PROJECT BASED LEARNING: VETERAN TEACHERS
CREATING CURRICULUM FOR A NEW SCHOOL

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To the Faculty of Washington State University:

The members of the Committee appointed to examine the dissertation of STEWART TYLER MORGAN find it satisfactory and recommended that it be accepted.

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The process of writing my dissertation has been a long, interesting, and enjoyable journey and would not have been possible with the support of a lot of people. This experience has allowed me to consider and reconsider ideas and theories related to education. This experience has also forced me to consider the complex nature of curriculum development ranging from the meaning of the word *curriculum* to the constant creation, implementation, and revision thereof which has also provided me, happily so, with more questions than answers.

I would like to first thank my life partner Alisa for calming me down, pushing me when needed, allowing me to spend endless hours in the basement working on the computer, and for constantly hearing “I need to work on my dissertation” or “I am at insert amount of pages.” We will need to celebrate by taking a vacation to Kauai and eating coconut muffins. I should also probably thank my dogs, Mouse and Gibby because if I didn’t Alisa would be upset. My parents have always supported my learning, ranging from Judo and piano lessons, trips to Mexico and Europe, along with paying for my undergrad, thanks! I have also experienced a variety of support, over the last five years, from my students and colleagues for which I am thankful.

Thank you, Dr. Richard Sawyer, your support has reignited my passion for teaching and learning. Your ability to gently guide me, provide feedback and fresh viewpoints while remaining incredibly calm and patient encouraged me to keep moving forward. I would also like to thank my committee members, Dr. Sharon Kruse and Dr. Shameem Rakha for their support and participation in my journey.
John Dewey wrote *Experience and Education* in 1938 which essentially argued that students bring their experience into the classroom and should not be considered as blank slates needing to be filled with information. Dewey wrote his book 80 years ago and since then the pendulum in education has swung back and forth several times. Political, economic, social, and religious events of the 20th and 21st century have been responsible for the swinging of the pendulum and the ever-changing educational landscape which has been well documented (Mitchell, Crowson, & Shipps, 2011; Slattery, 2014; Spring, 2009).

Over time the swinging pendulum has dictated what curriculum teachers can teach and how to teach it. Today, however, teachers are finding that the pendulum is allowing for some freedom to create curriculum that is student-centered and allows for the experiences of their students to grow. Progressive frameworks such as Project-Based Learning (PBL) are placing the
student at the center of their learning and are appearing throughout the US. The purpose of this qualitative study was to explore how four veteran teachers, responsible for implementing a PBL framework, create curriculum, and encounter supports and hindrances as they do so.

The qualitative study took place in medium sized, suburban school district in the Pacific Northwest. The study consists of four case studies which explored the journey of four veteran middle school teachers as they transitioned from a traditional classroom to create PBL curriculum for a new PBL school. The study also explored the supports and hindrances encountered by each teacher. Two themes emerged from this study: The encouraged and continued blending of personal and professional experiences could shape the creation of future PBL curriculum, promoting relevance and engagement for students, teachers, district leaders, community members, and environment; Conditions that support teachers (i.e., professional development, resources etc.) as they create PBL curriculum could further their intellectual and professional capacity to continually develop and implement projects that engage students, establish lasting relationships with the community and connections to the environment.
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CHAPTER ONE
INTRODUCTION

Background for the Study

As a viable form of education in the American education system of the 20th century, project-based learning (PBL) has faced many challenges. Political, economic, religious, and social events have shaped how education is carried out in the US. For example, the political and economic event of the Space Race of the 1950s and 1960s placed emphasis on science, technology, engineering, and math (STEM) in American schools. Today, the same emphasis has been placed on STEM subjects, which have also been shaped by politics, such as the general increased standardization of education, and more specifically, the policies of No Child Left Behind (NCLB) and Common Core State Standards (CCSS). At one end of the spectrum, the driving force behind these policies is the desire to keep the US economically superior, while at the other, relevant (Spring, 2011). Progressive approaches to teaching and learning have always existed in some form or another, especially in mainstream education. John Dewey’s learning laboratories of the early 20th century and the Buck Institute for Education (BIE) of today, are examples of progressive frameworks which have operated within the margins of mainstream education.

The following examples further illustrate how the relationship between the political, economic, religious, and social events and the American education system have forced PBL into the margins. For example, the second industrial revolution of the late 19th and early 20th century sparked a great demand for efficient factory workers. It was expected that the school system would facilitate, to an extent, the training and/or conditioning of these workers. Spring (2011)
discusses how the Taylorization of schools in the early 1900s and the preparation of the next generation of factory workers followed a bell schedule and students performed repetitive, menial tasks. However, in *Experience and Education* (1938), John Dewey defined the margins during this time, which emphasized the need to include students’ experience and voice in the development of any curriculum. Dewey considered the student experience an asset. He believed it could help drive students’ natural desire to learn, as opposed to the mainstream which saw students as empty vessels in need of information. Placing students at the center of their learning would later help shape PBL.

The political, economic, and social events of the Cold War and Civil Rights Movement provide excellent examples of how these forces shaped school curriculum and attempted to address social issues in the 1950s and beyond. For example, the Soviet Union’s successful launch of Sputnik in 1957 put pressure on US schools to broaden STEM subjects within their educational systems to stay ahead of the communists. Socially, the Civil Rights Movement and the *Brown versus Board of Education* (1954) decision to desegregate schools, attempted to address the inequities in education because of “Separate but Equal”, as well as the Jim Crow laws that had been implemented in the late 19th century.

However, today’s classrooms are like classrooms of the past. Mitchell et al. (2011) compared the schools of the 1950s and those of the present to the story of “Rip Van Winkle”, claiming that “school organizations and programs are sufficiently similar to what was happening 60 years ago that a “Rip Van Winkle” who fell asleep in 1950 wouldn’t have much trouble recognizing the elementary and secondary schools of today” (p. 21). Furthermore, students today are directed throughout their day via a bell, where they learn passively about a subject in blocks of time (as opposed to making connections with other subjects), and the emphasis remains on
STEM subjects in hopes of remaining politically and economically competitive, or at least relevant, on the world stage. The failure to implement the Brown versus Board of Education decision of 1954 has resulted in more segregated schools today compared to those before 1954 (Kozol, 2005).

Shaped by political, economic, religious, and social events, the school system has become cyclical in nature, appearing to meet the needs of the times without changing, as illustrated in the research of Mitchell et al. (2011). The 1983 publication of A Nation at Risk moved education into the era of accountability, especially as it relates to curriculum, instruction, and teacher autonomy (Mitchell et al., 2011). Teachers’ ability to create and implement curriculum during the last four decades has been stifled by political policies as “authority has shifted to state governments and private sector actors who set the standards, produce the assessments, and determine what level of performance represents “success”” (Mitchell et al., 2011, p. 179).

Mitchell et al. (2011) provide a glimpse into the conditions (i.e., increased accountability, standardization etc.) currently experienced by teachers:

Add to these conditions an increasingly prescribed and narrow curriculum, the development of “teacher-proof” curriculum, high-stakes testing and sanctions for school failure and it is easy to understand why teachers might feel as if they are indeed under siege from educational leaders and policy makers. Policy moves that standardize and centralize the curriculum run counter to the ambiguities that define the teaching-learning process (McNeil, 2000). Today’s teachers find themselves caught between the conflicting demands of a centralized curriculum and the need for autonomy dictated by the realities of teaching. It is a dilemma
that places them squarely in the crossfire of criticism and makes them increasingly vulnerable to public scrutiny. (p. 180)

The past has painted a rather gloomy picture of the American education system. However, some school districts are beginning and/or continuing to explore the fringes of the educational landscape and are finding progressive frameworks such as PBL to be a powerful approach to teaching and learning. Project-based learning schools are finding that curriculum shaped by communication, collaboration, critical thinking, and creativity—the 4 C’s developed by the Buck Institute for Education (BIE), a leading PBL institute—is significant to student growth.

**Project-based Learning**

PBL has progressivist and constructivist roots reaching back to John Dewey in the early 20th century. Therefore, PBL shares similarities to place-based education (PBE), environment-based education (EBE), problem-posing education (PPE) and several other progressivist and constructivist frameworks. Among other components, project-based learning places emphasis on developing students’ critical thinking skills via curriculum that centers on project production to represent their learning and growth. Kokotsaki, Menzies, and Wiggins (2016) provide the following definition: “Project-based learning (PBL) is an active student-centered form of instruction which is characterized by students’ autonomy, constructive investigations, goal-setting, collaboration, communication and reflection within real-world practices.” However, this simple, student-centered definition of PBL may leave the reader curious as to what role the teacher plays in PBL curriculum development. This definition may even encourage the reader to consider or reconsider their understanding of curriculum and curriculum development and perhaps deconstruct or reconceptualize the meaning of curriculum.
Curriculum Development

Curriculum development presents a plethora of challenges for teachers. However, the understanding of the word *curriculum* may add to or eliminate these challenges. Slattery (2014), when reflecting on the work of Pinar, discusses curriculum as a verb rather than a noun. Curriculum is an “interpretation of lived experiences” and it becomes problematic if it is simply imposed on students to simply run the course. Curriculum “becomes a social process whereby individuals come to a greater understanding of themselves, others, and the world through mutual reconceptualization” (p. 66). Considering curriculum as a verb and as the “interpretation of lived experiences” the process of creating and implementing curriculum can be explored more deeply, and perhaps more so than curriculum as a noun—a tangible, corporatized, packaged product.

