student learning. The quality of a teacher preparation program can significantly affect the preparedness of teachers (Darling-Hammond, Chung, and Frelow, 2002). According to Mead (2015), due to the increased understanding of the influence of teachers on student achievement, some universities are reevaluating whether teachers who graduate from their programs are effective educators in the classroom.

Intensive clinical preparation is different from mere "field experiences of the past by recognizing teaching as a profession of practice while simultaneously preparing teachers who can integrate knowledge of their students, their content, and their pedagogy" (Gelfuso, Dennis, & Parker, 2015, p. 2). Stein and Stein (2016) acknowledged that teacher preparation programs should form strong partnerships with local schools so that preservice teachers partake in practical, hands-on experiences. The PBL training offered to the graduates at the private university in the study had the opportunity to receive the high-quality clinical practice on which CAEP Standard 2 evaluates teacher preparation programs, and the intensive clinical preparation described by Gelfuso et al. (2015). The graduates were required to create and implement two PBL projects as a participant of the grant with a mentor teacher while completing their student teaching requirements. The training allowed the private university to weave theory and practice together in a high-quality experience. Further research to identify the disconnect between

implementing educational theories into practice in the graduates' first-year classroom assisted in uncovering the gaps within teacher preparation programs. The research will guide the needed changes in course programming that preservice teachers are receiving to ensure they can effectively make a positive impact on student learning in their future classrooms.

Definition of Terms

Accreditation: the recognition an institution maintains for its graduates to gain admission to other reputable institutions. Accreditation ensures that higher education institutions are meeting acceptable levels of quality.

Best Practice Teaching Strategy: Using researched-backed teaching strategies to form one's teaching style

CAEP: Council for the Accreditation of Educator Preparation

Mentor Teacher: a licensed pre-K-12 educator with at least four years of experience

Pedagogy: the art and science of teaching

Preservice Teacher: a post-secondary student admitted to the department of education at an institution of higher learning

Project-Based Learning (PBL): a teaching strategy in which students gain knowledge and skills by working for an extended period to investigate and respond to an authentic, engaging and complex question, problem, or challenge ("BIE", 2018).

Student Teacher: An unlicensed teacher still completing their undergraduate degree in pre-K-12.

Teaching Strategy: Referring to how the content is presented to ensure the success of all learners.

Conclusion

The landscape of the pre-K-12 grade classroom reveals a student who needs to prepare for the 21st Century. The 21st Century student needs to have skills that require them to use yet-to-be-discovered technology. Instead of going to an encyclopedia, the student will turn to Google to find the answer to their content question. Teacher preparation programs need to keep up with this type of student to guarantee their success. CAEP has brought forward a set of standards to ensure teacher preparation programs develop educators who are ready to take on this challenge.

The study assisted in the further development of the Elementary Education program at the private university to ensure the successful accreditation by the CAEP standards. The study specifically uncovered how the recent graduates were implementing educational theories into practice after receiving high-quality training that followed the Constructivism Theory approach.

In chapter two, further exploration of the following topics will uncover the value of the study: the need to be an accredited university, the elements of a Gold Standard PBL, and the Constructivism Theory. These three topics will help the reader understand the importance of the case study and the further development of the Elementary Education program at the private university and teacher preparation programs nationwide.

CHAPTER 2

LITERATURE REVIEW

The purpose of the study was to discover how the recent graduate of the private university located in a Midwestern state was utilizing the elements of the Gold Standard PBL into their first-year classroom. With many describing the first-year teaching experience as chaotic, many teachers leave the profession within the first five years of their careers due to a variety of reasons, but a large one being lacking support in the implementation of best-practice teaching strategies (Podolsky, Kini, Bishop, & Darling-Hammond, 2016). The participants of the study experienced a unique mentorship during student teaching and the PBL training, where they implemented two PBL projects in regular education classroom settings. As they moved out into their first-year classrooms, away from their mentor and the support from the faculty at the university, are the recent graduates implementing educational theories into practice? Chapter two will include an overview of the previous research on accreditation standards, the definition of the elements of the Gold Standard PBL teaching model, and the Constructivism Theory.

Accreditation

Schools of Education across the nation are increasingly coming under scrutiny on how efficiently they are preparing teachers. The U.S. Department of Education estimates that there were about 460,000 individuals enrolled in traditional teacher preparation programs in 2013-2014 (U.S. Department of Education, 2016). Former Secretary of Education, Arne Duncan, likened Schools of Education to the Bermuda Triangle, where students sail in, but no one knows what happens to them when they come out (Duncan, 2009). Once the student receives their diploma at commencement, institutes of higher learning are discovering the difficulty of tracking

their graduates. Specifically, are the graduates effectively implementing the educational theories into practice in their first-year teaching position, or does the administration need to pay to have additional training completed for the new hire?

In 2016, the National Education Policy Center (NEPC) created a report that discussed the four major national initiatives, at the time, that was created to hold teacher education accountable — in essence, keeping them out of the Bermuda Triangle. The four major initiatives in the report included the US Department of Education's state and institutional reporting requirements in the Higher Education Act (HEA); the standards and procedures of the Council for the Accreditation of Educator Preparation (CAEP); the National Council on Teacher Quality's (NCTQ) Teacher Prep Review; and the edTPA uniform teacher performance assessment developed at Stanford University's Center for Assessment, Learning and Equity (SCALE) with aspects of data storage and management outsourced to Pearson, Inc. The NEPC admits that although each initiative is different, they all assume "that the key to teacher education reform is accountability in the form of public assessment, rating, and ranking of states, institutions, programs, and/or teaching candidates" (National Education Policy Center, 2016, p. 3).

The review of the four initiatives found two significant conclusions. The first conclusion stated that three of the four initiatives (not including edTPA) included little evidence on how to improve the performance of the program (NEPC, 2016). The initiative gave summative evaluations that would influence public policies and called for teacher preparation programs and institutions to make evidence-based decisions. However, there was no evidence used when the decisions were made (NEPC, 2016). The second conclusion of the report found that the initiatives reviewed assumed that school factors, mainly the teachers, are the only factor in the

educational equity equation. The initiatives, at the time, did not account for the multiple in- and out-of-school factors that influence student achievement (NEPC, 2016, p. 4).

According to the NEPC (2016, p. 5), evaluations of teacher preparation programs should do the following:

- Reflect alternative forms of accountability that shift the focus from externally generated single-measure tests to multi-pronged internal assessments of teacher performance and student learning.
- Avoid "placing too much weight" on value-added assessments of program graduates' and programs' effectiveness. Evaluations of preparation programs should not be based solely or primarily on students' test scores. This is consistent with recommendations in the National Academy of Education report on teacher preparation evaluation.
- Consider teacher educators' performance (defined as knowledge, practice, commitments, and professional judgment as they play out in the construction and operation of programs), teacher candidates' performance (defined as knowledge, practice, commitments, and professional judgment as they play out in classrooms and schools), and students' learning (defined as academic learning, social/emotional learning, moral/ethical development, and preparation for participation in democratic society).
- Recognize that teacher preparation programs have multiple, often complex, goals and purposes, including preparing teachers to challenge inequitable school and classroom practices and work as agents for social change. These goals, which are consistent with a "strong equity" perspective, should be reflected in the evaluation processes.

The NECP's assessment aligns with Tatto et al. (2016) conclusion of the proposed regulations put in place by the Department of Education. Tatto et al. (2016) stated that one of the potential outcomes of the increased regulations would be the "balkanization of teacher preparation programs, with highly effective programs creating exclusive networks among themselves" (2016, p. 27). In essence, they are moving away from the collaborative model for learning. Tatto et al. also stated that the data produced by the regulations must be publicly made available before a level of fidelity could be confirmed. This was a concern for the researchers as they concluded that it "presented a high risk in a policy environment characterized by lack of trust and a high level of vulnerability for the teaching profession" (Tatto, 2016, p. 27). A very concerning statement for all parties as teachers play significant roles in the lives of many stakeholders.

State Accreditation

Teacher preparation programs align their syllabi and major assignments to meet the standards enforced by the state teacher licensing board (Appendix A). The elementary education standards are broken down into four major categories. The first category focuses on human relations and cultural diversity. The state educator licensing board (2017) where the study takes place requires a minimum of two semester hours, that encompasses Native American studies, creating a positive classroom environment, and strategies for teaching and assessing diverse learners (p. 25). The second category the state requires for licensure is the Youth Mental Health Competency. This standard includes the awareness that mental health is prevalent in youth today, and how to identify and refer students for interventions. The first two categories are a requirement of all education students and are not specific to students seeking an elementary

license. The third category for licensure digs into the development, learning, and motivation of the student. The educator licensing board (2017) requires the graduate to have mastered "major concepts, principles, theories, and research related to the development of children and young adolescents to construct learning opportunities" (p. 42). The final category to meet the requirements of the state teaching license is the curriculum standard. The state licensing board requires teacher preparation programs to provide their students with the opportunity to develop a high level of competence in English, science, mathematics, social studies, arts, and physical education. Assessing the standards during the institution's accreditation review is the task of the accreditation team. If the accreditation's team finds the standards are not implemented with high-quality instruction, the institution goes on an improvement plan. If improvement is insufficient, they will lose their accreditation status.

In 2011, the state licensing board adopted the Interstate Teacher Assessment and Support Consortium (InTASC) Model Core Teaching Standard. The InTASC standards (Appendix B) outline what "all teachers across all content and grade levels should know and be able to do to be effective in today's learning contexts" (2017, p. 3). The InTASC standards differ from the state's program standards for specific preparation areas in that they also focus on the dispositions of the professional teacher, assessment for learning, and the application of skills by the preservice teacher (Council of Chief State School Officers, 2013). Pairing the state standards and InTASC standards together requires the student to become a well-rounded educator.

The state teacher licensing board where the study takes place used the standards to determine if the state teacher preparation programs are efficiency preparing their candidates for the classroom. The goal of the local teacher licensing board is to "serve as a dynamic process

which assures a high-quality preparation for professional educators. It is a constant, reflective improvement process in which we work with institutions, learned societies, and other accrediting agencies to encourage and uphold best practices within the field of teacher education" (2017, p. 18).

The statement above from the local teacher licensing board where the study took place, connects to the recommendations from the 2016 brief by the NEPC. The accreditation process cannot be a one and done situation, where the entire value is on one comprehensive evaluation. The accreditation process must be a reflective improvement process. Something that an institution is continually working on to improve the quality of instruction they are providing to their teaching candidates. Institutions need to take an assessment for learning mindset, even if the requirement is to take a more in-depth look into their programs every seven years.

CAEP Standards

Any university that is recommending a graduate for teaching licensure must be reviewed and approved by the local teacher licensing board. However, institutions may also seek out national recognition through the Council for Accreditation of Educator Preparation (CAEP), which the local teacher licensing board has created a partnership. Having the CAEP accreditation stamp is not currently a requirement of institutions in the state where the study is taking place, the institutions are still required to submit a massive amount of documentation to meet the standards set forth by the local teacher licensing board. Due to the alignment with CAEP, and esteem that comes with having a CAEP accredited program, many institutions are completing the additional paperwork to receive the CAEP accreditation seal of approval.

The CAEP standards (Appendix C) flow from two principals. Teacher preparation programs must provide substantial evidence that their graduates are competent, caring individuals and the institution's faculty can produce evidence to "maintain and enhance the quality of the professional programs they offer" ("CAEP", 2015, para. 2). The CAEP standards are divided into five standards, with sub-standards to ensure teacher preparation programs can meet this goal.

Similar to the state standards and InTASC standards, the first two CAEP standards are driven by the preservice teacher's development while in the program. CAEP's standard one focuses on the content and pedagogical knowledge, deeply digging into discipline-specific practices while weaving in technology ("CAEP", 2015). The first standard in CAEP also addresses the mastery of the 10 InTASC standards, thus making it imperative for teacher preparation programs to weave the two standards throughout their programs.

The second CAEP standard, clinical partnerships, and practice is unique from the InTASC and the state standards as it forces the teacher preparation programs to look at the partnerships they are creating with all stakeholders. This partnership needs to develop a mutually agreeable expectation for candidate entry, preparation, and exit ("CAEP", 2015). Although this may seem like another step, the partnership adds a measure of accountability to the teacher preparation program. The teacher preparation program is listening to the stakeholders who are hiring their students to hear what needs to change or stay the same within their programs.

The remaining CAEP standards focus on the teacher preparation program, which is a significant shift from the state and InTASC standards.

- Standard 3 Candidate Quality, Recruitment, and Selectivity
- Standard 4 Program Impact
- Standard 5 Provider Quality Assurance and Continuous Improvement

The final three standards in the CAEP document include meeting requirements for selecting and retaining high-quality preservice teachers. These three standards work together as they look out past the preservice teacher's time receiving training and how they are impacting their students. Standard five of CAEP specifically looks at how the institution is using their data to continually reflect and grow to meet the needs of the communities ("CAEP", 2015).

A Shift in Teacher Preparation

As the tail end of the Millennial generation moves out of high school and into adulthood, teacher preparation faculty need to review how they are presenting the content to preservice teachers. Gordon Tredgold (2016) found that 64% of the millennials he surveyed would instead make $40,000 a year at a job they loved, then having employment at a place they found boring and were paid a significant amount more. Tredgold (2016) also found that 88% of the millennials that he surveyed preferred a collaborative work environment, 80% felt like on the spot recognition was essential for their growth and understanding, and 84% believed that making a positive difference in the world was more important than positive recognition. A concerning statistic to add to the mix completed by Gallup in 2016, was that only 6% of superintendents believed that their districts understood the Millennials' needs (as cited in Abrams, 2018, p. 75). A bridge must be built to meet the needs of future generations of students.