Even though curriculum continues to be developed by corporations and imposed on teachers by school districts, it is ultimately reflected upon, interpreted, and implemented by the teacher. Moreover, teachers are defined by their experiences, which further helps to shape the curriculum. This study was co-constructive in nature and its purpose was to explore how four veteran middle school teachers developed knowledge as they created PBL curriculum in their first year as teachers of PBL. Furthermore, the purpose of this study was to explore the supports and hindrances the teachers encountered as they created the PBL curriculum. All four teachers had a range of service from 6 to 18 years. Coincidentally, all four teachers’ teaching experience had taken place in the Gibbon School District (GSD), which resulted in similar expectations with regards to students, community members, building and district leaders, and collaborating with each other. The teachers were selected to be a part of the PBL school based on their dedication and documented ability to “see and serve” all students—a component of the GSD mission statement.
PBL not only places an obvious emphasis on projects to reflect student learning, but it is also inclusive of the collaborative efforts between students, teachers, the community, and environment. It is important that teachers of PBL recognize these relationships as they develop and implement the curriculum. For example, if the community is defined by an environmental rights leader, a proposed project of a parade may reflect and celebrate this relationship and can be shared with the students, community, and environment. A project such as this not only helps to define the PBL curriculum, but also affords students the ability to develop critical thinking skills, and in this case, “how to think critically about community”, which includes relational and environmental themes.

The four veteran teachers who comprised this study were challenged to create a new, student-centered PBL curriculum. They arrived from two middle schools within the GSD to a recently acquired campus and began developing a PBL curriculum during the fall of 2016. Throughout the year, each teacher experienced several supports and hindrances as they navigated their way through the progressivist and constructivist PBL framework.

**Supports and Hindrances**

The teachers of this study experienced a variety of supports and hindrances throughout the 2016-17 school year, and each teacher developed knowledge as it related to them, which was specific and unique to their experience. However, as the group developed knowledge unique to their experience, shared similarities became evident.

The underlying theme found within the identified supports and hindrances was a desire to support student learning and growth. As each teacher praised and condemned components of the program, they asked for continued support and for the hindrances to be addressed. The goal for exploring PBL curriculum development, along with the supporting and limiting factors, serves
three purposes. First, the findings will hopefully allow the program to become better defined as it relates to the continued creation of the PBL curriculum. Second, as the school continues to grow, identifying both the supports and limitations will allow new teachers to experience success earlier. Third, neighboring school districts who are considering implementing a PBL framework can reference this study as a guide.

**Context and Purpose of the Study**

This study was qualitative in nature and was comprised of four case studies. The purpose of this study was threefold: (1) to explore and co-construct knowledge with veteran middle school teachers new to PBL as they created PBL curriculum (2) and encountered supports and hindrances, (3) and to provide recommendations for the GSD as the school continues to grow.

This study was conducted in a school district in Washington State, and consisted of around 8000 students and 400 staff members. The data collection portion of the study took place throughout the 2016-17 school year, beginning in the fall of 2016 and concluding during the spring of 2017. The four veteran teachers selected for the PBL school became participants in this research study. Interviews were conducted three times during the school year—at the beginning, middle, and end. The data consisted of a total of 12 interviews which were conducted during the school year and constitute much of the significant findings. The purpose was to co-construct knowledge with the teachers in hopes of gaining a more meaningful understanding with regards to creating a PBL curriculum. The data also consisted of, albeit to a less extent, observations, artifacts, and researcher reflections.

A conceptual framework was developed to better illustrate the co-constructive nature of this study as each teacher created the PBL curriculum and encountered supports and hindrances. The conceptual framework shown in Figure 1, allowed for the exploration of supports and
hindrances as they related to the overall PBL program. The framework consisted of a back and forth nature as the teachers developed the PBL curriculum and encountered supports and hindrances, and allowed teachers to discuss supports and hindrances as it related to their ability to create the PBL curriculum. The findings of this study may influence the GSD to increase support (i.e., tangible and intellectual resources) as the teaching staff grows and the PBL curriculum continues to be created.

Figure 1.

Each teacher was interviewed three times during the school year. Each interview was transcribed and open-coded. These themes, along with the transcriptions and researcher notes, were shared with the research participants as a member check, as well as an opportunity for the researcher and participants to co-construct knowledge. The emergent codes and member checks also influenced the development of the interview questions and topics. Additional data was collected through observations, the collection of artifacts, and reflective journaling.

Summary
This study was co-constructive in nature as it explored how four veteran teachers developed knowledge as they created the PBL curriculum. This study also explored how teachers developed knowledge as they encountered supports and hindrances related to creating the PBL curriculum. Two main themes emerged as a result of this study:

1. Teachers blend their personal and professional experiences as they create the PBL curriculum. Further inclusion of these experiences could result in a PBL curriculum that continues to emphasize themes of independence, collaboration, relationships, communication, critical thinking, creativity, and environment.

2. Consistent access to resources including professional development, tangible resources (i.e., material supplies), and time, could further benefit and develop teachers’ skills as they relate to the creation of a PBL curriculum.

This study allowed for teachers to reflect on their abilities as they related to creating the PBL curriculum, and highlighted the need for release time for teachers to collaborate and create the PBL curriculum. Furthermore, this study emphasized the need for continuous and consistent access to resources which included material supplies and professional development opportunities. Each teacher reflected upon the supports and hindrances they encountered over the course of the school year, and hoped the continued and increased support to develop the PBL curriculum would be considered by the GSD in the future. They also shared concerns for hiring the “right” people to join the staff. As the student body grows and the middle school develops into a high school, the “right” kind of teacher will be crucial for PBL success.

CHAPTER TWO
The educational landscape has significantly changed in the last 20 years. During this time, teachers had to navigate the *No Child Left Behind Act* (2001), *Race to the Top* (2009), *Common Core State Standards Initiative* (2010), and *Every Student Succeeds Act* (2015) (Mitchell, Crowson, & Shipps, 2011; Slattery, 2013). Broadly speaking, these policy changes share a relationship with the past perhaps as a ripple of the ‘Separate but Equal’ climate of the late 19th and early 20th century, along with the Brown versus Board of Education Decision in 1954. The changes could also be part of the recent global economic changes and the desire of the United States (US) to remain relevant (Spring, 2010). Some have tied this change to the events of September 11th 2001, and the criticism of the Muslim community within the US (Slattery, 2013). It was recognized, albeit slowly, that the public education system should appreciate and celebrate diversity. The ever-changing political, educational, and socio-economic climate has inspired school districts throughout the US to consider the demographics of their student body, their learning needs, and how to best serve them.

Others have argued that these changes are largely a result of economics. Over the last decade, an effort to increase student interest in science, technology, engineering, and mathematics (STEM) has been made to keep the US relevant and competitive with other growing economic powers of the world such as India and China. However, as schools emphasize STEM subjects, they do so in a system that operates in the same fashion as it did 150 years ago. Schools and bell schedules were historically designed to shape the next generation of factory workers (Spring, 2010). As the world became increasingly globalized during the 1990s, US factory jobs were largely outsourced to other countries. While the US economy changed, the
school system did not, and continues to maintain a traditional, factory-style bell schedule, where teaching and learning largely takes place in isolation.

Districts are working to meet the needs of their diverse student bodies, and in some cases, are adopting non-traditional teaching and learning frameworks. Along with the adoption of these frameworks, school districts are exploring grading policies and the merits of standard-based grading (Nagel, 2015). Schools making these changes are finding that teachers and students are growing, fulfilling the political mandates of CCSS, addressing social changes, and maintaining economic relevance. Only recently, and perhaps because of the political, economic, and social changes, school districts have begun to explore alternatives to the traditional, factory-based approach to teaching and learning such as PBL (Slattery, 2013).

**Situating Project-Based Learning**

To define PBL, understanding what student-centered frameworks are not, may provide a clearer picture of what they are. As obvious as it may seem, student-centered frameworks are not teacher-centered classrooms, which are at the other end of the teaching and learning spectrum, and which place the teacher at the center of student learning as they impart knowledge on students who are viewed as empty vessels in need of information. A teacher-centered approach to teaching and learning, commonly referred to as the banking-model, creates a dichotomy between the knowledge holder and the knowledge seeker—those who have and those who have not (Freire, 2000). The knowledge holders impart knowledge they wish for the knowledge seekers to have, which perpetuates a narrow and biased view of the subject being taught. Even during the information age, where students have answers at their fingertips, teacher-centered classrooms remain all too common. However, school districts and teachers are beginning to experiment with student-centered frameworks such as PBL.
In broad terms, PBL is placed under the umbrella of student-centered curriculum frameworks. Student-centered frameworks place the student at the center of their learning. Examples of such frameworks include place-based education, environment-based education, and problem-posing education, to mention a few. These frameworks overlap with one another and create a clear, concise definition of PBL, is challenging to provide. Gruenewald (2003) highlights this challenge when discussing place-based education. Place-based education lacks a specific theoretical tradition as it shares similarities with the following: experiential learning, contextual learning, problem-based learning, constructivism, outdoor education, indigenous education, environmental and ecological education, bioregional education, democratic education, multicultural education, and community-based education. Along with the other student-centered frameworks, place-based education, has difficulty incorporating context and emphasizing the value of learning from and nurturing specific places, communities, and regions. Since the definitions are somewhat vague and perhaps unclear, attempts have been made to provide a clear definition of PBL. Kokotsaki, Menzies, and Wiggins (2016) provide this definition: “Project-based learning (PBL) is an active student-centered form of instruction which is characterized by students’ autonomy, constructive investigations, goal-setting, collaboration, communication and reflection within real-world practices” (p. 267).

PBL incorporates themes of environment, community, and problems into projects and into the framework in general. The commonality shared among these frameworks is that the student, usually working in collaboration with other students, is largely responsible for working with, discovering, and making sense of new information, while the teacher acts as a guide and facilitator of student learning. Furthermore, a student of PBL is challenged to develop and
complete a project to demonstrate their learning, which may further distinguish PBL from other student-centered frameworks.

A research study by Santelmann, Gosnell, and Meyers (2011) further illustrates student-centered learning and supports the definition provided by Kokotsaki, et al. (2016). Santelmann et al. provided a powerful experience for their students as they facilitated a place-based, environment-based, and project-based curriculum focused on the watershed of their rural community. Students were involved in site visits to local farms and forests and documented their findings in journals, which helped to increase their listening and observational skills. The students also conducted thematic interviews with farmers and other community members, which translated into further hands-on projects, ‘actions on the ground’ and real change. This project also emphasized the need for students to develop their skills related to “constructive investigations, goal-setting, collaboration, communication and reflection within real-world practices” (Kokotsaki, et. al., 2016, p. 267).

PBL and public education in general are not immune to the ever-changing political, economic, and social forces. Spring (2010) illustrates this as he discusses the Taylorization of the school system in the late 19th and early 20th centuries. Back then, schools were modeled after a factory system and were geared towards producing the next generation of factory workers. Schools in the US emphasized STEM subjects in the 1950s and 1960s as they engaged in a Space Race with the Soviets during the Cold War. Currently, and because of globalization, another strong emphasis is being placed on STEM subjects in hopes of producing the next generation of engineers and staying economically relevant and globally competitive. Even though the need for factory workers has largely subsided in the US, and the Cold War has ended, the way students are educated, even with the recent implementation of CCSS, has remained the
same. PBL has existed in the margins of the education system and can be traced back to the early 20th century and the writings of John Dewey. PBL has also been impacted by the political, economic, and social forces over time. How has PBL been situated within the social foundations of education?

PBL has been situated in the margins of mainstream, traditional education for over a century. However, some of the political, economic, and social forces previously mentioned, and those which are somewhat responsible for having kept PBL and other student-centered frameworks marginalized, are now showing signs of flexibility. For example, the era of standardized testing and accountability—advocated by big business, corporations, and government, along with the policies of *No Child Left Behind* and *Race to the Top*—have proven more detrimental to communities, teachers, and students, and have made the issues they were trying to address even worse, leading to the exploration of other teaching and learning avenues (Slattery, 2013). Since the aforementioned policies have largely failed, a shift has been made to explore the margins of the educational landscape.

**Conceptual Framework**

The purpose of this study was to co-construct knowledge while four veteran teachers created PBL curriculum during their first year as teachers of PBL. Furthermore, the purpose of this study was to co-construct knowledge related to PBL curriculum creation as they encountered supports and hindrances during their first year. Themes derived from the current PBL literature provide insight related to supports and hindrances that are internal to teachers (i.e., inside factors such as personal and professional experiences) as well as supports and hindrances more external to them (i.e., outside factors such as building leaders and professional development). The themes
exist together and create a unique interplay that shapes the teacher’s experience, understanding, and ability to adapt and create PBL curriculum.

The themes are in a constant state of development and thus, are constantly shaping PBL. The duality of “inside” and “outside” factors influencing PBL is not unique; in fact, it exists in every aspect of the universe. Slattery (2013) provides a brief discussion of curriculum development in the postmodern era which can be applied to the diagram below. While some issues and/or accomplishments are addressed and/or praised, other factors not given the same attention, are exacerbated and/or overlooked. For example, as teachers may be provided professional development, they may not—for a myriad of reasons—have the necessary resources to implement change. Figure 1 exhibits this back and forth nature—the duality that exists as an aspect of creating PBL curriculum.

![Conceptual framework](image)

*Figure 1. Conceptual framework.*

Since the “inside” and “outside” factors constantly ebb and flow, the PBL framework takes shape. In this way, the PBL framework serves as a conduit. As the outside factors, such as
the ability to create, implement, and revise curriculum influence PBL, the “inside” factors, such as what the teacher brings to PBL (confidence, content knowledge, experience, attitude etc.) are also shaped. The same may also be true for the “inside” factors influencing the “outside” factors, although to a lesser degree, since the “outside” factors include many more components.

The conceptual framework diagram does not appear balanced as more “outside” factors—both supports and hindrances—are discussed with more frequency in the current literature. This finding is somewhat understandable as the “outside” factors impacting PBL development could be considered infinite, and could range from socio-economic issues related to the demographics of the student body, staff, and community, to teacher retention rates, to current federal policies. Whereas, the “inside” factors, which could be argued are also shaped by an infinite range of factors, are ultimately simply summarized as the teacher. However, they are not to be discounted since they have the experience, content knowledge, and attitude, and are operating within, and even sometimes against, numerous “outside” forces.

**Literature Review**

PBL is influenced by two primary factors: outside factors (i.e., building leadership, professional development, resources, etc.) and inside factors (i.e., teacher confidence, content knowledge, personal experiences, etc.). As these two intermingle, they shape the PBL framework. During this constant back and forth, the PBL framework may act as conduit. To further illustrate the concept of the PBL framework as a conduit, for example, if a lack of professional development hinders PBL curriculum development, it may be reflected in the curriculum (i.e., poor design, implementation etc.).

The conduit—in this case the PBL framework, can be supported and hindered by a myriad of factors. Professional development (PD) helps to illustrate the idea of a PBL program
as a conduit. When teachers demand, but do not receive professional development, training program development becomes hindered, which can negatively impact a teacher’s content knowledge, confidence, attitude, as well as hamper student learning. Several research studies have found that providing teachers with access to professional development training is one of the most significant outside factors to shaping PBL programs, which can instill confidence in teachers, promote positive attitudes, and increase student learning. As the conduit becomes more free-flowing in nature, it is further defined by other “outside” factors, such as strong building and district leadership, as well as access to resources, such as technology, collaborative practices, community members, and time. These “outside” factors shape the “inside” factors, and when the “outside” and “inside” factors complement each other, they shape a robust PBL program.

**Characteristics of Project-Based Learning**

This study focuses on active learning as opposed to a traditional concept of education, where students are often requested to regurgitate information. Student-centered curriculums, such as place-based, problem-posing, environment-based, and project-based share a somewhat ambiguous definition as they are defined by the unique and ever-changing characteristics of their community (Gruenewald, 2003; Slattery, 2013). However, common themes appear within student-centered curriculums, allowing for the application of loose definitions such as the definition of PBL previously mentioned (Kokotsaki, et. al., 2016).

Over time, students had the opportunity to develop a significant skillset. The Buck Institute of Education—a well-established organization and a leader of PBL—has, over the years, identified the qualities of student learning nourished more deeply within a PBL framework and those that provide more consistent opportunities for developing the following qualities: problem solving skills, collaborative skills, increased confidence, critical thinking skills,
communication skills, and time management skills (Larmer, Mergendoller, & Boss, 2015). As students engage in project creation and learning, they develop interpersonal and intrapersonal skills, which are characteristic of PBL.

The current literature, as it relates to teachers experiencing PBL, presents several characteristics which provide a working, albeit always changing, definition of the framework. For example, a continuous and consistent need to support teachers via professional development trainings is a characteristic of PBL. Professional development allows teachers to develop other characteristics of PBL, such as collaborative skills, personal and professional content knowledge, and leadership skills (Abrami, Poulson, & Chambers 2004; Fallik, Eylon, & Rosenfeld, 2008; Han, Capraro, & Capraro, 2015; Harris, Penuel, D’Angelo, Debarger, Gallagher, Kennedy, & Krajcik, 2015; Howley, Howley, Camper, & Perko, 2011; Kanter & Konstantopoulos, 2010; Ketterlin-Geller, Baumer, & Lichon, 2014; Kokotsaki, et al., 2016; Ronfeldt, Farmer, McQueen, & Grissom, 2015).

As students and teachers learn and shape the characteristics of PBL they experience a plethora of supports and hindrances along the way. For example, both students and teachers of PBL can be supported and/or hindered by district and building leadership, professional development, resources, collaborative skills and time. The following section explores the supports and hindrances experienced by teachers and students of PBL.

**Supports and Hindrances of Project-Based Learning**

The current literature paints a picture of the dynamic between “inside” and “outside” factors and their relation to PBL. However, the picture is somewhat skewed as the literature places greater emphasis on the “outside” factors on the hindering components (i.e., lack of resources, professional development, leadership etc.) than on the “inside” factors. A synthesis of
the current literature will provide a brief and thematic understanding of the “inside” and “outside” forces at play and how they shape PBL frameworks. The review of literature will specifically focus on the supports and hindrances of the “inside” attributes, as well as the supports and hindrances of the “outside” attributes, and the impact they have on PBL. The alarming lack of “teacher voice” in the current literature regarding PBL will also be discussed.

**Inside Attributes**

Inside attributes range from having veteran teaching status, personal knowledge, teacher confidence, and motivation among other defining aspects operating as supports and/or hindrances.