CREST Program

In 1996 the University of Texas at Arlington implemented an intensive yearlong teacher preparation program that takes place entirely in the field. Collaborative Redesign of the Educational System (CREST) allowed preservice teachers to experience an entire school year in the classroom (Wilmore, 1996). The primary purpose of the CREST program was to "directly tie theory to practice" for the preservice teachers and by providing a laboratory school for the preservice teacher to observe the theory in practice immediately connected (Wilmore, 1996, p. 59). After a year, the CREST program interviewed principals who hired the CREST trained teacher. The principals reported the following:

1. The CREST trained teacher was more articulate and could ask specific questions about classroom management and discipline;
2. The principals felt that the CREST trained teacher was better prepared and was able to organize a classroom that was ready for the first day of school;
3. Compared to their peers, the CREST trained teacher was more confident and competent during their first year of teaching (Wilmore, 1996).

The CREST program began over 20 years ago but had qualities that the millennial student would find attractive. CREST gave the preservice teacher explicit instruction followed by observation and application of the theories in practice. The outcome produced a more confident and better-prepared teacher. Through collaboration with mentor teachers and explicit instruction, the CREST preservice teacher was the more prepared and confident first-year teacher than the regularly trained preservice teacher.

Authentic Experiences

The millennial student yearns to feel a connection to each project they complete, but in many of the teaching methods courses, the student will find themselves teaching to their peers. Authentic experiences could include placing the preservice teacher in the classroom, with students, and teaching a lesson at the level of the students. Preservice teachers would get to experience teaching and all the extra factors that come with teaching while having the support of a licensed professional in the room. First-year teachers are overwhelmed with many challenges in the classroom. Burkman (2012) narrowed the challenges first-year teachers face into the following top five categories: emotionally disturbed students, students with psychological disorders, overactive children, special education students in general education classrooms, and stress management. Each of the five topics are challenges that need to be addressed for the successful mastery of the local state standards; however, pre-service teachers lack true mastery without classroom experience.

Science Circus Days. As a way to allow pre-service teachers an authentic experience to apply their skills from their science methods course, Pei-Ling Hsu redesigned the course to include an educational event called Science Circus Days. Hsu's 2016 study focused on two sections of the science methods courses, with 38 preservice teachers in their junior or senior year. Most of the participants of the study did not have any "previous formal teaching experience except for occasional tutoring or teacher assistantships" (Hsu, 2016, p. 1215). Students spent three hours a week, for fifteen weeks, in the course. While in the course, the preservice teacher learned how to design and implement a lesson (Hsu, 2016). Students received critical feedback to improve their lessons from their peers and the instructor. The preservice teachers practiced the

lessons before they went to the Science Circus Day with their peer. At the Science Circus Day, the preservice teacher presented the lesson to children, parents, families, and teachers in small groups. Hsu required the preservice teacher to present the lesson on two separate occasions to allow reflection time inbetween (Hsu, 2016).

Hsu (2016) found that through the Science Circus Day, the students were more engaged in their learning and felt more connected to the content as they were presenting to a variety of people. The setting was unstructured and unfamiliar, which is not unlike the classroom. Because of this, the preservice teacher found value in spending extra time to prepare their lessons and have hands-on activities. Hsu (2016) found that the preservice teachers yearned to collaborate with their peers about their lessons by repeatedly talking about their lessons and rehearsing them before the presentation. The collaboration amongst peers and instructor was key to the success of the activity.

Project-Based Learning

With many schools moving to provide all students with technology, students are now able to quickly find the content answers through a search of the Internet. What does this mean for teacher preparation? Teachers need to move away from being the content specialist to becoming a guide to help students find appropriate information on their own.

A current strategy that has come into focus once again in educational communities is Project-Based Learning. Project-Based Learning (PBL) is an instructional method that encourages students to discover knowledge through a series of guided experiences. Adderley et al. (1975, p. 1) provided the following definition of what PBL is:

1. Projects involve the solution of a problem; often, though not necessarily, set by the student;
2. Projects involve initiative by the student or group of students and necessitate a variety of educational activities;
3. Projects commonly result in a product and last a considerable length of time;
4. The teacher's role is as an advisor, not the authoritarian.

Adderley et al.'s definition from 1975 demonstrates that PBL is not a new concept in education. Research has proven that PBL instruction at the elementary, secondary, and post-secondary levels can be successful (Harris, Penuel, DeBarger, D'Angelo, & Gallagher, 2014; Kumari & Nandal, 2016; Pellegrino & Hilton, 2012). Multiple studies compiled by Kingston (2018), (Appendix D), prove that using PBL as a teaching strategy has shown student growth at all grade levels, with different classroom demographics, and in varying content areas. In *Democracy and Education*, Dewey's (1916) statement on "doing" is key to understanding this PBL, "Give the pupils something to do, not something to learn; and the doing is of such a nature as to demand thinking; learning naturally results" (p. 98).

Many other professions utilize the theoretical framework of Problem Based Learning. Students participating in the PBL framework are immersed in their learning and expected to engage in problem-solving real-world difficulties. "PBL is helpful in assisting learners to transfer knowledge and apply it to other situations, rather than just on formalized tests" (as cited in Caukin, Dillard, & Goodin, 2016, p. 27). PBL ingrains the 21st Century Skills to ensure students are ready to succeed in a world that they cannot even imagine. Through collaboration, creative thinking, problem-solving, and critical thinking, PBL allows students to practice these

skills with their peers. Researchers have found that PBL activities that allow students the freedom to learn at their own pace, while working collaboratively with their peers, allow for a deeper level of learning in the content area (Autapao & Minwong, 2018, p. 5).

BIE Project Based Teaching Practices: Developing the "Gold Standard PBL"

The Buck Institute for Education (BIE) is considered by many educators to be a leading force in the call to arms for a shift to establishing PBL classrooms. For 30 years, the BIE has assisted teachers in preparing students to succeed in and out of the classroom. To help teachers create PBL opportunities for their students, the BIE created the Project Based Teaching Practices for a Gold Standard PBL. The BIE believes that the teacher must become much more than a facilitator during the PBL experience and must manage a wide variety of experiences in the classroom: managing content, motivate students, assessment for learning, and contact with parents (Larmer, Mergendoller, & Boss, 2015). This strategy developed by the BIE draws on the extensive history of project-based learning, even before the time of Dewey.

Progetti. Larmer, Mergendoller, and Boss (2015) trace the history of PBL back to the 16th century in Italy, when architects, painters, and sculptors were classified as skilled artisans. This classification did not sit well as they believed their occupations to be a "union of scientific and artistic knowledge" (Larmer et al., 2015, p. 25). Each of the professions required specialized training, which required school. This unrest with the professionals led to the creation of the Accademia di San Luca in 1577 by Pope Gregory XIII (as cited in Larmer et al., 2015).

It soon became apparent that the traditional lecture style was not an adequate instructional method for the architects, painters, and sculptors. These students needed the time and opportunity to practice what they were learning. The assignments, called *progetti* (projects),

were design challenges that students took what they were learning through lecture and immediately apply it to their learning. The Accademia di San Luca began to hold competitions in which these *progetti* were judged against specific criteria (Larmer et al., 2015).

The Project Method. William Heard Kilpatrick published *The Project Method* in 1918 (Larmer et al., 2015). John Dewy heavily influenced Kilpatrick, and he believed that student-created projects were an avenue to connect student learning to social and physical environmental interactions to help students become contributing members of society (Pecore, 2015). Kilpatrick's essay asserted that the purpose of projects was to "foster student motivation by encouraging students to freely decide the 'purposes' they wanted to pursue" (Larmer et al., 2015, p. 27). Without the student's choice in the project, the schoolwork would become counterproductive and alienate the students.

Due to Kilpatrick's belief that students needed to be motivated to learn, the student had control over what type of project they wanted to complete. Kilpatrick's Project Method identified four types of projects: Type 1 projects embody some external idea or plan; Type 2 involves enjoying an esthetic experience; Type 3, problem-solving; and Type 4 involve gaining skills or knowledge (Pecore, 2015, pp. 158). The teacher's role in the Project Method was more of the guide, and they would gradually remove themselves from the educative process (as cited in Pecore, 2015).

Medical Education. A group of medical educators in the 1960s at Canada's McMaster University became concerned when they realized their students were having difficulties mastering the clinical and diagnostic skills they needed to practice as physicians. A review of the current curriculum emphasized the memorization of knowledge, not the integration of the

"knowledge, skills, and dispositions typical of successful doctors" (Larmer et al., 2015, p. 29). Realizing they needed a new teaching approach, they developed problem-based learning, an approach that has been adopted by multiple professions since its creation over 50 years ago.

Gold Standard PBL. Drawing from the previous history of PBL, the BIE created the following diagram to assist teachers with designing high-quality PBL opportunities in their classrooms. Although the diagram is cyclical in design, the elements are of equal value and needed to be included in the PBL design for it to be considered a Gold Standard PBL. The diagram was created to ensure the idea of the BIE's Gold Standard PBL was easily understood, and the descriptions were kept short (Larmer et al., 2015). Larmer et al. (2015) wanted to also base the diagram on recent educational research and theory, specifically the learning sciences.

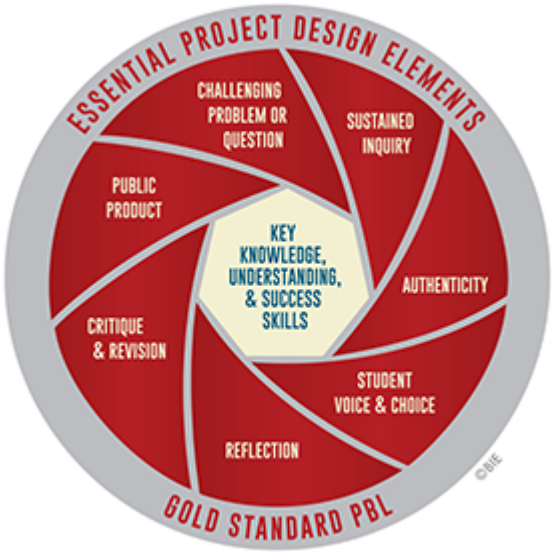

Figure 1. Essential Project Design Elements of a Gold Standard PBL (BIE, 2018)

The goal of PBL is to engage in the learning process while mastering the content deeply. Therefore, the bullseye of the diagram holds the key knowledge, understanding, and success skills. Students who participate in a Gold Standard PBL can expect to have learning experiences

that take them past the superficialities of a Google search (Larmer et al., 2015). An example of this would have the students conducting interviews with professionals in the community (or by video chat) to obtain their knowledge.

Along with mastering the content, the student would also develop skills to implement for their successful futures. Meaning, they would begin to develop a civic dialogue and analyze current issues and problems in their communities. The transfer of their learning to something meaningful to them allows for more in-depth learning of the information (Larmer et al., 2015). Larmer et al. (2015) also address the importance of implementing the 21st Century Skills into PBL to ensure students can become contributing members of society in adulthood.

The outside of the diagram includes the essential project design elements that a teacher must represent within a Gold Standard PBL. The teacher must start the project with the learning goals in mind, and the design elements may have a varying degree of representation within a given project.

Starting at the top of the diagram lies the challenging problem or question slice. The challenging problem or question give the organizing structure for the Gold Standard PBL because it gives the learning a purpose (Larmer et al., 2015). Students are required to do the activity not only to memorize it but also to apply it to a real-world situation. Determining the correct level of challenge in a diverse classroom is essential for the teacher, the BIE calls this the "Goldilocks" level of the challenge (Larmer et al., 2015).

Problem-based learning starts with a challenging problem (Larmer et al., 2015). These problems are messy, realistic, have multiple stakeholders, and do not have an obvious answer. The student is required to collaborate amongst their peers to problem solve to find the solution.

During this collaboration students "identify and master 'learning issues'-the information and concepts they need to learn and understand to solve the problem" (Larmer et al., 2015, p. 30). As a part of a team, the student learns how to set individual goals that work toward the bigger goal of solving the problem. The team presents its findings to the entire class and the logic they have used to come to the conclusions. The final step in the problem-based learning strategy is the student reflection on the entire learning experience. This reflection time allows the student the opportunities to improve their performance, but also to solidify the knowledge they have gained if the problem should arise in their career.

Once the challenge is issued, or problem identified, the student needs to maintain a culture of sustained inquiry. Traditionally thought of as research through a book (or now on a computer), sustained inquiry requires the student to engage in finding answers to questions they might have about their problem or challenge. They may do this research through interviews with experts, fieldwork, or even experiments. While conducting research, students will find answers to their initial questions while forming new questions as they progress through their research (Larmer et al., 2015). Thus, their sustained inquiry spirals their learning to dig deeper into a problem or challenge.

The next two slices on the BIE's Gold Standard PBL diagram are essential for high-quality student engagement in the project. Student Voice and Choice and Authenticity let the student know that the learning they are doing is meaningful. These slices will help them as they grow into adulthood as they become more aware of the world around them, its problems, and how they can help.

Moving around the circle of the elements, the next slice is the reflection piece. Reflection in the Gold Standard PBL is intended to be used by students to "determine whether the problem-solving strategies they are using are appropriate to the problem being solved" (Larmer et al., 2015, p. 43). Students who use their metacognition can modify their projects as needed. The ability to modify projects is key to becoming a problem solver as students may have to try more than one way to be successful at a task.

Critique and Revision throughout a PBL project is key to student understanding and success. Gold Standard PBL emphasizes the need for multiple formative assessments throughout the project. Checkpoints completed by the teacher, other experts, or student peers allow feedback throughout the project. If a peer is to review their work, the student is learning how to give appropriate feedback and how to examine each other's work (Larmer et al., 2015). Multiple checkpoints are implemented before the summative assessment to ensure learning. In a Gold Standard PBL, the summative assessment may be a combination of traditional and new assessment practices (Larmer et al., 2015). Examples of assessment in a Gold Standard PBL may include an essay of the content knowledge and conceptual understanding, and a rubric that assesses the team-created product.

The public product is the final slice of the BIE's Gold Standard PBL diagram. Students are required to share their findings to the challenge or problem they have been working on with a public audience. Larmer et al. (2015) believe that there are several positive consequences for sharing their product with the public. The first positive consequence is that the student does their best because a wider audience than just the teacher will see the final project, and the project is deemed more authentic by the student. Student engagement is a second positive consequence

that stems from publicly presenting their product. When adults come in from the community to listen to the students' answer to a problem, students begin to realize their work (learning) is meaningful and feel pride in their accomplishments (Larmer et al., 2015).

Project-Based Learning in Teacher Preparation Programs

Universities are required to prepare students who possess impeccable communication skills, critical thinking skills, and the ability to problem-solve for a world that is increasingly complex and unpredictable. As the elementary and secondary educators shift away from the lecture-based approach to an open-ended inquiry model, post-secondary systems must uncover ways to keep their learners engaged in the content. The following section will expose research that demonstrates how teaching preparation programs have implemented the PBL instructional approach in their programs.

The University of Calgary. The University of Calgary created an innovative program to redesign their BEd program that focused on three pillars: Inquiry, Learner Centeredness, and Field experiences (Roessingh & Chambers, 2011). The students in the program had already completed a degree and were the average age of 29 at admission. Roessingh and Chambers (2011) described the students as

> self-disciplined, and highly motivated will also arrive with the skills for independent, self-directed inquiry, research, and critical reflection. In sum, our teacher preparation students bring discipline area knowledge, maturity, life experience, and a profound desire to touch the life of a child. (pp. 60-61)

After mapping out critical theory, social constructivism, and behaviorism to reveal the best way to meet the needs of the learner, Roessingh and Chambers decided on a pragmatic,

balanced approached and set out to design the program using the project-based learning instructional design.

The projects at the University of Calgary in the teacher preparation program vary in length of time and are learner-centered, collaborative, and task-based activities. All projects in the program include essential design elements: clearly defined learning objectives and key concepts; a list of materials and resources; a set of enabling tasks; and assessment criteria and rubrics (Roessingh & Chambers, 2011). Throughout the project, the student encounters enabling tasks. These enabling tasks are to provide the learner with "collaborative learning and promote interactivity and integration focused on authentic situations and issues pertinent to the learning objectives and key concepts guiding the project" (Roessingh & Chambers, 2011, p. 67). The student is continuously receiving feedback from their instructor through continuous assessment and monitoring of learning through the projects. The University of Calgary found alternative forms of assessment, such as self-reflection, to showcase what learners can do and allowing the student to take an active role in their learning (Roessingh & Chambers, 2011). After receiving multiple forms of feedback, the project concludes with an assessment rubric. The rubric is a checklist of the required components of the project as the student has received multiple forms of feedback. The final assessment also includes a brief set of content-based knowledge questions that the instructor expects to find in the learners' work (Roessingh & Chambers, 2011).

Through formal instructor evaluations, Roessingh and Chambers (2011) concluded that providing instruction to pre-service teachers through a PBL instructional design was incredibly beneficial. The students commented that the classes presented by PBL instructional design were "extremely valuable" and "useful to our practice" (Roessingh & Chambers, 2011, p. 68). The

University of Calgary's implementation of the PBL instructional strategy is affecting the way their students are learning in the methods classroom

The Academically or Intellectually Gifted Licensure Program. The Academically or Intellectually Gifted Licensure Program (AIG) is a 12-credit hour program that allows teachers to obtain an add-on license in gifted education through a university in the Southeastern United States. The AIG courses are offered online, except for one hybrid course that requires a field experience held on campus. Throughout the courses, students experience PBL through discussion boards, assignments, readings, and the major assignment was the design of a PBL curriculum unit that the teacher could use with their students (Dole, Bloom, & Doss, 2016).

Dole, Bloom, and Doss (2016) sought to understand how the field experience contributed to the teachers using PBL in their classrooms. The field experience offered to the AIG participants was an opportunity to collaborate with their peers and implement their learning with students in grades one through nine. The purpose of the field experience was to encourage teachers to be facilitators and allow the students to take the lead in their learning experiences (Dole, Bloom, & Doss, 2016).

The researchers uncovered that the field experience was helpful for the AIG participants in implementing the PBL instructional strategy in their classroom after leaving the university (Dole, Bloom, & Doss, 2016). Four sub-themes emerged from this central theme. Students were able to apply the theories they were learning into practice as they were learning about PBL, along with mastering the logistics of PBL (Dole, Bloom, & Doss, 2016). Participants were allowed to work together to learn about the PBL process that has been described as unstructured The field experience required the student to participate in a PBL project and were required to try

a new strategy. Students in the AIG program also had to become the facilitator, not the planner. This is a shift for many teachers, and one participant described it as "scary" (Dole, Bloom, & Doss, 2016, p. 28). The participants in the AIG program were able to discover that, by allowing more student autonomy, students can go more in-depth with their learning (Dole, Bloom, & Doss, 2016). The final theme emerging from the research was the importance of collaboration with the AIG participant's peer (Dole, Bloom, & Doss, 2016). Some of the participants in the study described collaboration as the most rewarding aspects of the experience.

The researchers of the AIG program focused on the effect the field experience had on educators after the PBL instructional strategy was taught in an online course. The study found that through the field experience, the participants understood the PBL instructional strategy. Dole, Bloom, and Doss (2016) state "as our data and other research indicate, meaningful experience may be the ticket to changing teacher's conceptions and ultimately practice" (p. 30).

Project-Based Learning in Math and Science Methods Courses. Wilhelm, Sherrod, and Walters (2008) found that understanding in math can develop significantly when it is put into context within the discipline of science. The researchers studied twenty-four middle-level preservice teachers from a Southern United States university. These preservice teachers were seniors and enrolled in an integrated mathematics and science methods course that met once a week for three hours for sixteen weeks.

Preservice teachers who participated in the class received instruction on the Moon through scaffolded benchmark lessons. During the benchmark lessons and project work, the preservice teachers would work cooperatively in small groups, communicate their project status to the class, and revise their work according to peer and teacher feedback (Wilhelm, Sherrod, &

Walters, 2008). The researchers posed the following question: What causes the phases of the Moon? In collaborative groups, the preservice teacher made daily observations and sketches that recorded the Moon's altitude and azimuth angles. After the five-week observation period, the preservice teacher was challenged to a driving question that demanded them to apply their mathematical skill (Wilhelm, Sherrod, & Walters, 2008). The next step divided the collaborative groups and had the groups investigate another question to continue to drive their group work. The preservice teacher was continually collaborating, receiving feedback, and had their learning supported throughout the entire project.

Wilhelm, Sherrod, and Walters (2008) assessed the preservice teacher using the Lunar Phases Concept Inventory as a pretest and a posttest. Although not all the domains had significant increases in understanding science and math, the researchers found that desiging projects is beneficial to preservice teachers. They stating that settings rich with projects permit preservice teachers to "engage in contextualized problem solving, make connections within and across disciplines, develop reasoning skills, and accurately represent can communicate concepts" (Wilhelm, Sherrod, & Walters, 2008, p. 232).

PBL Approach to Teaching Physics for Preservice Elementary Teachers. A college of education in Israel recognized the negative attitudes of their preservice teachers toward the physics course (Goldstein, 2016). The course was traditionally taught through lectures, textbooks, and laboratory exercises. In response to observing the negative attitude, the instructor decided to implement a PBL approach to teaching the physics course. The course was structured so the students would spend the first three or four lessons in each semester becoming familiar with the field of study to prepare them for the activity (Goldstein, 2016). The middle

part of the course provided time for the students to work on their projects under the instructor's supervision. Finally, the last three lessons of the semester were for the students to present and discuss their projects as a class. The project's objective was to explain the natural phenomena or principals of the action of modern devices based on the laws of physics (Goldstein, 2016).

As the course was altered to assist in changing the students' perspectives on physics, Goldstein sought to uncover if the PBL instructional approach assisted in improving their attitudes. Goldstein (2016) found that 90% of the students expressed a feeling of improvement in their perception of learning physics due to their experience with PBL. Also, no student expressed a negative attitude regarding learning physics (Goldstein, 2016).

Enhancing Problem-Solving Skills in Preservice Teachers Through PBL. Koray, Presley, Köksal, and Özdemir (2008) studied the question of whether PBL was useful in developing preservice elementary teachers' problem-solving skills. The sample consisted of 85 preservice elementary teachers in Turkey. The participants enrolled in a Science Instruction II course where they were divided into a control group and an experimental group. The control course received the content via lecture, and the depth and quality of the information evaluated by their instructor and classmates (Koray et al., 2008). The participants in the experimental group received the same information utilizing the PBL instructional approach.

Through a mixed-methods approach, Koray et al. (2008) determined that requiring preservice teachers to work in a PBL environment required them to develop problem-solving skills. Additionally, the preservice teachers showed growth in their communication skills, collaboration with peers, and knowledge acquisition (Koray et al., 2008).

Constructivism Theory

The constructivism theory of learning states that learning must be experienced to truly master the content (Freire 1972; Piaget 1932; Richardson 1997; Vygotsky 1978). Experiencing content is the foundation of project-based learning. Constructivism allows the individual to take the content and create their understanding, based on what they already know and believe (Richardson, 1997). This vision supports Dewey's belief that education is not an act of receiving information, but an active and constructive process between two people (Dewey, 1916).

Constructivism has many advantages to the pre-K-12 student, but also to the preservice teacher. As stated in the reports from the National Education Policy Center (2016) and Tatto et al. (2016), teaching is a dynamic practice, therefore making it difficult to break down individual teaching elements to not overwhelm preservice teachers. Kennedy (2016, p. 10) states the following about constructivism as a framework for preservice teachers:

> Trying to break down teaching into individual elements has some advantages (e.g., makes the teaching act more visible to student teachers). We can easily go awry and generate hundreds of things teachers strive to achieve. Ranging from extremely broad goals such as help students learn the curriculum to extremely narrow and fleeting goals like get Frederick to stop poking Julio.

The uniqueness of the constructivist theory has the learner at in the driver's seat and the teacher as the guide to ensure learning is happening.

The constructivist theory is made up of four focal characteristics where the learner (similar to the Gold Standard PBL model) is at the center (Brunning, Schraw, & Ronning, 1995). The characteristics of the constructivist theory are cyclical and continually in motion for the

learner (Figure 2). Brunning, Schraw, & Ronning identified the following characteristics of the constructivist model: learners construct their own meaning; social interaction plays a vital role; authentic learning tasks are crucial for meaningful learning; learning is dependent on current understanding (1995).

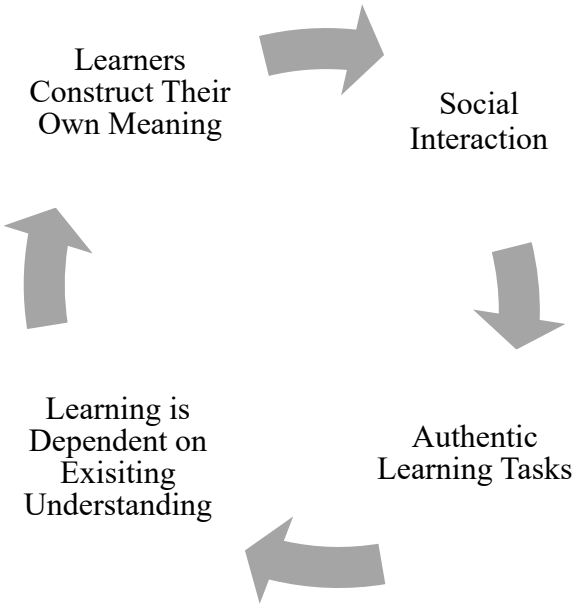

Figure 2. Focal Characteristics of Constructivism

Conclusion

The study explored how the graduates of traditional teacher preparation programs were implementing educational theories into practice. The requirement for accreditation using the CAEP Standards to ensure graduates successfully obtained a teaching license drove the need for the study. Although the case-study was intrinsically motivating for the researcher, other program directors in teacher preparation programs may benefit from the research. The university in the case-study had access to the unique experience of PBL training. The PBL training had access at

a small population of preservice teachers to reveal if the hands-on, integrated training that used the constructivist approach affected their first-year teaching experience.

Chapter two included a summary of the previous research on accreditation standards, the definition of the elements of the Gold Standard PBL teaching model, and the constructivism theory. Chapter 3 will discuss the methodology utilized, including the research context, the participants, and provide procedures for conducting the research data analysis.

CHAPTER 3

METHODOLOGY

The purpose of the qualitative case study was to explore if the graduates of the private, Midwestern, university were integrating theories into practice during their first year in the classroom. To continually improve the Elementary Education program at the university where the study takes place and meet the upcoming accreditation standards, the qualitative case study addressed the central question: *How are traditionally prepared elementary education graduates implementing theories into practice during their first-year of teaching?*

Chapter three describes the study's research methodology and analysis of the following: (a) rationale for using the case study approach, (b) review of the setting, (c) identification of the study's participants, (d) how the data was collected, (e) methods which the data was analyzed, (f) explanation of participant rights, and (g) potential limitations of the study. The chapter will conclude with a summary.