**Inside supports.** Very few “inside” supporting factors appear within the current literature, suggesting there is a need for further research. The “inside” factors that shape a teacher and support PBL are largely shaped by “outside” factors, specifically professional development (PD). However, when separating the “inside” teaching characteristics from the “outside” characteristics, several supporting factors benefit PBL, such as teacher confidence, content and pedagogical knowledge, and the ability to blend professional and personal knowledge, as well as access to resources technology. By far the most significant “inside” supporting component addressed in the literature is the knowledge—personal, pedagogical, and professional—that teachers bring with them. However, their knowledge is shaped largely by “outside” factors, such as access to resources, including professional development trainings, resources, education programs, and time to reflect.

Abrami et al. (2004) found specific factors inhibiting teacher motivation and the implementation of a cooperative learning curriculum. Abrami et al., discovered that teachers’ lack of motivation stems from a lack of congruence between teachers’ teaching philosophy and
the curriculum, their sense of self-efficacy, level of training, as well as follow-up support, influence of the principal, school climate and culture of the community. The authors found that these characteristics hindered the program and were best addressed via PD trainings. According to Abrami et al., PD trainings are a key component to teacher motivation as well as developing their ability to innovate within their context. Motivation paired with the ability to innovate also helps influence teachers’ confidence, which is necessary for creating, implementing, and refining PBL curricula.

Personal and professional knowledge have also been found to be important characteristics of PBL teachers. Teachers who integrate their personal experiences into a place-based education (PBE) English class, afford the students the ability to question and construct their sense of place as well (Azano, 2011). Apart from the teacher connecting their personal knowledge and experiences to English instruction, Azano found that PBE also promotes curricular relevance and can promote the students’ understanding of place (i.e., limitations, challenges, benefits, drawbacks, inequalities). However, Azano also found that students were unable to fully grasp the power of place as a result of the teachers inability to view place through a critical lens, which resulted in a superficial understanding.

In relation to teacher knowledge (personal and professional), Blumenfeld, Soloway, Marx, Krajcik, Guzdial, and Palincsar (1991) found that the significance of teacher content and pedagogical knowledge should not be overlooked. These findings were also confirmed by Azano (2011). Content and pedagogical knowledge play a role in alleviating some of the pressures associated with curriculum development and PBL, such as the pressures of time, lack of PD trainings, and resources, among others. The more content and pedagogically confident a teacher is, the better they are going to be at overcoming the challenges of developing and implementing
a new curriculum. However, Blumenfeld et al. associate the further alleviating of these pressures to the teacher and students having consistent access to an “outside” factor: technology. The authors found that technology can sustain motivation and thought throughout a project.

More recently, Fairbanks, Duffy, Faircloth, He, Levin, Rohr, and Stein (2010) found that not just a blend of content and pedagogical knowledge should be considered as relevant and important characteristics of progressives, student-centered curriculums, but a blending of professional and personal knowledge should also be considered as an important component as well. The authors argue that a blending of personal and professional knowledge may be important, if not more important, than traditional concepts of professional knowledge. Furthermore, a blending of these two components would allow for deeper understanding of teacher beliefs, philosophies, ideas related to vision, belonging and identity which, in turn, would help to define a rich program and learning experience. Fairbanks et al. suggest setting time aside for teachers to engage in meaningful reflective practices and further study of teacher education processes to better achieve this blending of knowledge and/or understanding thereof.

**Inside hindrances.** The current literature fails to thoroughly explore many of the personal hindrances shaping teachers’ ability (or inability) to create, implement, and/or refine PBL curriculum. However, teachers may be hindered, as it relates to PBL, by an inability to collaborate and have an open and/or growth mindset. Teachers may also be hindered by teaching the way they were taught (Slattery, 2013). Most teachers and parents of the students were taught by one teacher at a time—they were taught what to think and how to think, and then were tested on the material in a very rigid and structured fashion (Slattery, 2013). As the times and policies have changed, states, school districts, and teachers are playing catch up to understand and implement the requirements. To further illustrate this hindrance and inability to change more
rapidly, teachers may also feel like they are losing their autonomy to do their job and therefore, try to maintain the last aspects of autonomy by using a specific grading method versus learning about and implementing CCSS, and considering using standards-based grading (Nagel, 2015). Teachers may feel like they have been attacked and have lost a lot their academic freedoms via federal policies that have played out over the last 20 years. Teachers may also be lacking the specific skills necessary (i.e., collaborative skills) to engage students using different teaching and learning methods and frameworks, such as PBL. As a result, they may continue teaching in ways that are detrimental to student learning.

A few specific “inside” hindrances appear in the current literature, including the lack of teaching experience and an inability to implement change (Fallik et al., 2008; Kokotsaki et al., 2016). These two hindrances are uniquely intertwined and can be addressed with time and professional development. Over time, as teachers gain experience and confidence, they are better prepared to implement changes in curriculums and/or frameworks, and are also considered to have veteran status (Fallik et al., 2008). Kokotsaki et al. also found that teachers tend to struggle because of inability to support and guide student learning, and experience a lack of support from district and building leaders.

Fallik et al. (2008) found that there are benefits to having veteran status teachers over novice teachers engaged in the implementation of new frameworks such as PBL. When researching the differences between the veteran and novice teachers’ ability to implement PBL teaching strategies after a PD training, Fallik et al. found that novice teachers had a feeling of preparedness but were concerned about implementation, whereas veteran teachers were significantly more confident. Fallik also found that regardless of teaching status, continuous PD
increased teacher ownership of the curriculum, which instilled teachers’ confidence to take risks in the future.

When reviewing PBL programs from around the world, Kokotsaki et al. (2016) found that teachers who experienced continuous PD were better prepared to take on the challenges of PBL. Kokotsaki et al. found that teachers lacking the skills necessary for PBL, such as the ability to support student learning and provide guidance and/or support for student learning, hindered not only student growth, but the program as well. Furthermore, the authors found teachers need to be better supported both during their teacher training and ongoing PD offerings.

These two hindrances can be somewhat easily addressed according to the literature. As long as teachers are given the time to plan, research, prepare, implement, and revise and are given the opportunities for PD, the hindrances of being a novice teacher or a teacher struggling to support learning, will dissipate. However, considering whether the teacher is open-minded should also factor into their ability to implement change. Regardless of the time and professional development provided, if teachers are not interested in growing personally and professionally, then the growth of the program will be hindered (Dweck, 2016).

For the most part, the literature is missing an exploration of teacher voice. Teacher voice plays and/or should play a significant role in shaping frameworks, school climates and cultures, grading and school policies (Nagel, 2015). Teacher voice allows for concerns, such as a lack of PD, to be raised and possibly addressed assuming the leadership is in support. The current literature places a considerable amount of focus on the “outside” support and role of professional development. As previously noted, PD instills and strengthens characteristics such as teacher confidence, personal and pedagogical knowledge, and ultimately impacts student learning. These components, plus a multitude of others, shape teacher voice. Teacher voice and PD share a
symbiotic relationship; however, teacher voice should be considered at every level of program development. Teacher voice at every level of program development increases teacher engagement, motivation, satisfaction, attitude, and general buy-in to the mission of the school (2015).

**Outside Attributes**

The literature focuses heavily on the “outside” factors and is almost evenly divided with nearly an equal amount of attention given to the supporting and hindering factors. The amount of literature that comes from an “outside” point of view and either praises or critiques PBL is two to three times more prevalent than that of an “inside” point of view. The supporting and hindering “outside” factors include discussions of professional development, resources, collaborative practices, collegial relationships, district involvement, leadership, reform policies, culture, canned versus created curriculum, and time. However, these factors can be further paired down to the themes of professional development, leadership, and time.

**Outside supports.** The three supporting factors include professional development, leadership, and time—all of which are related and intertwined. Furthermore, the “outside” supporting factors are intertwined with the “inside” focus of teacher knowledge. For example, teachers feel a sense of confidence and motivation to take risks regarding the implementation of a new curriculum if they are exposed to relevant professional development offerings, supported by their building and district leaders, and are given the time to collaborate, create curriculum, reflect, and revise—all of which further develops their “teacher knowledge”.

**Professional development.** Not surprisingly, when teachers partake in PD trainings, they experience increases in student learning and growth even if they didn’t find the training particularly valuable. Students have demonstrated increased levels of learning in math, science,
and history, which can also be attributed to PD trainings (Han et al., 2015; Harris et al., 2015; Parker, Lo, Yeo, Valencia, Nguyen, Abbott, & Vye, 2013). Some researchers have found the potential for a healthier community as a result of educating teachers with regards to progressive-based frameworks such as PBL. Kilinç and Evans (2013) found that if teachers are provided appropriate training, education, PD and resources, they can serve as models of a healthy community.

Current literature regarding PBL consistently addresses the role of professional development (PD) and does so in a mostly positive manner. For example, “outside” factors of PD can assist in the growth of characteristics that are typically considered “inside” factors, including teacher knowledge, confidence, attitude, and motivation (Abrami et al., 2004; Blumenfeld et al., 1991, Fairbanks et al., 2010). This research also connects PD to student growth, wherein the more prepared teachers are, the more the student learns. The gains in student learning have been evident among lower-level learners (Han et al., 2015), Advanced Placement (AP) learners (Parker et al., 2013), minority and marginalized students (Kanter et al., 2010), as well as teachers and students within specific subject areas, such as math and science (Han et al., 2015; Harris et al., 2015).