Rationale for Case Study Methodology

Offering the PBL training to the preservice teachers was a unique situation, as the Education Department was one of four institutions awarded the grant in the United States. The grant offered a unique opportunity to study how a supplemental training that is hands-on and immediately implemented affected the first-year teaching experience. "A case study is an in-depth description and analysis of a bounded system" (Merriam, 2009, p. 40). As the PBL training experience was a bounded system, limited to 22 of the education students at the university, a case study was fitting for the research. The study's intent was not to focus on the

PBL teaching strategy. Instead, the study attempted to reveal how the graduate utilized high-quality training after embedding the instruction into practice during student teaching.

The researcher served as the Elementary Education Program Director at the private university where the PBL training was offered and tasked with ensuring the Elementary Education standards were met through high-quality instruction. As the private university moves into their first CAEP accreditation cycle within three years of the time of the study, program changes were needed to ensure the success of the program. The case study was, therefore, intrinsically interesting to the researcher, who used the findings to develop the Elementary Education course plan at the specific university. Guba and Lincoln concluded that a case study was the best way to evaluate a phenomenon such as the PBL experience as the case study provides a "thick description, is grounded, is holistic and lifelike, simplifies data to be considered by the reader, illuminates meanings, and can communicate tacit knowledge" (as cited in Merriam, 2009, p. 48). In addition to being beneficial to the researcher, using the case study design allowed the evaluation of the information by a variety of professionals outside of the setting to meet the needs of their specific state accreditation requirements.

Setting

The case study's pool of participants was limited to the 22 graduates from the PBL training conducted at a private university in a Midwestern state. The university in the study places a high priority on reflective thinking, and graduates are accustomed to providing thoughtful responses to experiences to encourage growth.

The initial grant for the PBL training was issued to the university for three years beginning the 2017 school year. The participants of the study were in the first cohort and

received the training during the 2017-18 school year. The PBL training consisted of Project Slice in October 2017, PBL 101 in November 2017, two Site Support Visits in February and March of 2018, and a PBL Symposium in March of 2018. The researcher conducted the interviews in March of 2019 to explore how students were implementing PBL project design one year after receiving the training.

Due to the funding of the grant, the university was required to choose 22 students ranging from Early Childhood, Elementary, and Secondary Education- meaning not all students in the Education Department were able to participate in the PBL training. The research participants of this study focused on the preservice teachers that graduated from the university with an Elementary Education degree, bringing the research participant sample to thirteen.

The qualitative interviews were conducted in March 2019. The interviews were completed one-on-one, as Creswell states, to allow participants to share ideas freely (Creswell, 2015, p. 217). The interviews lasted forty-five minutes to fit the schedules of the classroom teachers.

Participants

A purposeful sampling was collected from a preset pool of participants. Merriam (2009) acknowledges that purposeful sampling assumes that the researcher wants to gain insight from a sample where the most information can be learned. The participants in the study were limited to graduates of the private, Midwestern, university who received the PBL training from the BIE. The training was limited to twenty-two students, and three of those students were continuing their education through master's programs and were not contacted. The training included secondary and elementary trained teachers. As six of the eighteen participants are working in the

secondary classroom, the researcher did not contact them as the study focuses on the graduates who were trained to work in the elementary classroom. Thus a total of thirteen potential research participants were contacted.

A convenience sampling selection was utilized as the study took place with the graduates from the university where the researcher was a faculty member, and a relationship was already established between the researcher and the participants. The relationship grew from the researcher having many of the participants in methods education courses at the university. The researcher also was a point of contact between the organization who provided the grant and the university. Therefore, the researcher had access to all the names of the participants she created due to part of her workload. The researcher received permission from the university to utilize the list of names through the IRB process. Potential participants were contacted via email (Appendix E) to initiate the interview.

Data

Triangulation is the process of corroborating evidence from different methods of data collection to validate findings in a study (Creswell, 2015). Therefore, in addition to the literature review included in chapter two, the study employed the following measures to ensure the validity of the data collection methods.

Participant Survey

Each research participant was sent an online survey they completed before the semi-structured interview. The survey focused on how the first-year teacher perceived the PBL training affected their teaching experience. Although surveys are traditionally quantitative instruments, they may also provide corroboration for the qualitative data collective by other

methods (Bloomberg & Volpe, 2012). The survey was created using REDCap and distributed via email before the completion of the interview. No information collected on the survey identified the participants, and the survey began with a statement reminding the participants of their rights.

The participant survey included in the study consists of two parts (Table 1). The first part was comprised of three questions that required the research participants to rate their answer by a Likert scale. The purpose of the first three questions was to establish the validity of how the first-year teacher was using the PBL training or not in the classroom. The second part of the survey looked at the research participant's perception of the PBL training and required the participant to compose a short write-in response.

Table 1

Participant Survey

Question to Study Participant	Alignment to the Study
Part 1: Perception of Use of PBL in the Classroom	
1. In my opinion, the PBL training has affected my first year of teaching. (Likert Scale Rating)	This question addresses the CAEP Standard 4 Program Impact, does the candidate see their training as relevant?
2. In my perception, I use teaching strategies daily I learned during the PBL training in my classroom. (Likert Scale Rating)	Is the graduate applying the theories presented during their pre-service training? The question also addresses CAEP Standard 2.
3. In my opinion, using PBL as a teaching strategy has affected student learning in my first-year teaching experience. (Likert Scale Rating)	Question three addresses CAEP Standard 4 Program Impact, Indicators of Teaching Effectiveness.
Part 2: Perception of PBL Training	
1. What did you like the best about the PBL Training as a preservice teacher, and why? (Short answer)	The final questions addresses the CAEP Standard 4 Program Impact and will measure what the candidate feels was relevant (or not) about the training.
2. What would you like to see changed regarding future PBL Trainings for preservice teachers and why? (Short answer)	

Participant Interview

The qualitative data collected through the semi-structured interview protocol (Appendix F) took place in March of 2019, in a mutually acceptable location, for the face-to-face interview. All the data was collected by the principal researcher as a requirement of the University of New England's Doctorate in Educational Leadership dissertation process. Having the data collected by one researcher ensures that the interview protocols were followed and analyzed through the same lens.

The same questions were presented to each participant during the 45-minute interview. The interview began with obtaining oral consent from the research participant to proceed with the interview. Additionally, participants were asked to sign a Research Written Consent Form (Appendix G) to allow the audio recording of the interview. The interview was transcribed using an online transcription service. If any identifying information was recorded, the researcher redacted the information from the transcription to protect participants' identity.

According to Brinkmann and Kvale (2014), "An interview is an inter-view, an interchange of views between two persons conversing about a theme of mutual interest" (p. 4). The semi-structured interview contained open-ended questions to encourage a discussion between the research participant and the principal researcher. The following question was used to ease discussion and set the tone of the interview; *you are seven months into your first-year experience, how are things going?* As the principal researcher was also the research participants' methods professor, the question reestablished a rapport with the participants.

As the purpose of the study was to uncover how the graduates are implementing educational theories into practice in their first-year teaching experience, the researcher relied on

the participants to introduce the educational theories into the conversation. The open-ended questions allowed further analysis of the knowledge the graduates gained through an alternative form of instruction like the PBL grant opportunity. A matrix of interview questions is included in Table 2 to demonstrate how the open-ended questions connect to the purpose of the study.

Table 2

Matrix of Interview Questions

Question to Study Participates	**Theory to Practice Connection** Is the graduate implementing the PBL theory into their classroom?	**Connection to CAEP**
How are you implementing the PBL teaching strategy in your classroom?		CAEP Standard 2: Clinical Partnerships and Practice (Theory to Practice)
How did the PBL training prepare you for your first-year classroom experience?		CAEP Standard 4: Program Impact (Indicators of Teaching Effectiveness)
What was your biggest take away from the PBL training provided by the BIE?		CAEP Standard 4: Program Impact (Satisfaction of Completers)

After the interview, the participants were asked any further clarifying questions to expand upon their statements. The researcher reminded the participants that they would receive a copy of the transcribed interview via email to review for accuracy. During the review of the transcribed interview, the participant clarified or redacted any inaccurate statements. The researcher again reminded the participants the data will be housed in a secure location for two years and then destroyed after the completion of the study.

Field Notes

The interviewer also took field notes to document observations during the interview. Field notes act as a written account that parallels the interview transcript (Merriam, 2009). The researcher took notes throughout the interview with the research participant using a Rocketbook

Smart Notebook. The Rocketbook Smart Notebook is an interactive notebook that allows the researcher to write field notes during the interview, then immediately upload and transcribe the notes when the interview is over. Merriam (2009) states it is imperative that the researcher dictates their field notes as soon as they are able after the observation to ensure all aspects of the interview are captured. The field notes focused on keywords that may connect directly or indirectly to the Gold Standard PBL Model.

Analysis

The goal of data analysis was to make sense of the data. The analysis may require consolidating, reducing, and interpreting what the participants have said to make meaning of the data (Merriam, 2009). Merriam (2009) states that data analysis is merely answering your research question. Therefore, the focus of the data analysis revolved around the answering of the central research question: *How are traditionally prepared elementary education graduates implementing theories into practice during their first year of teaching?*

Data analysis was a continuous process as the interviews took approximately a month to complete. As new data was collected, it was analyzed using the constant-comparative data analysis (Glaser & Strauss, 1967). Through the continuous comparison of participant remarks, interview answers were organized into themes and coded. To assist with the organization of the data, all the codings were done utilizing electronic resources. All participant information was removed before the transcriptions were stored electronically. Merriam (2009) states that when the data and findings are saturated, data collecting is finished. As the participate pool was limited in the study, the researcher collected data and reached saturation of the data by interviewing eight participants.

Coding Process

During the first cycle coding process, the researcher utilized In Vivo coding to analyze the interview transcripts. Saldaña (2010) states that In Vivo coding is a "word or short phrase from the actual language found in the qualitative data language" (p. 74). In Vivo coding is also applicable to qualitative research as it looks to uncover the facilitators interpretations of terms that are used regularly (Saldaña, 2010). As the transcribed interviews were read by the primary researcher, words and phrases were highlighted that connected to the Gold Standard PBL model. The first cycle of coding was completed on the transcribed interviews in Word.

To develop a coherent synthesis of the data during the second cycle of coding the researcher used pattern coding to review the first cycle of coding. Pattern coding pulls together data to identify emergent themes or explanations (Saldaña, 2010). From the first cycle In Vivo codes, similar codes were assembled together to create categories from the collected data. The categories exposed from the second cycle allowed the researcher to draw conclusions from the interview to determine the educational theories the graduate is implementing into practice in their first year of teaching.

To ensure the validity of the data, the triangulation of multiple data sources is required. Therefore, the researcher's field notes and an online survey completed by the research participants was also analyzed using the methods outlined for the participant interviews.

Participant Rights

The rights of the participants were protected through the following measures. First, informed consent gained through the use of the research written consent form (Appendix G). The form explained the purpose of the study and the potential risk to the participant.

Participation in the study was entirely voluntary, and there was no financial compensation for participation in the study. Respecting their decision to participate or decline participation without the fear of any harm was communicated by the researcher. Although the risk was low to the participant, the researcher attempted to ensure the participant understood that the only document their name appeared on was the research written consent form. The research written consent form is stored in a locked filing cabinet for a term of two years and only be accessible by the primary researcher. At the end of the two-year term, the documents will be destroyed.

Second, participant rights were ensured through the use of anonymity, and any identifiable features were not documented in any areas of the study. The researcher was committed to keeping identifying the characteristics of the participants and the university out of the study. As the audio recording was sent to a third party to be transcribed, during the face-to-face interview, the researcher did not address the participant by name, which was articulated to the participant before the recording began.

The researcher followed all ethical principles and guidelines for research involving human subjects as identified in the Belmont report (Belmont, 1979). As noted in the Belmont report (Belmont, 1979), respect for persons is an essential element of research. Respect for persons in this study was demonstrated by the following: each teacher was given the opportunity to participate or not participate in the study; participants were contacted through email before data collection to determine their willingness to volunteer to the study; and at any point in the study, the participant was able to choose to withdraw from the study.

Potential Limitations

A potential limitation to the study was the relationship between the participant and the researcher. Many of the participants have an established relationship with the interviewer as a methods professor and as a performance evaluator. However, the interviewer endeavored to ensure the participants are comfortable, and there was no possibility of reprisal as they are no longer enrolled as students. Due to this potential limitation, the interview questions were structured in a way that encouraged discussion between the two parties.

The study attempted to reveal how the first-year teacher was implementing educational theories into practice. However, it is impossible to summarize the job description of a teacher into one word. The teaching profession is complex and requires the implementation of various mandates, policies, curriculum, pedagogy, and management practices (Moore & Whitfield, 2011). The complexity of the teaching profession is a limitation to the study, and as are the multiple factors that could potentially influence the first-year teacher's experience.

Conclusion

Chapter three provided a detailed description of the study's research methodology. The qualitative case study methodology was used to uncover how first-year teachers were implementing educational theories into practice in their classrooms. Participants were from a private university in a Midwestern state that received high-quality PBL training through the funding of a grant. Data collected through semi-structured interviews were analyzed through a two-step coding process. In order to corroborate the data collected through the interviews and attempt to remove any bias, the participant survey was methodically analyzed. Chapter four will summarize the results of the data analysis.

CHAPTER 4

RESULTS

As stated in previous chapters, the purpose of the qualitative case study was to uncover how recent graduates of a traditional teacher preparation program were implementing educational theories into their first-year teaching experience. The bounded case study reviewed and explored the relationship between receiving hands-on training through the BIE and the first-year teacher's experience. The relationship directly connects to CAEP Standard 4.2 Indicators of Teaching Effectiveness, where teacher preparation programs establish the value of their programs after graduation.

The eight participants in the study were in the seventh month of their first year of teaching. The participants received the PBL training through the BIE before and during their traditional student teaching experience. Each participant was required to create and implement two PBL projects, with their mentor teacher in addition to fulfilling the requirements of student teaching. Each team (participant and mentor teacher) received scaffolded training provided by the BIE, where they experienced a PBL project from the student's perspective and created a Gold Standard PBL with a mentor teacher. Participants of the study obtained employment in a variety of settings, including public and private schools. As preservice teachers, all participants received training in elementary methods courses. However, participants in the study were employed in grade-level settings that included kindergarten through eighth grade due to state licensing criteria.

Chapter 4 presents the results of the examination of face-to-face interviews and online surveys with eight first-year teachers. It begins with a description of the coding methods and

analysis used on the data collected from the interviews. Through two rounds of coding of the participants' interview transcripts, themes emerged to answer the research questions in detail. Each theme will be revealed and analyzed in the chapter. The chapter will conclude with a summary of the study's findings.

Analysis Method

Data was collected through multiple means to ensure the validity of the research. First, each participant completed a five-minute, online survey about PBL. Next, each participant interviewed face to face with the researcher. These interviews were transcribed using an online transcription service. Each transcription was sent back to the participant to review for accuracy.

Data analysis began immediately after the first interview was completed. Each interview was coded by the researcher using the In Vivo method for the first round of data analysis. The researcher reviewed the transcripts to uncover which phrases stood out about the research questions. Using these phrases, the data was further analyzed and coded for a second-round employing pattern coding.

Coding Process

Each transcript was initially coded employing the In Vivo coding method. In Vivo Coding allows the researcher to "prioritize and honor the participant's voice" (Saldana, 2009, p. 74). It was vital for the researcher to collect the participant's voice, as they were not expected to list the Gold Standard PBL elements. The study uncovered how the participants were genuinely using the PBL elements, not how well they memorized each vocabulary term. For example, a participant stated, "How can I get them to relate to it?" The statement coded as *Student Reflection*, which is an element of the Gold Standard PBL. Another example of the coding

process would include the participant who created a lesson on fatal friendships while teaching Julius Caesar but was able to connect a popular teen TV show for their students (coded authenticity). However, six of the eight participants specifically spoke about the elements of a Gold Standard PBL, proving their understanding of the model. While coding, the researcher highlighted each practice that the participant was using that connected to the PBL Gold Standard Model.

In the second round of coding, each highlighted quotation was categorized to fit into one of two themes. The first theme was to uncover what elements assisted the participant in finding ways to use the elements of PBL in their classroom. The second theme was to discover why does PBL not work for the first-year teacher. Table 3 catalogs the codes uncovered during the research.

Table 3

Second Round Coding Themes

Question	Codes
What made PBL work for the Participant?	Hands-on learning, relationships, student engagement, application to other content areas, collaboration with peers
Why does PBL not work for the Participant	Challenging to work with the current team; PBL not implemented in building/district

From the data collected during the coding process, the researcher then aligned codes to the appropriate research questions. This process exposed the following findings presented in the duration of chapter four.

Presentation of Results

The following themes that emerged from the qualitative interviews, online surveys, and field note observations provided insights into which factors assisted the first-year teacher to implement PBL into their classroom. The data collected was guided by the following research questions:

How are traditionally prepared elementary education graduates implementing theory into practice during their first year of teaching?

1. How does the first-year teacher implement the Gold Standard PBL model in their professional practice?
2. How does the graduate perceive their ability to translate theory into practice, particularly in the implementation of the PBL project design during their first-year experience?

All Participants are Using Elements of the PBL Training in Their First-Year Classroom

Through the one-on-one interviews, participants discussed how they are engaging students in their learning. The study's overarching question discovered how traditionally prepared educators are implementing theory into practice during their first year of teaching. The participants were asked explicitly about engagement due to receiving training from the BIE, which focused on strategies to engage students in their learning at a deeper level. Multiple studies have linked student engagement to content mastery, which is a priority to educators (Autapao & Minwong, 2018; Dewey, 1916). All participants referred to a strategy they discussed during the PBL training and how they were implementing the element into their

classroom. The following sections include how the first-year teacher is implementing the elements of the Gold Standard PBL model into practice.

Challenging Problem or Question. The Buck Institute for Education (BIE) refers to the challenging problem or question as to the "heart" of the PBL (Larmer et al., 2015). The challenging problem or question element of the Gold Standard PBL model can be used to engage students in the content. This element of the model is thought of as the "hook" for the student, the part that gets their attention, or what makes them excited to learn about a topic. One participant described issuing a challenging problem or question to their class because it gave the students a goal or target to achieve.

Authenticity. Making learning authentic is a strategy that teachers connect students to a problem that is meaningful in their eyes. This problem might come from the global, local, or personal perspectives. Participants in the study reported multiple ways of implementing the authenticity element of the Gold Standard PBL into practice. One participant transformed all the classroom's manipulatives into Viking football regalia because of the deep love of the team. This participant found that whenever a math problem involved particular Viking football magnets, the students were more engaged in the lesson. Although this participant did not implement a full PBL into their classroom, they quickly realized the value of engaging the learner through a meaningful topic to the learner. If the learner had not been engaged by following along with the Viking football magnets, the content might be missed, or teaching time would have been wasted.

Another participant used authenticity in a way that was more aligned with the Gold Standard PBL model. While reading Julius Caesar with the class, this participant connected the

idea of fatal friendships with popular TV shows that middle school students would regularly watch, like Pretty Little Liars. This participant used the shows to connect modern storylines that portrayed fatal friendships to classic stories like Julius Caesar to allow students to make connections between the stories.

To engage the students in a way to solve a specific problem, one participant challenged their students to create a tool for the local storyteller to get the attention of the audience. This participant stated that the class was having trouble quieting down in their classroom and easily empathized with the storyteller's needs. The storyteller came into the participant's classroom to describe the needs of the attention-getting tool, which made the project meaningful to the students. At the conclusion of the project, the storyteller invited the class to the library to see the tool in use with the audience. Seeing their tool used by the storyteller benefited the students and allowed them to see that their work had meaning.

Student Voice and Choice. Allowing students to have an element of control in their learning allows the student to create a sense of ownership in the project and work harder (Larmer et al., 2015). The Gold Standard PBL element of student's voice and choice aims to take assignments away from a set of directions and instead have the student become an invested member in finding the answer to the problem.

Participants in the study reported using student voice and choice in their classroom to differentiate the interests of their students while connecting the standards of the content. Multiple participants stated that they use student voice and choice in almost all their assignments. The participants expressed that if the students can demonstrate the content correctly, they may choose the manner which they present the content. For example, one

participant assigned an annotated timeline, which was fact-based. However, the students in the class could choose if they wanted to make an electronic version of a timeline, act out the timeline, or use another creative medium to submit the specific facts of the timeline. The participant reported that middle school students were highly engaged and spent time refining their work to present in class. Another participant had their students create an author's biography where students were required to research a poet. Students in this classroom were also able to choose how they would present their final product. This participant stated they were surprised at how deep the students went into their poet's backgrounds and how the students connected to the poetry. After the project finished, the participant stated that they noticed multiple poetry books in the classroom for the remainder of the term.

Critique and Revision. The Gold Standard PBL model has multiple assessment opportunities weaved throughout a project from peers, teachers, or outside professionals. Students participating in PBL projects receive multiple pieces of feedback before their final presentation in order to do their best. Participants of the study stated the templates from the BIE for the critique and revision element were the most helpful in their first year of teaching. Participants exposed the premade checklists or rubrics at the beginning of the year allowed them to develop their assessment plans, as the templates gave them a place to start.

Unreported Elements. Student-led sustained inquiry and reflection by the students were not identified as a prominent strategy in the participant's first-year classroom. However, through observation of the participants' classrooms, elements of each unreported element were present. In one participant's classroom, the researcher observed Genius Hour presentation boards. Genius Hour is an opportunity for students to research an "un-Googleable" question or topic. Students

inquire about a unique interest and find content experts to help them solve their question. Genius Hour uses both student-led sustained inquiry and reflection to engage the learner but is simply a different program.

Four of the Eight Participants Implemented a PBL that Utilized All Elements of the Gold Standard PBL Model as First-Year Teachers

The first sub-question of the study sought to uncover how many of the participants had implemented a Gold Standard PBL as a first-year teacher. Of the eight participants interviewed, four of the participants had implemented all elements of a PBL project in their first eight months of teaching, and all used resources they received during the BIE training. The following examination will highlight the factors that allowed the participants to implement a PBL that utilizes all elements of the Gold Standard PBL model in their classroom during their first year of teaching.

One participant implemented the PBL project that they created during their student teaching experience with their mentor teacher. This participant taught the same grade level in student teaching but adapted the PBL project to fit the needs of the current classroom. The participant stated:

> I did implement, I took pieces of it just 'cause I didn't want to do the exact same thing. So last year, we did, it [the PBL project] was for sound and light, and so we did one, and we had to create a device to communicate to an audience. We did science experiments and all that, leading up to them creating a device and then writing about what they made for informative writing. So, I've implemented one, and I think it went fairly well. I will tweak more now that I've done it on my own.

This participant used the PBL created from their student teaching experience as a starting point for instruction. The participant adapted their instruction to fit the specific needs of the learners in the classroom. The participant stated they had the confidence to implement PBL because they saw a master teacher implement the project and work through the problems that arose during implementation. The last statement by the participant, "I will tweak (it) more now that I've done it on my own," is a promising predictor for continued growth. This participant's statement proves that they will continue to meet student's needs throughout their career.

Another participant who implemented multiple PBLs into their first-year classroom experience stated the training was beneficial because it allowed them to see the theory in practice. The participant stated:

> I think the PBL training allowed me to see this is something you can do. It's not just a theory, 'cause I think oftentimes in school, just in general, we talk a lot about, "Hey what you could do in your classroom someday what you could do, what you will do in your classroom", but you don't do it as much…but the training was the rubber meets the road.

Providing opportunities for preservice teachers to add to their teaching strategies toolbox needs to be a priority for teacher preparation programs. The examples from the participants show the need for guided, hands-on experiences for the preservice teacher to construct their meaning of educational theories.

The second example of implementation of PBL by the participants includes a poetry study with a sophomore class. The participant referred to the PBL project as a "poem tasting" where students were given a list of 40 modern poets and required to pick one to research. Throughout the project, the participant presented multiple mini-lessons to ensure the content was

mastered. This participant used the template from the BIE training to build their PBL, although they did qualify, they did not fill in the entire template. Implementing a full-scale PBL can be a daunting task for an experienced teacher. What made implementation more attainable to the participant was that the template from the BIE gave them a place to start. Teacher preparation programs need to offer a variety of high-quality resources to their students for use in the future.

As reflected above, the push for the implementation of PBL came from the confidence they gained going through the training before entering their classroom. The second finding aligns to Brunning et al. (1995) four characteristics of the constructivist theory, allowing the participants to engage in their learning of the PBL model more deeply. Participants were able to take the content from the PBL training and create their understanding of how to implement into their classroom (Richardson, 1997).

The participants' perception about whether they were using the PBL elements could be due to inexperience in the classroom. As in all professions, the first-year teacher has many lessons learned on the job. All eight participants commented on how surprised they were about all the "little things" they are required to do as a lead classroom teacher. The "little things" described by the participants included parent relationships, working with classroom paraprofessionals, and managing field trips. However, as demonstrated by the first finding of the study, the participants are using elements from the PBL training but not implementing an entire PBL project in their classroom. All participants predicted they would implement a PBL project in their classroom during their second year of teaching.

Seventy-five percent of the Participants Perceived They are Using Elements of the PBL Training Daily

Participants were asked on an anonymous online survey if they were using the elements of PBL daily in their classrooms. Of the eight participants, 75% believe they are using elements from the PBL training daily to assist student learning. The remaining 25% of the participants felt they were implementing the elements of the training, but not daily. As the purpose of the study was to discover how graduates were implementing theories into practice after receiving a hands-on, guided training experience, the results show that by providing a constructivism approach to learning is essential when training preservice teachers. Findings indicate that the participants are frequently using strategies they were taught in a hands-on approach, which is useful for teacher preparation programs in ensuring they are producing teaching candidates who will positively impact student learning during their professional careers.

Each participant was able to reflect on their own practices and how the PBL training assisted them in their first year of teaching. To answer the study's second sub-question, participants were asked in the survey if the PBL training had a positive effect on their first year of teaching. Of the eight participants, seven agreed that PBL had a positive effect, and one participant remained neutral on the topic. Participant statements that support that the PBL training was beneficial to their first year of teaching included:

- The PBL training was extremely beneficial as a preservice teacher. I came into teaching with the knowledge to implement a full PBL Project. Being in the classroom this year, I have found myself using bits and pieces of PBL in many things

we do. I also think it was beneficial in the aspect of just being informed of new and best practice within education.

- I loved how the PBL training encouraged my ability to create meaningful projects for my students. It provided me with ideas and guidance on how to implement PBL projects in my future classroom.
- While I haven't yet done a full PBL, I find myself implementing its teaching practices often. For example, I use as much hands-on, inquiry-based activities that encourage collaboration as possible.
- As a firm believer in the fact that relationships drive everything in education, this was neat to see before I stepped into my student-teaching experience. Also, I was able to see PBL in action earlier. It was no longer just a theory taught in the classroom, but not something I could see in action.

The training provided hands-on instruction, sustained support, and an expert mentor that worked closely with each participant. Previous studies have identified the importance of directly tying theory into practice for the preservice teachers to successfully implement their learning into their first-year classrooms (Dole, Bloom, & Doss, 2016; Hsu, 2016; Larmer et al., 2015; Roessingh & Chambers, 2011; Wilmore, 1996). The finding proves that the supports provided through the training allowed for the participants to engage deeply with the teaching strategies. Thus, allowing the participants to have the confidence to implement the elements of the PBL Gold Standard Model in their first eight months of entering the teaching profession.