Fallik et al. (2008) found that both novice and veteran teachers responsible for creating the curriculum for PBL in Science and Technology (SAT) and who participated in a PD, demonstrated an increased sense of ownership—a very personal “inside” factor. However, Fallik found that conversely, novice teachers were just as prepared as veteran teachers because of PD, but were hesitant to implement the program due to potential difficulties. Regardless of the hesitancies experienced by novice teachers, all parties involved experienced benefits as a result of PD.
Professional development has also been found to promote the “inside” personal characteristics of motivation and innovation (Abrami et al., 2004). Abrami et al. researched several components related to teachers implementing new curriculum. The study consisted of a 48-question survey taken by 933 teachers. The findings stressed that the key aspect to a successful implementation of a new curriculum is providing PD for prospective teachers. The study explored other components such as cooperative learning curriculum, teacher philosophies, school climate and culture, along with practical constraints (i.e., access to materials, class size, and time requirements). The survey found that teacher confidence, cooperative learning skills, and student compliance influenced the success of the study to a degree. However, PD remained the most important component to teacher motivation and innovation within their context.

Kanter et al. (2010) researched the impact of project-based science (PBS) curriculum in relation to minority student achievement. The results of the study found that students were not necessarily more inclined to pursue a career in science because of learning via a PBS framework, but learning gains were made regardless of students’ attitudes. The authors attributed these findings to a strong correlation between PD and student achievement. However, the authors found that minority students were somewhat more reliant on an “inside” factor: teacher knowledge, which can be shaped by PD.

Meaningful PD may have a positive ripple effect as teachers learn about the aspects of progressive, student-centered curriculums and the significant role community plays. The teachers in turn serve as role-models for students who then positively impact the community. Kilinç et al. (2013) argued that investment in teachers’ understanding of place-based education (PBE) could potentially play a key role in shaping a health community. Kilinç et al. (2013) citing Dubel and
Sobel (2008), state that teachers are to “model the dynamics of a health community” and since teachers assist the community that molds the student, a PBE framework may be the solution.

The “outside” impact of PD has an obvious and positive impact in relation to the “inside” characteristics of the teacher. Consistent professional development offerings have also proved to be a powerful force related to student learning (Abrami et al., 2004; Fallik et al., 2008; Han et al., 2015; Harris et al., 2015; Howley et al., 2011; Kanter et al., 2010; Ketterlin-Geller et al., 2015; Kokotsaki et al., 2016).

**Leadership.** PBL teachers can also find support from district and building leaders. These leaders can provide PD trainings to help teachers carve out time to collaborate, create, and reflect upon their practice (Ketterlin-Geller et al., 2015; Molyneux & Tyler, 2014; Ronfeldt et al., 2015). Building and district leaders can also connect the program, teachers, and students to the community. Access to resources are essential to PBL and district and building leaders can consistently support teachers as they create, implement, and refine the curriculum (Harris et al., 2015; Howley et al., 2011).

Collaboration has proven to be a powerful experience for teachers and students. Administrators can shape a collaborative climate and school community. They also have the power to shape a culture of collaboration. Ketterlin-Geller et al. (2015) explored the role administrators play in establishing a culture of collaboration. The authors found that—apart from time—a key ingredient to creating a culture of collaboration is the administrator. The responsibility of the administrator is to support teachers. This support becomes evident in their ability to carve out time for teachers to read, research, plan, observe, and attend workshops—all of which help shape a culture of collaboration.
Recent studies support the positive “outside” role leadership plays in shaping a culture of collaboration. Collaborative practices are proving to be a positive force for teacher and student learning, as well as help develop cultural understandings among teachers (Molyneux et al., 2014; Ronfeldt et al., 2015). Ronfeldt et al. studied 9000 teachers over the span of two years in Miami-Dade public schools to better understand the collaborative relationship between teachers and students, and found that both benefit. Specifically, Ronfeldt et al. found that collaboration improves teaching and positively impacts student achievement in math and reading.

Teacher collaboration has also encouraged teachers to become more culturally aware (Molyneux et al., 2014). Molyneux et al. studied PBE pre-service teachers in the slums of India and found that when teachers respected the children’s lives and experiences, they also experienced a rich teaching and learning experience. The authors attributed this rich teaching and learning experience to the power of teacher collaboration. However, administrators—being the key ingredient to shaping a collaborative community—need to set time aside for collaborative efforts (Ketterlin-Geller et al., 2015).

Collaboration. A culture of collaboration can be defined, according to the literature, by leadership and time. Collaboration alone should also be considered as an “outside” positive force that shapes PBL and other student-centered curriculums. Collaborative methods, such as team-teaching, have proven powerful for student learning and within progressive frameworks, such as PBL, that do not accommodate innovative teaching methods (Chang & Lee, 2010; Chu, Loh, & Chow 2011).

Team-teaching and collaborative practices have proved powerful when outside experts are included in the creation and implementation of the curriculum. Chang et al. (2010) examined the challenges of PBL in an education system that does not accommodate innovative teaching
practices and found that when team-teaching takes place, the establishment of PBL was feasible and time-saving. The authors also found that outside experts—in this case, the technology teacher—further benefit program development. As a result, teachers were able to conduct PBL and students enjoyed the experience.

Chu et al. (2011) found similar results when the outside expertise of a librarian was included in the team-teaching effort. The librarian was a key component to measured increases in students’ reading and analytical abilities. However, the authors found that parents believed the students were not learning despite measured gains. The authors acknowledged the contextual factors since the study was conducted in Hong Kong, and considered that culture may have influenced the parents’ perception of student learning.

Collaborative teaching efforts play a positive “outside” role in student and teacher learning. Teachers working collaboratively are more likely to implement PBL and student-centered curriculums. For example, students have demonstrated increased reading and analytical skills. However, with the resources of professional development, the help of the building and district leaders in shaping a culture of collaboration, should not be overlooked.

**Outside hindrances.** Several “outside” factors hinder the teachers’ ability to establish a PBL or student-centered curriculum. The hindrances could be a simple exploration of the topics presented in the supporting factors, professional development, leadership, and collaboration, as well as the challenges teachers experience when these factors are lacking. However, this would be repetitive since the challenges were presented in the previous section. On the other hand, acknowledging other significant “outside” hindrances, such as reform policies, resources, and perceptions, would be time well spent.
Reform policies. The literature in regards to reform policies appears throughout the last two decades as teachers’ ability and/or motivation has been stifled or silenced as a result of reform policies (Behizadeh, 2014). Nagel (2015) speaks to this as teachers struggle to maintain a degree of autonomy through their grading methods and as the CCSS and ESSA become more deeply embedded in the education system, and the last vestiges of teacher autonomy, for better or worse, are up for grabs. Education reform policies and the impact they have on teachers and students are anything but new and have far reaching political, economic, and social implications (Mitchell et al., 2011). As current policies are playing out in the classrooms throughout the US and elsewhere, real impacts are experienced by teachers daily; therefore, it is understandable that the current literature will reflect these specific impacts more than other related topics (Behizadeh, 2014; Flynn, Kemp, & Perez, 2010; Harrison et al., 2013). However, current reform policies have also encouraged teachers to focus on meeting specific standards, which have influenced teachers to experiment with progressive approaches to teaching and learning, such as PBL (Krajcik et al., 2008; Marrongelle, Sztajn, & Smith, 2013).

Behizadeh (2014) has found that reform policies of the last 20 years have hindered teachers’ ability to create innovative curricula, and has therefore narrowed as result of increased standardization. However, the author proposes that Freire’s Problem-Posing Theory and PBL provide solutions to the narrowing of curriculum as they place the student at the center of their learning. PBL, problem-posing theory, and other student-centered curriculums allow teachers to shift away from the banking model of education to a form of teaching and learning where the teacher, student, and community are co-participants and construct meaning together. However, teachers will require PD, supportive leadership and time to collaborate and create, to learn and make necessary adjustments.
Like Behizadeh (2014), Flynn et al. (2010) and Harrison et al. (2013) have found that increased standardization removes the teacher and student further away from self. Flynn et al. studied race as it relates to place-based education and found teachers to be unprepared in addressing these issues. The authors also found that curriculum is also shaped by the context of place, community, and culture, and not national standards. Harrison et al. echoes and confirms Flynn et al.’s findings and the significance that context plays in shaping identity. When studying a diverse population of students in Australia, the authors found that the students experienced a greater sense of self and identity when they studied local histories, while a standardized form of history moved the students further away from this understanding.

**Resources.** In general, a lack of resources makes the creation and implementation of a PBL or student-centered framework challenging. In broad terms, resources include components such as professional development, leadership, and collaborative time, and when these are lacking, teachers and students are impacted (Basilotta, Martín, & García-Valcárcel, 2017; Marrongelle et al., 2013; McInerney, Smyth, & Down, 2011).

Basilotta et al. (2017) found that a lack of a wide variety of resources hindered teachers’ experience as they experimented with PBL methodologies. The authors found that teachers were specifically hindered by a lack of support from school management, inadequate provision of technological tools, and a lack of material and technology in general. Basilotta et al. found that PBL needs to be supported by both teachers and administrators, which was not the case during this study and was further hampered by a lack of clear communication. The authors also found a need for more time for both students and teachers to plan, discuss, and reflect. In addition, a need for PD related to collaborative practices would have benefitted teachers and students lacking these skills, since PBL depends heavily upon authentic collaboration. However, despite the lack
of resources, the teachers within this study found PBL methodologies to have a positive impact on students and teachers. The authors found that PBL promoted active participation, motivated teachers to learn, and allowed teachers to acquire various curricular skills.