Mentor Teacher's Influence

The participants in the study received a unique student teaching experience that allowed the preservice teacher to meet their mentor teacher three months before entering the student teaching classroom. This experience created a partnership between the mentor and student-teacher that proves a Constructivism Theory approach to teacher preparation is essential for long term implementation of theories into the classroom. The participants perceived the following aspects of the relationship between the mentor teacher and the student-teacher as having a positive effect on their training.

Multiple participants stated that the relationship with their mentor teacher felt like they were both learning through the process. The mentor teacher and student-teacher were required to attend a five-day training before the student teaching experience to plan for PBL implementation. One participant stated:

> I was experiencing it [the PBL training], with a first-grade teacher, and she was still pretty new to it [PBL]. She had kind of heard of it, incorporated some elements of it; but even just working with someone that has had experience with teaching, and then when we were trying to put that together… it was nice because we were both focused on those certain aspects and it kind of helped me delve into that a little bit more.

Additionally, the mentor teacher relationship supported the student-teacher in building their PBL, which was their initial requirement to participate in the grant. However, as the participant states below, the relationship built during the five-day training established a team mindset.

> We got to know them [mentor teacher] sooner. We worked with them to build one [a PBL]. We didn't have to just build right on our own, which if I wouldn't have had that this year, I probably would have had to just build on my own cause they don't have the team, not every school has a grade-level team

Many participants in the study are employed by small school districts that have one section per grade level. Although each participant felt supported by the administration for what the school has prioritized to implement, many stated they did not implement PBL into the classroom because no one else in the building was using PBL as a teaching strategy. Having an opportunity to process the information from the training with the mentor teacher proved to be an essential factor to assist first-year teachers in implementing best-practice teaching strategies.

Participants also commented on the feeling of trust that was built in the five-day training before they began their student teaching experience. Many mentor teachers frequently contacted their student teachers through email and phone calls to plan lessons or talk about behavior management strategies. A professional relationship was built between the mentor teacher and student-teacher; even for the participants who were in multiple placements for student teaching. A participant stated the following about the relationship they shared with their mentor teacher:

> My mentor, she would fight tooth and nail for me, I know she would and to know you have that in your corner it makes it easier to even take a little bit of a risk when we look at PBL. Sometimes, some of the things that people try, I would say is risky. Teaching strategies, they're risky sometimes when they're new. I think having that [mentor teacher's] support; you're more willing to take a risk if you have a safety net to fall back on a little bit.

These relationships have continued since student teaching for some of the participants. The following statement comes from a participant in regards to the support they still receive from their mentor teacher.

> She was really good about letting me be as involved as she was. Yeah, I felt like we were equals. I could go to her with anything and be like, "What do you think of this idea?" And she would do the same, you know? It didn't feel like I was always having to play catch up. Now I feel like I can always go back to her and ask questions. It's not, you know, it's not going to be awkward or anything.

Working closely with a mentor teacher proved to be an essential element for participants who successfully implemented a PBL project during their first year of teaching. As previously stated, four of the eight participants have implemented a PBL project into their classroom within their first eight months of teaching. The four participants each stated that support from their PLC's, administrators, and peers in the building encouraged the implementation of PBL as a teaching strategy in their classroom. Of the four participants who have implemented PBL, two of the participants are the only teachers using PBL model as a teaching strategy in their building. However, the buildings they are currently working in are using their staff development time to learn about PBL as a teaching strategy. This additional training during student teaching makes the first-year teacher feel like an expert and confident about their ability to implement PBL project in the classroom.

Barriers in Implementing PBL

In contrast, four of the participants stated that they are not implementing PBL as a teaching strategy in their classrooms because of specific situations in their building. One

participant stated multiple times throughout the interview that the grade level team was attempting to implement a PBL project, but it was not the best practice PBL project. This participant stated that the grade level team was "sort of doing one now. It's kind of a stretch to be considered a PBL." The participant perceived that the grade level team was implementing what the BIE considers a "dessert PBL." A dessert PBL requires the student to create a project, that is led by the teacher, and does not include multiple elements of the Gold Standard PBL model. When the participant was probed further about their work with their PLC, they stated that their creativity was stifled due to the expectation to work as a team, where all were doing the same activities at the same time. This participant also stated that they were expected to follow precisely what the senior faculty members were doing without question.

Two participants stated they are not currently incorporating the Gold Standard PBL model in their classroom because they did not see a PBL project implemented at the level they are currently teaching during their training. Neither of the participants had first-year teaching experiences with grade-level teams that received training in the application of PBL in the classroom. Accepting a position within a school where the PBL model was not implemented inhibited the participants' perceived ability to transfer theory into practice. The participants stated they felt supported to make their own decisions on how to teach the standards but ended up following what the team did because feeling overwhelmed with all the "little things" the new teacher is required to do. The "little things" included parent communication, participation in IEP meetings, and evening teacher responsibilities (i.e., Christmas concerts and Math Night).

Summary of Findings

Chapter four described the results and finding of the first-year teacher implementing theory (specifically the PBL project as a teaching strategy) into practice. The purpose of the study was to assess how first-year teachers were implementing a specific theory learned during their preservice career, in a scaffolded instructional approach. CAEP's Standard 2.1 evaluates the teacher preparation program's ability to "ensure that theory and practice are linked" (2015). CAEP Standard 2 is meant to assess if teacher preparation programs are producing teachers who will meet the needs of all learners. As the participants of the study received scaffolded instruction on the PBL teaching strategy, the data from the study uncovered that the participants perceive they are implementing the elements of PBL into their classroom at varying degrees. The constructivism approach to learning was beneficial to the long-term application of the PBL teaching strategy, and the support of the mentor teacher was imperative to the success of the first-year teacher's confidence in implementing a PBL project. Chapter five presents interpretations, conclusions, implications, and recommendations based on the data collected in the study.

CHAPTER 5

CONCLUSION

The purpose of the qualitative case study was to examine how first-year teachers were implementing theory into practice in their first-year classroom after receiving scaffolded instruction on a specific educational theory. Previous studies show that traditional lecture methods are not effectively training teacher candidates to be successful in the classroom (Chesley & Jordan, 2012; Kiuhara, Graham, & Hawken, 2009; Levine, 2006). A change is required to meet the needs of preservice teachers, not only in teacher preparation programs but also to ensure the success of their future students. The requirements of the accreditation process will highlight the areas for improvement in teacher preparation programs through peer-review assessment and data collection. However, there is a gap in the literature in what "areas" need to improve to ensure that first-year teachers are successfully implementing best-practice teaching strategies into their classrooms. The participants of the case study offered a unique look at how a hands-on, scaffolded approach to instruction affected their use of a specific teaching strategy.

In order to determine the perspectives of the eight participants of the study, the principal researcher interviewed the participants and asked each to complete an online survey. These instruments were used to document their perception of how the scaffolded training on the Gold Standard PBL model affected their first year of teaching. The study was not completed to reveal the effectiveness of PBL as a teaching strategy, rather, if the instructional method which the participants were trained to use PBL affected their ability to implement the teaching strategy in their classroom. The study was completed to assist in the collection of data for CAEP Standard

2, where teacher preparation programs provide proof of their ability to prepare teachers that have a positive impact on all students' learning (CAEP, 2015).

Interpretation of Findings

The study sought to answer how graduates are implementing theories into practice during their first year of teaching after receiving scaffolded, hands-on training on a specific teaching strategy. The results of the data collection revealed findings that will assist teacher preparation programs in developing learning experiences that produce a confident teacher who will have a positive impact on student learning. The following research questions guided the study:

How are traditionally prepared elementary education graduates implementing theory into practice during their first year of teaching?

1. How does the first-year teacher implement the Gold Standard PBL model in their professional practice?
2. How does the graduate perceive their ability to translate theory into practice, particularly in the implementation of the PBL project design during their first-year experience?

The data collected through qualitative interviews and online surveys exposed a need for teacher preparation programs to move away from the traditionally presented lecture methods courses. In its place, teacher preparation programs need to develop an approach that utilizes the Constructivism Theory to deliver the content to preservice educators. Preservice teachers need to use educational theories and teaching strategies as they are learning about them to synthesize the material and know when to use them with their future students. To assist preservice teachers with the construction of their own meaning of educational theories, the following implications

arose from the data as a call for change in teacher preparation programs. Teacher preparation programs need to create fluid partnerships between stakeholders and provide leadership development opportunities to their students.

Changes to Teacher Preparation Programs

The findings described in chapter four support that students in teacher preparation programs need to experience the theories they are learning in their teaching methods courses in practice. The four participants who are implementing PBL projects stated that going through the training while creating a PBL project made them confident to implement a PBL project in their first-year classroom. The participants who are not implementing a PBL project stated that seeing the elements of a PBL project in practice has allowed them to bring the elements into their classrooms. These findings are consistent with the constructivist learning theory as the participants were able to experience PBL and construct their understanding. However, many teacher preparation programs are continuing the traditional practice of short practicum experiences during their course work and a long experience during their student teaching. The data collected in the study maintains that the experiences in the classroom should be weaved throughout the preservice teachers' career and not left until the final semester. Traditional teacher preparation programs require the preservice teacher to complete multiple classroom experiences while completing methods courses. During the classroom experiences, the preservice teacher typically implements a series of lessons, observes professional teaching practices, and practices classroom management. These classroom placements are in addition to their methods courses and average to be around ninety hours in the classroom. At the university where the study took place, the preservice teachers schedule their classroom hours with the

teacher around their campus class schedule. Preservice teachers are encouraged to view a variety of subjects taught by the licensed teacher, but due to scheduling limitations, this is not always possible. The unfortunate reality is that the preservice teacher's schedule can sometimes overwhelm the student and make the experience become more of a burden than a meaningful experience. Teacher preparation programs need to reorganize their course plans to allow students time to create meaningful partnerships with mentor teachers. Similar to what the CREST program attempted, teacher preparation programs need to guide preservice teachers to tie educational theories into practice directly (Wilmore, 1996).

School Partnerships. Teacher preparation programs are in the daunting position to train teachers for an elementary teaching license that can span first through eight grades. With most course plans taking four semesters (including student teaching), how can preservice teachers experience a variety of levels to ensure they are prepared for the classroom?

Creating fluid partnerships with schools would allow students to experience a wide variety of teaching styles within a building. In the style of a lab school, professors in teacher preparation programs would bring in their preservice teachers as observers of best-practice teaching strategies. After the lesson concluded, the preservice teachers could ask the teacher questions about the teaching strategy. As Professional Learning Communities (PLCs) are becoming the norm, teacher preparation programs could search out PLCs that are using the same best-practice teaching strategy and divide the class up into different sections. Dividing the class would be beneficial, as it would be less distracting to the students and offer a higher chance of engagement for the preservice teacher.

The partnership would be considered fluid as it would allow for the teacher preparation programs to go to the classrooms where a master teacher is implementing the strategy. Planning around the teacher's classroom schedule would be less invasive than asking teachers to show preservice teachers a teaching strategy that they are uncomfortable implementing. The fluid partnership would also allow for multiple observations of different classrooms and behavior management styles.

By creating a partnership with schools which allows the preservice teacher to come in and watch a teaching strategy, teacher preparation programs are creating connections between theories and implementation for their students. As a teacher, the preservice teacher needs to learn how to become flexible while they are implementing a lesson. For example, if the teacher gives a formative assessment, and the students do not answer the questions correctly, the teacher needs to know what to do next. There is no perfect road map. Traditionally, teacher preparation programs present educational theories and best-practice teaching strategies through lecture, role-play, or videos. However, by watching the teacher use the teaching strategy, the preservice teacher can see how to adapt the strategy in real-time to meet the needs of all the students.

Four of the participants were not implementing a full-scale PBL that utilized all elements of the Gold Standard model during the first year of teaching. The participants stated two reasons for not implementing PBL in their classrooms: as preservice teachers, the participants had not engaged with PBL at the level they are teaching, and the school did not prioritize the implementation of PBL. Creating a fluid partnership with schools would allow the preservice teachers to view a variety of classroom settings to engage in the theories taught and implemented at all levels of their licensing range. The research recommends that the preservice teacher focus

in on a specific grade level to learn about the theory at a deeper level. However, offering opportunities that allow the preservice teacher to construct their own meaning will prove helpful implementing theories from their methods courses into practice during their first year of teaching.

Mentor Teacher Relationship. The data collected in the study suggests that the role of the mentor teacher affected the participant's perceived ability to implement a PBL project in their first-year classroom. All the participants commented on the role of the mentor teacher and the positive experience of going through the PBL training together as a team, not a leader, and subordinate. The finding highlights the importance of establishing a positive relationship between the mentor teacher and the preservice teacher. Often teacher preparation programs strive to give their students quantity experiences over quality experiences in the practicum classroom setting. These experiences require the preservice teacher to meet multiple educators while observing or teaching in multiple settings. This finding suggests that teacher preparation programs need to consider the relationship between the mentor teacher and the preservice teacher. As the study revealed, after the participant established a relationship with a mentor, deeper learning took place. Instead of multiple, short practicum experiences, teacher preparation programs should consider moving to a more extended placement for the preservice teacher.

Leadership Development

Fifty percent of the participants stated they did not implement PBL into their first-year classroom. When questioned further, these participants clarified that they were using PBL elements, but had not implemented an entire Gold Standard PBL. Participants reported that the most significant barrier to not implementing PBL in their classroom came down to building

support. The participants who reported that they were not implementing a Gold Standard PBL during their first year of teaching were in schools that had not prioritized PBL. One participant stated they were questioned about what PBL stood for during their interview. The participants were employed in towns with less than 1300 people and had one section per grade level at their school. Due to the small size of the school, these participants did not participate in established Professional Learning Communities. However, the participates stated they felt supported by their peers and could have implemented PBL into their classroom; they just did not due to feeling overwhelmed with all the other requirements that came with their first year of teaching. Offering preservice teachers opportunities to develop leadership skills during their training could potentially allow them the opportunity to begin the conversation on implementing best-practice teaching strategies that are not currently utilized.

Implications

Education is a fluid practice, where change needs to happen at a rapid pace. However, because teacher preparation programs courses are offered due to state teaching licensure requirements, education program directors find change a bit more complicated. Higher education needs to catch up with elementary and secondary education practices, where student-centered learning is not only a theory but a practice. The data collected through participant interviews revealed that when the preservice teacher was allowed time to construct their own meaning of the PBL teaching strategy, they were more likely to use the strategy in their classroom. Education program directors need to consider the findings in the study and implement the constructivism theory into the development of their course plan. Perhaps teacher

preparation programs need to provide an experience where the preservice teacher is immediately implementing the theories they are discussing in the classroom.

Teacher preparation programs need to offer opportunities to the preservice teacher to develop relationships with professionals in the community. These relationships will allow the preservice teacher to practice their skills and take calculated risks with their learning. These risks will help the preservice teacher to continue to grow as a professional and not fall back into the way they were taught as a student.

PBL is one of many teaching strategies that preservice teachers are exposed to during their training. Teachers in the classroom need to decide what teaching strategy will best meet the needs of their students. Half of the study's participants stated they did not implement PBL due to lack of support. A potential way to assist the preservice teachers in finding their voice is through a teacher leadership course. Teacher preparation programs need to offer their students more opportunities to lead their peers and the community to ensure they can assertively state what is best for their classroom.

Recommendations for Action

Accreditation requirements are forcing teacher preparation programs to look at their current practices and assess how they are preparing future educators. The reach of the CAEP standards continue to grow in teacher preparation programs and are forcing each program to provide data that proves they are providing opportunities for the future educator to affect their future students positively.

The findings of the research allow for teacher preparation programs to reassess their current practices in training teacher candidates. The first year of teaching will always be

challenging, but the data collected in the study reveals that the 50% of the participants of the study were confident in their abilities to implement PBL projects into their classroom. The participants attributed this confidence to having a strong relationship with their mentor teacher. Reviewing current practicum placement policies that allow the preservice teacher to develop a more meaningful relationship with their mentor teacher may assist with their learning.

Recommendations for Further Study

The assessment of the effectiveness of teacher preparation programs and their ability to prepare teacher candidates that ensure learning for all students is a priority for many stakeholders. The research conducted in the study reflects opportunities for future studies. Therefore, the following recommendations for further study may be beneficial for teacher preparation programs.

With the first year of teaching often described as chaotic, there are many new experiences for the graduate. During the PBL training, the participants constructed their own meaning of how to implement a PBL project in the classroom through a guided, hands-on experience. Did the experience truly become a part of their teaching pedagogy, or was it a means to an end, and they reverted to implementing strategies they experienced as elementary students? Therefore, a longitudinal study would be beneficial to discover what role experience has on the implementation of theories for the second-year teacher.

A comparison study between a group of traditionally trained teachers and a group of teachers who receive a more integrated approach by using the focal characteristics of the Constructivism Theory would also benefit teacher preparation programs. By comparing the data

between the two groups of participants, it could determine if there is a best practice teaching strategy for teacher preparation programs.

Conclusion

It is vitally crucial that teacher preparation programs continually collect data on the effectiveness of their programs. Producing an ineffective teacher has a rippling effect that could derail the potential of a student. Accreditation requirements require teacher preparation programs to complete a thorough examination of their practices and reflect on ways to make improvements that will benefit their students. These requirements allow the teacher preparation programs to reflect and improve their course plans continually.

The data collected from the study revealed the need for more guided opportunities in the classroom for the preservice teacher. Teacher preparation programs need to change their practicum experiences and their seated methods courses to offer a more integrated approach. The integrated approach would allow the preservice teacher to see the theories they are discussing in the seated methods course in action, thus creating a more in-depth learning experience. By offering courses through the constructivism theory lens, teacher preparation programs will prove that they are producing teachers that meet the needs of all students.

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Appendix A

State Teacher Preparation Standards

Human relations and cultural diversity. State licensure requires coursework a minimum of two semester hours in multicultural education, including in Native American studies, cultural diversity, strategies for creating learning environments that contribute to positive human relationships, and strategies for teaching and assessing diverse learners including universal design for learning, response to intervention, early intervention, positive behavior interventions and supports. The graduates applying for licensure meet these requirements through completion of State-approved programs that include coursework addressing the multicultural education and Native American studies standard. Teacher preparation programs may meet these requirements through general education, specific content major, professional education requirements, or a combination thereof. Youth Mental Health Competency. The State requires classwork in youth mental health. This should include:

- An understanding of the prevalence and impact of youth mental health disorders on family structure, education, juvenile services, law enforcement, and health care and treatment providers.
- Knowledge of mental health symptoms, social stigmas, risks, and protective factors.
- Awareness of referral sources and strategies for appropriate interventions.

50015 Elementary Education

50015.1 Development, Learning, and Motivation. The program requires the study of development, learning, and motivation. Candidates know, understand, and use the major concepts, principles, theories, and research related to the development of children and young adolescents to construct learning opportunities that support individual students' development, acquisition of knowledge, and motivation.

50015.2 Curriculum

50015.2a English The program requires the study of English language arts. Candidates demonstrate a high level of competence in use of the English language arts, and they know, understand, and use concepts from reading, language, and child development, to explicitly teach and model each of the following: reading, writing, speaking and viewing, listening and language, and thinking skills and to help students successfully apply their developing skills through a variety of learning opportunities.

50015.2b Science The program requires the study of science. Candidates know, understand, and use fundamental concepts in the subject matter of science—including physical, life, and earth and space sciences—as well as concepts in science and technology, science in personal and social perspectives, the history and nature of science, the unifying concepts of science, and the inquiry processes

scientists use in discovery of new knowledge to build a base for scientific and technological literacy.

50015.2c Mathematics The program requires the study of mathematics. Candidates know, understand, and use the major concepts, procedures, and reasoning processes of mathematics that include number and operations, rational numbers, algebraic thinking and processes, geometry, measurement and data, statistics and probability in order to
foster problem-solving activities.

50015.2d 2d Social Studies The program requires the study of social studies. Candidates know, understand, and use the major concepts and modes of inquiry from social studies-the integrated study of history, geography, the social sciences, and other related areas to promote elementary students' abilities to make informed decisions as citizens of a culturally diverse democratic society and interdependent world.

50015.2e Arts The program requires the study of arts. Candidates know, understand, and use (as appropriate to their own knowledge and skills) the content, functions, and achievements of dance, music, theater, and the several visual arts as primary media for communication, inquiry, and insight among elementary students.

50015.2f Physical Education The program requires the study of physical education. Candidates know, understand, and use (as appropriate to their own understanding and skills) human movement and physical activity as central elements to foster active, healthy lifestyles and enhanced quality of life for elementary students.

Appendix B

InTASC Standards

1. **Learner Development:** The teacher candidate understands how learners grow and develop, recognizing that patterns of learning and development vary individually within and across the cognitive, linguistic, social, emotional, and physical areas, and designs and implements developmentally appropriate and challenging learning experiences.
2. **Learning Differences:** The teacher candidate uses an understanding of individual differences and diverse cultures and communities to ensure inclusive learning environments that allow each learner to meet high standards.
3. **Learning Environments:** The teacher candidate works with others to create environments that support individual and collaborative learning, and that encourage positive social interaction, active engagement in learning, and self-motivation.
4. **Content Knowledge:** The teacher candidate understands the central concepts, tools of inquiry, and structures of the discipline(s) he or she teaches and creates learning experiences that make these aspects of the discipline accessible and meaningful for learners to assure mastery of the content.
5. **Applications of Content:** The teacher candidate understands how to connect concepts and use differing perspectives to engage learners in critical thinking, creativity, and collaborative problem solving related to authentic local and global issues.
6. **Assessment:** The teacher candidate understands and uses multiple methods of assessment to engage learners in their own growth, to monitor learner progress, and to guide the teacher's and learner's decision making.

7. **Planning for Instruction:** The teacher candidate plans instruction that supports every student in meeting rigorous learning goals by drawing upon knowledge of content areas, curriculum, cross-disciplinary skills, and pedagogy, as well as knowledge of learners and the community context.
8. **Instructional Strategies:** The teacher candidate understands and uses a variety of instructional strategies to encourage learners to develop a deep understanding of content areas and their connections, and to build skills to apply knowledge in meaningful ways.
9. **Professional Learning and Ethical Practice:** The teacher candidate engages in ongoing professional learning and uses evidence to continually evaluate his/her practice, particularly the effects of his/her choices and actions on others (learners, families, other professionals, and the community), and adapts practice to meet the needs of each learner.
10. **Leadership and Collaboration:** The teacher candidate seeks appropriate leadership roles and opportunities to take responsibility for student learning, to collaborate with learners, families, colleagues, and other school professionals, and community members to ensure learner growth, and to advance the profession.

Appendix C

CAEP Standards

Standard 1. Content and Pedagogical Knowledge

The provider ensures that candidates develop a deep understanding of the critical concepts and principles of their discipline and, by completion, are able to use discipline-specific practices flexibly to advance the learning of all students toward attainment of college- and career-readiness standards.

Candidate Knowledge, Skills, and Professional Dispositions

1.1 Candidates demonstrate an understanding of the 10 InTASC standards at the appropriate progression level(s) in the following categories: the learner and learning; content; instructional practice; and professional responsibility.

Provider Responsibilities:

1.2 Providers ensure that candidates use research and evidence to develop an understanding of the teaching profession and use both to measure their P-12 students' progress and their own professional practice.

1.3 Providers ensure that candidates apply content and pedagogical knowledge as reflected in outcome assessments in response to standards of Specialized Professional Associations (SPA), the National Board for Professional Teaching Standards (NBPTS), states, or other accrediting bodies (e.g., National Association of Schools of Music – NASM).

1.4 Providers ensure that candidates demonstrate skills and commitment that afford all P-12 students' access to rigorous college- and career-ready standards (e.g., Next Generation Science Standards, National Career Readiness Certificate, Common Core State Standards).

1.5 Providers ensure that candidates' model and apply technology standards as they design, implement, and assess learning experiences to engage students and improve learning; and enrich professional practice.

Standard 2. Clinical Partnerships and Practice

The provider ensures that effective partnerships and high-quality clinical practice are central to preparation so that candidates develop the knowledge, skills, and professional dispositions necessary to demonstrate a positive impact on all P-12 students' learning and development.

Partnerships for Clinical Preparation:

2.1 Partners co-construct mutually beneficial P-12 school and community arrangements, including technology-based collaborations, for clinical preparation and share responsibility for continuous improvement of candidate preparation. Partnerships for clinical preparation can follow a range of forms, participants, and functions. They establish mutually agreeable expectations for candidate entry, preparation, and exit; ensure that theory and practice are linked; maintain coherence across clinical and academic components of preparation and share accountability for candidate outcomes.

Clinical Educators:

2.2 Partners co-select, prepare, evaluate, support, and retain high-quality clinical educators, both provider- and school-based, who demonstrate a positive impact on candidates' development and P-12 student learning and development. In collaboration with their partners, providers use

multiple indicators and appropriate technology-based applications to establish, maintain, and refine criteria for selection, professional development, performance evaluation, continuous improvement, and retention of clinical educators in all clinical placement settings.

Clinical Experiences:

2.3 The provider works with partners to design clinical experiences of sufficient depth, breadth, diversity, coherence, and duration to ensure that candidates demonstrate their developing effectiveness and positive impact on all students' learning and development. Clinical experiences, including technology-enhanced learning opportunities, are structured to have multiple performance-based assessments at key points within the program to demonstrate candidates' development of the knowledge, skills, and professional dispositions, as delineated in Standard 1, that are associated with a positive impact on the learning and development of all P-12 students.

Standard 3. Candidate Quality, Recruitment, and Selectivity

The provider demonstrates that the quality of candidates is a continuing and purposeful part of its responsibility from recruitment, at admission, through the progression of courses and clinical experiences, and to decisions that completers are prepared to teach effectively and are recommended for certification. The provider demonstrates that the development of candidate quality is the goal of educator preparation in all phases of the program. This process is ultimately determined by a program's meeting of Standard 4.

Plan for Recruitment of Diverse Candidates who Meet Employment Needs:

3.1 The provider presents plans and goals to recruit and support completion of high-quality candidates from a broad range of backgrounds and diverse populations to accomplish their mission. The admitted pool of candidates reflects the diversity of America's P-12 students. The provider demonstrates efforts to know and address community, state, national, regional, or local needs for hard-to-staff schools and shortage fields, currently, STEM, English-language learning, and students with disabilities.

Candidates Demonstrate Academic Achievement:

3.2 The provider meets CAEP minimum criteria or the state's minimum criteria for academic achievement, whichever are higher, and gathers disaggregated data on the enrolled candidates whose preparation begins during an academic year.

The CAEP minimum criteria are a grade point average of 3.0 and an average group performance on nationally normed assessments or substantially equivalent state normed assessments of mathematical, reading and writing achievement in the top 50 percent of those assessed. An EPP may develop and use a valid and reliable substantially equivalent alternative assessment of academic achievement. The 50th percentile standard for writing will be implemented in 2021. Starting in the academic year 2016-2017, the CAEP minimum criteria apply to the group average of enrolled candidates whose preparation begins during an academic year. The provider determines whether the CAEP minimum criteria will be measured (1) at admissions, OR (2) at some other time prior to candidate completion.