The resource of PD consistently appears in the literature and the lack of PD significantly hampers teachers’ ability to create innovative, PBL, and student-centered curriculum. A lack of PD also hinders teachers’ ability to meet the demands of CCSS (Marrongelle et al., 2013). In relation to a place-based education (PBE) framework, teachers would also benefit from PD (McInerney et al., 2011). Marrongelle et al. found that teachers experiencing PD related to CCSS allows them to better take control of the situation and their ability to fulfill the requirements of CCSS. The authors aimed their study at mathematics and found that PD empowered teachers to implement new learning styles in the classroom, which influenced student learning. McInerney et al. has also found studying teachers’ lack of understanding of ‘place’ in regards to PBE to be problematic. Providing a more critical understanding of ‘place’ will provide students and teachers with an increased sense of ownership, identity, and belonging as they engage and build trust within schools and communities.

**Perceptions.** How teachers, parents and community members view PBL and student-centered curriculums can also be problematic. For example, most teachers, parents, and community members experienced school in a very traditional sense, and this is feeds the perceptions of how schools should be managed (Slattery, 2013). As a result of these perceptions, teachers, who were most likely educated in a traditional sense, may need to be educated and/or re-educated in relation to progressive frameworks (McInerney et al., 2011). Parents and community members may share similar concerns as they more than likely experienced education
in a traditional sense, and may question whether students are learning via progressive frameworks such as PBL (Chu et al., 2011; Howley et al., 2011).

Project-based learning teachers in Hong Kong increased reading and analytical skills of their primary students. Chu et al. (2011) examined the nature of PBL and collaborative teaching practices in relation to developing reading skills among primary students and found that learning results increased as teachers taught collaboratively, and even more so when the librarian was involved. However, even though teachers, students, and parents found PBL to be meaningful, parents expressed, via a questionnaire, that their student was not learning as much as they would have in a traditional classroom. When Howley et al. (2011) explored a PBE program in a rural island community, they found, like Chu et al., that community members had similar concerns with regards to student learning. Specifically, the community members were concerned that students were not being properly prepared for life outside of high school. Students, however, had been prepared with skills via PBE and environment-based education that provided them with a greater sense of place, identity, and relationship with community.

**Summary**

Kokotsaki et al. (2016) define PBL as “an active student-centered form of instruction which is characterized by students’ autonomy, constructive investigations, goal-setting, collaboration, communication and reflection within real-world practices” (p. 267). However, the role the teacher plays in creating PBL curriculum, which encourages the development of these skills, needs further exploration.

An analysis of the current literature allows for an understanding of the supporting and hindering factors as they relate to the “inside” and “outside” components of student-centered curriculum such as PBL. The literature tends to place a considerable amount of emphasis on the
“outside” factors influencing these curriculum frameworks, and even more so on the hindrances. The emphasis on and the space provided in the current literature to the “outside” hindering factors may be understandable given the two decades’ worth of increased standardization of education, but not necessarily excusable. Slattery (2013), a post-modernist curriculum scholar, provides a brief discussion of the duality that exists in every aspect of life, including curriculum development. As time and energy, or in this case research, is devoted to a specific topic, an infinite number of other topics are ignored. This duality exists in the current literature. As the current literature tends to focus on the “outside” factors, the “inside” factors become somewhat neglected.

The concept of teacher voice is largely void in the current literature regarding PBL. More specifically, teacher voice exists minimally as it relates to the topics of PD, resources, leadership, collaboration, and perceptions. As teachers continue to work and even implement student-centered curriculums such as PBL, the supports and challenges they experience doing so need to be better documented. Teachers have been the afterthought of the years’ worth of educational reform. Teachers are treated more as objects of the reform as opposed to an active, vocal participant of the reform itself (Hargreaves & Shirley, 2011). In general, if teachers are expected to teach in a world defined by 20 years’ worth of reform policies, fulfill standards, and provide data to support their efforts, their voices should be more intimately intertwined in the overall process. In a similar vein, as teachers experiment with and implement PBL and other progressive, student-centered frameworks, their voices should be considered as a factor shaping the success of the program in every way. For example, as teachers investigate standards-based grading and develop a grading practice, it is important that they are a part of the process as opposed to having a grading system imposed upon them (Nagel, 2015).
As long as teachers remain absent from the reform policy, conversations and other significant decision-making processes that directly impact their ability to teach will keep them frustrated and resistant to change. A recent study of Nigerian science teachers provides an illustration concerning the lack of teacher voice. Oloruntegbe (2011) researched Nigerian science teachers’ involvement in creating, implementing, and refining curriculum and found that teachers “often show resistance and lack of commitment to implementation of curriculum reforms because they are seldom involved in the development and even how to best implement them” (p. 443). Oloruntegbe provides a simple solution: include the teacher voice. More specifically, the author “recommended an adoption of a grass root approach to curriculum development involving all stakeholders including teachers who would implement the curriculum in the long run” (p. 443).

Continuing with the Rip Van Winkle analogy, if he had fallen asleep 150 years ago and had just woken up, he would note the incredible amount of political, economic, and social change that had occurred, but if he were to look at the education system, he would likely note that not a lot has changed in regards to how teachers teach and how students learn. The point is that if the collective “we” are serious about reform policies, standardization of education, curriculum creation and implementation, creating equitable access for all students to learn and grow or any other number of issues regarding education, the role and voice of the teacher must be included more consistently and more meaningfully.
CHAPTER THREE

METHODS

This is a qualitative study comprised of four case studies. The study explored how four veteran middle school teachers created a PBL curriculum. The study also explored the supports and hindrances related to curriculum development. The four research participants are veteran teachers within the one medium-sized school district. To preserve the anonymity of the school district, it will be referred to as the Gibbon School District (GSD). Coincidentally, each teacher has only taught in the GSD and were selected to be the first teachers of the PBL school. The purpose of this study was to gain an understanding of how teachers construct knowledge as they create the PBL curriculum. This study was co-constructive in nature as knowledge was constructed with the research participants as the first-year phenomena of creating a PBL curriculum was explored. The findings of this study may provide district leaders an understanding of the complex nature of PBL curriculum development. Furthermore, district leaders may consider increasing support and addressing hindrances as the staff grows and continues to create PBL curriculum.

This chapter explains the steps taken to collect, analyze the data, and present the findings. This chapter specifically presents the attributes of a qualitative study, the research context, participants, researcher positionality, research design, data collection and analysis, validity and trustworthiness, and limitations.
A Qualitative Study

This qualitative case study explored the journey of four veteran middle school teachers as they developed a new PBL curriculum. These four teachers were the first PBL teachers in the GSD. As the GSD and PBL programs continue to grow, more teachers will need to be hired. This study provides a road map for district leaders as they expand and continue to support teachers and the PBL program. Furthermore, it may provide insight with regards to decreasing specific hindrances experienced by four veteran teachers as they create PBL curriculum during the first year of the program.

A qualitative methodology aligned well to the purpose of this study. The overall strengths of qualitative data include the ability to collect data in a natural setting over a period of time (Miles, Huberman, & Saldana, 2014). Qualitative research also allows for data presentation of the complex nature of relationships and understanding via thick descriptions (Geertz, 1973). Qualitative research allows the researcher to understand what is going on as employed methods assess causation and encourage flexibility (Miles, et al., 2014). Member checks were employed, which created the opportunity to co-construct meaning with each of the four teachers throughout the study, and resulted in a deeper understanding of what was going on.

This qualitative study was defined by four case studies conducted throughout the 2016-17 school year. The concept of a case study has been well defined over the years (Bogdan & Biklen, 2007; Creswell, 2007; Merriam, 2009; Patton, 2002; Stake, 2005). The case study method encouraged a detailed examination of the experiences of the four participants, and the data was presented with thick descriptions. Merriam (2009) defines thick description as “a term from anthropology and means the complete, literal description of the incident or entity being investigated” (p. 43). Furthermore, the knowledge gained from case studies according to
Merriam (2009) referencing Stake (1981) “is different from other research knowledge in four important ways. Case study knowledge is:"

- More concrete - case study knowledge resonates with our own experience because it is more vivid, concrete, and sensory than abstract.
- More contextual - our experiences are rooted in context, as is knowledge in case studies. This knowledge is distinguishable from the abstract, formal knowledge derived from other research designs.
- More developed by reader interpretation - readers bring to a case study their own experience and understanding, which lead to generalizations when new data for the case are added to old data. (Stake considers these generalizations to be “part of the knowledge produced by case studies” [p. 36].)
- Based more on reference populations determined by the reader - in generalizing as described above, readers have some population in mind. Thus, unlike traditional research, the reader participates in extending generalization to reference populations (pp. 35-36).

The consistent observations, collecting of artifacts, interviewing, reflecting, analyzing, and member checking defined the case studies over time to be more concrete, rich with context, interpretative, and relatable.

**Research Context**

During the last three decades, the community in which the school resides has experienced significant growth, increasing from 6000 residents to nearly 24,000, resulting in the building of several new schools and other facilities. The school district developed a mission to “see and serve” all students, recognizing that not all students learned the same way. The PBL school was an attempt to “see and serve” students who may learn best via hands-on projects.

This study took place in a West Coast school district that employs around 400 staff members and serves around 8000 students. As mentioned, the GSD experienced significant growth over the last two decades. This growth led to the building of several new schools. For example, the growing population of the high school, nearly 1000 additional students over the
past decade, influenced the development of several smaller high schools and include a STEM-based program, an arts-based program, and a smaller career and technical education based high school. The development of these programs may have influenced the district’s mission to ‘see and serve’ all students. The PBL school is the most recent attempt by the GSD to not only ‘see and serve’ all students but to address the pressures of growth.

The GSD experienced a relatively high socio-economic status (SES) with a free and reduced (F&R) rate that has only fluctuated 1% over the last decade between 15% and 16%. This low number becomes more meaningful when compared to neighboring districts who experience between 50 - 80% F&R. The GSD is situated in an area that has been shaped by high technology-based industries which may have led to wealthier families moving into the district and changing the demographics of the school and community. As a result of this growth, in 2015, teachers, community members, district leaders, and architects began discussing the need for an additional high school; however, as a building and plot of land became available, the district purchased both and decided to open a PBL middle school in the fall of 2016, well ahead of schedule.

**Research Participants**

All research participants have taught only within GSD their entire careers. In this study, each participant also reflected on memories of an impactful middle school teacher or middle school experience which ultimately placed them on a path to becoming a middle school teacher. In addition, at some point in their career, they had taken on other leadership roles such as curriculum adoption and/or Teacher On Special Assignment (TOSA) positions, working with teachers throughout the district. To preserve the anonymity of the GSD teachers, they will be referred to as Lennox, Tatum, Linden, and Rowan.
Lennox, Tatum, Linden, and Rowan were selected from a pool of over 400 teachers within the GSD to be the first PBL teachers within the district. All four are veteran teachers with reputations for creating engaging curriculum. For example, Rowan consistently challenged his students to consider the role of the environment and their actions within it, while Tatum encouraged students to learn via dance and other innovative approaches. The selection of these four teachers on behalf of district and building leaders was intentional. As a result, participant selection for this study is a convenience sample. Participant selection was also “geographically and immediately” close as the researcher teaches in the GSD and did not have the ability (time, funding, etc.) to conduct a similar study elsewhere (Miles et al., 2014). The unique experiences and veteran status of Lennox, Tatum, Linden, and Rowan shaped their approach to PBL curriculum development, along with their views of supports and hindrances which will be discussed later.

**Researcher’s Positionality**

To better understand the strengths and limitations of this study, it is necessary to provide an overview of the researcher’s position to promote transparency and address biases. In regards to the positionality of the researcher, Merriam (2009) finds,

Because human beings are the primary instrument of data collection and analysis of qualitative research interpretations of reality are accessed directly through their observations and interviews. We are thus “closer” to reality than if a data collection instrument had been interjected between us and the participants (p. 214).

This closeness can be a strength as it could provide a unique perspective not obtainable by other researchers. However, this closeness may also be problematic as it could, for
example, skew the study. Measures were taken to address the closeness which are discussed in the following sections. The following paragraphs provide a brief perspective of the researcher’s thoughts as they relate to his education and hopes as a teacher. The goal is to establish a level of transparency and a lens to more clearly define the positionality of the researcher.

For over 30 years, the researcher has been a student and a teacher within the education system, which has been a mostly traditional experience with progressive and critical pedagogical moments. The researcher marched through college and ultimately earned a Master’s of Education. However, during the graduate program, the researcher became enamored with critical pedagogists such as bell hooks, Paulo Freire and Peter McLaren, who ignited his fire and enthusiasm for education. During the early years of his teaching career, the researcher believed, albeit naively, that a powerful, freedom/liberation-based pedagogy could inspire the next revolution and that his students would rise, throw off the chains of capitalism, jump off the conveyor belt of mediocrity, and be the change. However, the researcher’s passion did not match the needs of his students, colleagues, and school and to fit into the culture during the first few years, he needed to tone down his expectations.

The researcher treaded water his first few years, focusing mainly on creating history curriculum. After a few years of teaching, the researcher was then obligated to begin a state or national certification program. He chose and completed the requirements for becoming a Nationally Board Certified Teacher. The passion and the fire that had been stoked by the critical pedagogists, however, was fading away. It was during his seventh or eighth year of teaching that he decided to pursue a doctorate of education in hopes of rekindling his fire. As a result, the researcher’s passion for teaching and education was reignited. The researcher began approaching
his curriculum differently. His curriculum began taking on a different shape, emphasizing critical thinking skills and ‘how to think’ versus what to think. As a result, the researcher witnessed students become less passive and more active in their education.

The change in the researcher’s approach to teaching and learning coincided with the district consideration of establishing a PBL school. PBL places a great deal of emphasis on shaping critical thinking skill among students which was attractive to the researcher. The district began exploring opportunities to establish a PBL school in 2015. The school opened during the Fall of 2016 and began as a 6th and 7th grade-based middle school. The PBL middle school influenced the building of the high school, which the researcher will be transferring to in the Fall of 2018. The potential for bias in this study is significant, and concerns regarding validity and reliability will be thoroughly addressed.

The researcher has taught for 12 years and is currently teaching in the GSD. As a result, this study may be skewed for a few reasons. First, the researcher may paint a more positive picture compared to an outside researcher because he wants the school to do well. Second, the researcher will be teaching at the PBL high school, and is a teacher within the GSD, interviewing other teachers. Third, the researcher has team-taught a PBL summer camp with the four participants in this study, and has developed a comfortable and collegial relationship with each of them. However, the researcher’s relationship to the GSD also presents a unique opportunity to dig more deeply into the research questions and perhaps more so than that of an outside researcher. The validity and reliability of this study is partly defined by acknowledging bias. Employing the practices of triangulation, member checks, and reflexive writing, for example, will further promote the validity and reliability. This will be addressed in the following sections.
Research Design

This study sought to understand how teachers construct meaning as they create PBL curriculum. More specifically, this study explored the co-construction of knowledge during the curriculum-making process along with the related supports and hindrances. The research questions were: How do veteran teachers construct knowledge as they create the PBL curriculum? How do supports and hindrances they encounter, interpret, and/or define, shape the PBL curriculum they create? Merriam (2009) discusses the construction of meaning as a broad goal of qualitative research to simply “understand how people make sense of their lives and their experiences” (p. 23). Co-constructing knowledge encouraged the acknowledgement and bracketing in of the researcher’s biases as a teacher who has experienced the challenges of creating curriculum and who also has a progressive and critical point of view. The researcher’s role as researcher and co-constructor of knowledge allowed him to critically consider his assumptions and suspend the preconceived notions he had related to curriculum development, as much as he could, during the analysis of collected data.

The research and collection of data took place over the course of the 2016-17 school year. Throughout the school year, interviews and observations were conducted and artifacts were collected. Interviews defined most of the data collected. Each of the four teachers was interviewed three times over the course of the 2016-17 school year. The purpose of interviewing the teachers at three different points of the year was to identify patterns in their experiences when creating the PBL curriculum. It can be assumed that specific supports and hindrances will exist with the establishment of any new program and therefore, would be worth exploring as the district continues to grow. However, member checks and reflective journaling were also components of the research and data collection process and will be discussed later.
Research was conducted and data was collected near the beginning, middle, and towards the end of the 2016-17 school year. The following is a timeline of the three stages of data collection:

- **October - November 2016**
  - Observations (four hours)
  - Artifact collecting (pictures and open-house pamphlets)
  - Interviews (four hours)
  - Transcribing and coding
  - Reflective journaling
  - Member check (sharing transcriptions and codes) and second interview protocol development via email

- **January - March 2017**
  - Observations (four hours)
  - Artifact collecting (pictures - how the brain works, student notebooks)
  - Interviews (four hours)
  - Transcribing and coding
  - Reflective journaling
  - Member check (sharing transcriptions, codes) and third interview protocol development via email

- **May - June 2017**
  - Observations (four hours)
  - Artifact collecting (pictures - outdoor learning area, butterfly garden)
  - Final interviews (four hours)
  - Transcribing and coding
  - Reflective journaling
  - Final member check (sharing transcriptions and codes) via email

Insight regarding PBL curriculum development and the supports and hindrances encountered, interpreted, and defined by four veteran teachers of the GSD may be useful to administrators, district leaders, and neighboring school districts interested in establishing a PBL program.

**Instrument Design**

The approach to developing interview protocols and collecting data exists between a tight and loose design (Miles et al., 2014). The interview protocols provide the best example of a loose and tight design. The purpose of this study was to gain an understanding of how teachers
create PBL curriculum along with the supports and hindrances they experience while doing so. The research questions were consistently included when developing interview protocols. However, as teachers reflected on personal and professional experiences related to creating curriculum, as well as supports and hindrances, the interviews became somewhat loose, allowing for the addition of probing questions. The loose design was also complemented by the fact that this study was comprised of four case studies where the researcher and research participant co-constructed knowledge. As a result of co-constructing knowledge, findings emerged differently for each case study—findings which would have been hindered if a tight instrument design was used.