In all cases, EPPs must demonstrate academic quality for the group average of each year's enrolled candidates. In addition, EPPs must continuously monitor disaggregated evidence of academic quality for each branch campus (if any), mode of delivery, and individual preparation

programs, identifying differences, trends, and patterns that should be addressed under component 3.1, Plan for recruitment of diverse candidates who meet employment needs.
CAEP will work with states and providers to designate, and will periodically publish, appropriate "top 50 percent" proficiency scores on a range of nationally or state normed assessments and other substantially equivalent academic achievement measures, with advice from an expert panel.
Alternative arrangements for meeting the purposes of this component will be approved only under special circumstances and in collaboration with one or more states. The CAEP President will report to the Board and the public annually on actions taken under this provision.

Additional Selectivity Factors:

3.3 Educator preparation providers establish and monitor attributes and dispositions beyond academic ability that candidates must demonstrate at admissions and during the program. The provider selects criteria, describes the measures used and evidence of the reliability and validity of those measures, and reports data that show how the academic and non-academic factors predict candidate performance in the program and effective teaching.

Selectivity During Preparation:

3.4 The provider creates criteria for program progression and monitors candidates' advancement from admissions through completion. All candidates demonstrate the ability to teach to college- and career-ready standards. Providers present multiple forms of evidence to indicate candidates' developing content knowledge, pedagogical content knowledge, pedagogical skills, and the integration of technology in all of these domains.

Selection At Completion:

3.5 Before the provider recommends any completing candidate for licensure or certification, it documents that the candidate has reached a high standard for content knowledge in the fields where certification is sought and can teach effectively with positive impacts on P-12 student learning and development.
3.6 Before the provider recommends any completing candidate for licensure or certification; it documents that the candidate understands the expectations of the profession, including codes of ethics, professional standards of practice, and relevant laws and policies. CAEP monitors the development of measures that assess candidates' success and revises standards in light of new results.

Standard 4. Program Impact

The provider demonstrates the impact of its completers on P-12 student learning and development, classroom instruction, and schools, and the satisfaction of its completers with the relevance and effectiveness of their preparation.

Impact on P-12 Student Learning and Development:

4.1 The provider documents, using multiple measures that program completers contribute to an expected level of student-learning growth. Multiple measures shall include all available growth measures (including value-added measures, student-growth percentiles, and student learning and development objectives) required by the state for its teachers and available to educator preparation providers, other state-supported P-12 impact measures, and any other measures employed by the provider.

Indicators of Teaching Effectiveness:

4.2 The provider demonstrates, through structured validated observation instruments and/or student surveys, that completers effectively apply the professional knowledge, skills, and dispositions that the preparation experiences were designed to achieve.

Satisfaction of Employers:

4.3. The provider demonstrates, using measures that result in valid and reliable data and including employment milestones such as promotion and retention, that employers are satisfied with the completers' preparation for their assigned responsibilities in working with P-12 students.

Satisfaction of Completers:

4.4 The provider demonstrates, using measures that result in valid and reliable data, that program completers perceive their preparation as relevant to the responsibilities they confront on the job, and that the preparation was effective.

Standard 5. Provider Quality Assurance and Continuous Improvement

The provider maintains a quality assurance system comprised of valid data from multiple measures, including evidence of candidates' and completers' positive impact on P-12 student learning and development. The provider supports continuous improvement that is sustained and evidence-based, and that evaluates the effectiveness of its completers. The provider uses the results of inquiry and data collection to establish priorities, enhance program elements and capacity, and test innovations to improve completers' impact on P-12 student learning and development.

Quality and Strategic Evaluation:

5.1 The provider's quality assurance system is comprised of multiple measures that can monitor candidate progress, completer achievements, and provider operational effectiveness. Evidence demonstrates that the provider satisfies all CAEP standards.

5.2 The provider's quality assurance system relies on relevant, verifiable, representative, cumulative, and actionable measures, and produces empirical evidence that interpretations of data are valid and consistent.

Continuous Improvement:

5.3. The provider regularly and systematically assesses performance against its goals and relevant standards, tracks results over time, tests innovations and the effects of selection criteria on subsequent progress and completion and uses results to improve program elements and processes.

5.4. Measures of completer impact, including available outcome data on P-12 student growth, are summarized, externally benchmarked, analyzed, shared widely, and acted upon in decision-making related to programs, resource allocation, and future direction.

5.5. The provider assures that appropriate stakeholders, including alumni, employers, practitioners, school and community partners, and others defined by the provider, are involved in program evaluation, improvement, and identification of models of excellence.

Appendix D

Studies Compiled by Kingston 2018 on PBL's Effectiveness

Grade Level	PBL Intervention	Findings	Demographics	Setting	Author, Year
2	Four PBL units focused on economics, geography, history & civics and government, designed to address nearly all state social studies standards and all literacy standards. Projects were done over an extended period and focused on a real problem or opportunity in the world.	The PBL group showed statistically significant higher growth in informational reading, but not in writing.	High -poverty, low performing districts with at least 65% of the student population qualified for free or reduced priced lunch (2) below state average student performance on state exams. FRLP = 65% to 100% (mean 80.350%); White = 40.337%; Black/ African American = 32.975%; Multi-racial = 15.491%; Asian = 5.368%; Hispanic/Latino = 4.448%	684 Students in the Midwest, USA	Duke et al., 2017
2	Economics and social studies projects targeting the Michigan Grade Level Content Expectations in economics, public discourse, decision-making, and citizen involvement and content area literacy	Students in the low socioeconomic schools made statistically significant gains in social studies and content literacy. Their post-test results showed no statistically significant differences from the students in the high socio-economic schools in social studies and reading.	Low socio-economic schools: 80% of students eligible for free and reduced-price lunch and with below-average academic achievement in social studies, reading, and writing. High socioeconomic schools: 2% or fewer students receiving free or reduced-price lunch and school achievement above the state average on state exams in social studies, reading, and writing.	63 Students in Michigan	Halvorsen et al., 2012
6, 7, 8	PBL middle school LetUS science curriculum materials collaboratively developed by the	Students made statistically significant gains on measures of scientific content	Detroit Public Schools: African American = 91%, Latino =4%, White = 1%	8,000 Students in the Detroit	Marx et al., 2004

	University of Michigan and Detroit Public Schools with professional development: summer institutes, monthly work sessions, teacher discussion groups, and with some classroom support.	knowledge and process skills.		Public School System	
9, 10, 11	Instead of relying on textbooks, teachers had students work on open-ended questions. Teachers introduced students to a project or theme, which students explored, using their ideas and mathematical knowledge. Projects were usually extremely open, amounting to a little more than a challenging statement, and students were given an unusual degree of choice in math lessons.	Students in PBL performed as well as or better than traditional school students on items of rote knowledge. Three times as many students in PBL score the highest possible score on the national exam (General Certificate of Secondary Education (GCSE)). More PBL students passed the national exam than students in traditional classes. PBL students did not have greater knowledge of math facts, procedure, and rules, BUT were better able to make more use of math in different situations	Traditional school: Working-class = 68%, Ethnic minority =17%; PBL school: Working-class = 79% working class, ethnic minority = 11%	300 Students in the United Kingdom	Boaler, 1997

Appendix E

Participant Recruitment Email

Dear XXX,

I hope this email finds you well. I am seeking participants for a dissertation study in a doctorate program of Educational Leadership at the University of New England. I am conducting a research study designed to understand how recent graduates are implementing educational theories into practice during their first year of teaching. In this study, I will use a qualitative methodology, which involves conducting a 45-minute interview and collecting a short online survey with educators who participated in the PBL grant.

As a participant, you will be asked to sign informed consent to participate. Your participation is entirely voluntary. You can choose to answer only the questions with which you feel comfortable and can discontinue participation at any time. The final data will be stored for a period for no longer than two years, after which it will be destroyed.

Again, if you agree to be involved in this study, please know you agree to the following:

- You and the school will not be identified
- You can withdraw at any point in the study
- You will be asked to sign a consent form

Finally, please let me know if you would like to participate in the study by _____. If you have any questions, please contact me at 307-871-0790 or lmiller14@une.edu. Thank you for your consideration, and I look forward to hearing from you!

Thank you,
Loni Miller
Doctoral Candidate

Appendix F

Interview Protocol

Introductory Protocol: *With your permission, I will audio record our conversation. Please sign the release form if you agree (give the participant the Research Written Consent Form). All identifying information will be removed from the transcribed data. You do not have to answer any questions you do not feel comfortable answering, and the interview will last 45 minutes. Once I start the recording, I will not use your name to assure your anonymity. The recording will be sent to a secure transcription service, and I will be taking notes to ensure I correctly understand your answers. Do you have any questions before we begin?*

Introduction: *The following questions will focus on the teaching strategies that you are using in your classroom as a first-year teacher. You were chosen for the study as you were a participant of the PBL grant and a recent graduate of a private university in the Midwest. The study is not to evaluate you as a teacher, instead explore potential changes in the teacher preparation model.*

Start Tape:

1. You are seven months into your first-year experience, how are things going?
   a. Follow up: What was the most surprising thing as a new teacher?
2. How are you implementing the PBL model in your classroom?
   i. Prompt: Give me an example of how you are engaging students in learning the content?
   ii. Prompt (only if needed): How are you providing critique and revision opportunities for your students?
3. How did the PBL training prepare you for your first-year classroom experience?
   a. Follow up question: How would your first-year experience be different without the PBL training?
4. What was your biggest take away from the PBL training provided by the BIE?
   a. Follow up: Give me an example of how the PBL training changed your preservice teaching experience.
5. Are there any other comments you would like to share about your experience with the PBL training?

Closing Remarks: *Thank you for taking the time to sit down with me today. As a reminder, I have given you a copy of the Research Description and the Participant's Rights for this study. The study will conclude by May of 2019. If you are interested in reviewing the conclusions, please let me know. My contact information is on the documents I have given you.*
I will be sending you a transcription of this interview to review by _____
Thank you again for your time.
Stop Recording

Appendix G

UNIVERSITY OF NEW ENGLAND
CONSENT FOR PARTICIPATION IN RESEARCH

Project Title: Teacher Preparation: Implementing Training into Practice

Principal Investigator: Loni Miller

Introduction:

- Please read this form. You may also request that the form is read to you. The purpose of this form is to give you information about this research study, and if you choose to participate, document that choice.
- You are encouraged to ask any questions that you may have about this study, now, during or after the project is complete. You can take as much time as you need to decide whether or not you want to participate. Your participation is voluntary.

Why is this research study being done?
This research study is to be submitted to fulfill the requirements for the degree of Doctor of Education in Educational Leadership, University of New England, Portland, Maine. The results of the study will be published as a dissertation and used for educational purposes in professional presentation(s) and/or educational publications(s).

Who will be in this study?
The participants in the study are first-year elementary teachers who received Project-Based Learning training as preservice teachers.

What will I be asked to do?
As a participant in the study, you will be asked to complete a short survey prior to meeting with the principal investigator. You will then be asked to complete a 45-minute interview with the principal investigator on how you are implementing educational theories into practice, specifically PBL.

What are the possible risks of taking part in this study?
Participation in the study carries minimal risks, as the researcher will maintain confidential data storage by using password protected files. Participant's names or other identifying features will be protected by using a coding system that is only available to the principal investigator. The coding system will be destroyed once the data has been analyzed.

What are the possible benefits of taking part in this study?
There is no financial compensation for your participation in this study.

What will it cost me?
There is no cost to the participant.

How will my privacy be protected?
Your identity will be protected through the course of the study by the researcher. Your name or other identifiable features will not be used during the study or in any publications. All data will be transcribed, coded, and securely stored. You will receive a copy of the transcribed interview

to review for accuracy. At any time during the interview process, you may choose to withdraw from the study.

How will my data be kept confidential?

The data will be housed electronically in a password protected file. After two years, all data will be destroyed.

What are my rights as a research participant?

- Your participation is voluntary. Your decision to participate will have no impact on your current or future relations with the University.
- Your decision to participate will not affect your relationship with Loni Miller.
- You may skip or refuse to answer any question for any reason.
- If you choose not to participate there is no penalty to you and you will not lose any benefits that you are otherwise entitled to receive.
- You are free to withdraw from this research study at any time, for any reason.
    - If you choose to withdraw from the research, there will be no penalty to you, and you will not lose any benefits that you are otherwise entitled to receive.
- You will be informed of any significant findings developed during the course of the research that may affect your willingness to participate in the research.
- If you sustain an injury while participating in this study, your participation may be ended.

What other options do I have?

- You may choose not to participate.

Whom may I contact with questions?

- The researchers conducting this study are Loni Miller
    - For more information regarding this study, please contact Loni Miller, 701-355-8107
- If you choose to participate in this research study and believe you may have suffered a research-related injury, please contact Loni Miller, 701-355-8107
- If you have any questions or concerns about your rights as a research subject, you may call Mary Bachman DeSilva, Sc.D., Chair of the UNE Institutional Review Board at (207) 221-4567 or irb@une.edu.

Will I receive a copy of this consent form?

- You will be given a copy of this consent form.

Participant's Statement

I understand the above description of this research and the risks and benefits associated with my participation as a research subject. I agree to take part in the research and do so voluntarily.

_____ _____

Participant's signature or Legally authorized representative — Date

_____

Printed name

Researcher's Statement

The participant named above had sufficient time to consider the information, had an opportunity to ask questions, and voluntarily agreed to be in this study.

_____ _____

Researcher's signature — Date

_____

Printed name