The process of creating interview protocols, conducting and transcribing the interviews, along with the open-coding process, member checking, and reflective journaling provides a brief overview of how knowledge was co-constructed throughout the study. The first interview protocol, for instance, was anchored with the specific research questions (Appendix A). However, being the first interview, it seemed necessary to gain an understanding of who the teachers were as students and how they experienced learning. Their shared experiences as students and learners, for example, allowed the researcher and participant to more effectively construct meaning throughout the study. Findings emerged because of the transcribing and open-coding process. The transcription and codes were shared with the teacher in the form of a member check, which provided them an opportunity to add to, clarify, or reject early findings. This process also allowed the researcher and participant to co-construct knowledge. This process informed and shaped future interview protocols of each teacher. The interview protocols were also shared with each teacher prior to the interview, allowing for them to once again add to, clarify, or reject questions or topics, which again allowed the researcher and participant to further
co-construct knowledge. The first interview influenced the second interview, which influenced the third interview, and which were all unique to the participant except for the research study questions. Throughout the study, findings emerged and themes appeared to address the research questions: How do veteran teachers construct knowledge as they create the PBL curriculum? How do supports and hindrances they encounter, interpret, and/or define, shape the PBL curriculum they create?

**Data Collection**

Data was collected in three primary ways: observations, artifact collection, and interviews. Data was also derived from interview transcriptions, coding, reflective journaling and member checks, which influenced the creation of interview protocols and the overall construction of knowledge as it relates to PBL curriculum development.

**Observations.** Merriam (2009) presents the idea of an observer as a collaborative partner, one who is equal partners with the research participants. The researcher found himself to be equal partners with the teachers as they constructed knowledge together. The researcher conducted a total of 12 one-hour observations of each teacher as they worked with their students. The observations also took place prior to the interviews. The observations allowed for a deeper understanding of the interview transcriptions and the collected artifacts. For example, Rowan and Tatum, during the interviews, discussed creating PBL curriculum and their desire to teach outside of the classroom. They presented the idea of a garden or outdoor learning area that would be ready by the end of the school year. The interviews provided information about their grand visions, which encouraged the researcher to draft the following few questions for the final observations: What would these gardens look like? Where would they find the resources to fulfill their visions?
The interview data was compared with the observations. Rowan and his students scaled their school garden down to a butterfly garden. Tatum settled for donated tires and logs which were both repurposed into outdoor seating. Even though Rowan and Tatum may have been underwhelmed by their accomplishments, the PBL curriculum they created encouraged students to consider the environment.

Artifacts. Most of the artifacts collected were photographs; however, pamphlets and other informational texts regarding PBL curriculum development were also collected. The researcher took photographs of student projects as he conducted observations. These photographs provide further evidence regarding the process of creating the PBL curriculum. Merriam (2009), citing Bogdan and Biklen (2007), regard photographs as a “means of remembering and studying detail that might be overlooked if a photographic image were not available for reflection” (p. 146). A few example photographs are provided in the data analysis below.

Interviews. Interviews comprised most of the data collected. Interviewing allowed for the participants to illustrate their journey in a powerful and highly unique fashion, which yielded richer, more meaningful data than, for example, observations and artifacts.

The interviews were semi-structured, allowing for a natural conversational style. The semi-structured interviews allowed for all the participants (including the participation of the researcher as a researcher and co-constructor of knowledge) to tell their stories and share their experiences in detail. According to Merriam (2009), the “less structure formats assume that the individual respondents define their world in more unique ways” (p. 90). The semi-structured interview format also afforded the opportunity to ask follow-up and probing questions, as well as helped gain further insight into a specific topic or theme that had been identified in previous interviews (Merriam, 2009). For example, as Rowan discussed a learning experience as a sixth-
grade student in a rural area, the researcher was able to ask probing questions, which afforded him the opportunity to elaborate on specific topics, such as the environment or role of mentors. This also allowed the researcher and participants to co-construct knowledge, and in this case, related to the environment.

The semi-structured interview model also influenced the development of future interview protocols. Continuing with the example mentioned above, the second interview with Rowan allowed for a conversation related to influences, which helped shape his teaching style. As Rowan’s sixth grade teacher emphasized the importance of the community and environment in her curriculum, the connection between Rowan’s experience as a student and the inclusion of community and environment he incorporates into the PBL curriculum he creates, was made. For example, Rowan hoped to have students design and create a school garden which would include the community and environment.

The researcher developed semi-structured interview protocols that consisted of open-ended questions related to the participants’ experiences as students, teachers, and creators of a PBL curriculum. These questions allowed for the participants to respond in a variety of ways and share their personal and professional experiences. The first round of interviews consisted of around ten questions. As findings emerged from the first interview, they were shared with the teacher in the form of a member check to further co-construct knowledge. Specifically, each interview was transcribed. The transcriptions were open-coded. The open-coding process was simply “having a conversation with the data, asking questions of it, making comments to it and so on” (Merriam, 2009). This “conversation” encouraged the jotting of notes in the margins which were simple as one word or short phrases. The open-coding process allowed for the early creation of categories, which influenced the development of interview protocols. The findings
from the first interview, member checks, and the researcher’s reflective journaling influenced the development of the second interview protocol (which was also member checked prior to the interview) and which would, in the same fashion as the first interview, shape the third and final interview.

**Reflective journaling.** After each round of observations, artifact collecting, and interviewing had taken place, the researcher reflected on the events. The practice of reflective writing and more specifically, reflexive writing, allowed the researcher to better understand and articulate his “biases, dispositions, and assumptions regarding the research” (Merriam, 2009). The process of reflexive writing allows the reader to better understand the researcher’s positionality as they consider the conclusions of this study. Reflective journaling allowed the researcher to consider and address his bias as a teacher within the GSD who has experienced the process of creating curriculum and who has also been supported and hindered by the district. The practice of reflective journaling also supported the researcher’s ability to participate and contribute in a more meaningful way as the researcher and participants co-constructed knowledge regarding PBL curriculum development.

**Member checks.** Member checks are a common way to ensure internal validity of a study (Merriam, 2009). Member checks are one method the researcher employed to consistently share his findings with each research participant. This process further encouraged the researcher and participant to construct meaning together. For example, member checks provided an opportunity for each teacher to agree, disagree, and provide clarification to a particular finding (or findings) that emerged from observations, artifacts, or interviews. Member checks also allowed the researcher to further understand, consider, and share his biases and misunderstandings throughout the study. This process of member checking was implemented
after each interview had been transcribed and open-coded and again, as the interview protocols were developed.

**Data Analysis**

This qualitative study consisted of four case studies and allowed for the participants to ‘tell their story’ throughout the school year. This study attempted to understand, via the qualitative methods of observing, artifact collecting, interviewing, reflecting, and analysis, of “how people interpret their experiences, how they construct their worlds, and what meaning they attribute to their experiences” (Merriam, 2009).

**Observations.** The researcher took observational notes of the teachers as they worked with their students. The observations allowed the researcher to make better connections with topics discussed in the interviews. For instance, Tatum discussed the consistent challenges of creating curriculum with limited resources; however, her ability to overcome these challenges was also consistent. The researcher observed Tatum’s resourcefulness on several occasions. For example, Tatum collaborated with students, colleagues, and community members to establish a mud room where students could exchange their shoes for rain boots and other gear necessary for keeping their school clothes in good condition and for venturing outside into the elements. Tatum created, again in collaboration with students, colleagues, and community members, an outdoor learning area with donated tires, which had been repurposed as chairs. The observations either confirmed or contradicted findings from the interviews. It would appear that access to resources did not hinder Tatum’s ability to create the PBL curriculum, but became a component of the curriculum.

**Artifacts.** I took pictures of student work throughout the year and as it was displayed. These pictures highlight and push back on the challenges Tatum consistently discussed in the
interviews of struggling to create the PBL curriculum due to limited resources. As Tatum and the researcher co-constructed knowledge, they considered the role resources played in the creation of the PBL curriculum. They found that the school and/or district did not consistently provide tangible resources for creating and implementing PBL curriculum. Although the consistent lack of resources presented challenges throughout the year, material support from the school and district, which was minimal, wasn’t that necessary (although it would have been welcomed) in creating the PBL curriculum. These artifacts are samples of the implemented PBL curriculum, and although the researcher does not intend for these artifacts to verify the supports and hindrances experienced by Tatum as she created the curriculum, they provide a basis for the researcher to discuss and articulate his perception of how resources and resourcefulness relate to the creation of a PBL curriculum. As students considered how to create an outdoor learning area with limited resources, they decided to repurpose donated tires and logs from the property into chairs and games. (Figures 3.1 & 3.2)

Figure 3.1 Tires Repurposed As Chairs
Interviews. The interviews make up most of the data collected. Each interview was transcribed, read, and re-read. During the initial reading, the open-coding method was employed as notes were taken in the margin. The open-coding process, category creation, and member check shaped subsequent interview protocols. This process of open-coding, category creation, and member checking was repeated two more times. Towards the end of the study, after the interviews, transcriptions, coding, member checks, reflective journaling, and analysis, overarching themes emerged as findings of the study.

During the first interview, the researcher asked Rowan to provide an overview of himself, where he was from and how he had experienced education. As Rowan began to open up, he discussed the impact of his mother leaving him and his father. He recalled how his father never made a disparaging remark about his mother despite her leaving and instead, emphasized the importance of treating people well and doing good. Rowan also discussed the role church had early in his life, which had shaped his father’s morals and to a degree, Rowan’s positive outlook early in his life. It was at this point, during the open-coding phase, that the researcher jotted
down a few notes related to influences and mentors. Rowan was influenced by his mother’s departure, his father’s response, and the church.

After the first interview transcription, Rowan discussed the impact his sixth-grade teacher made on him. Rowan recalled walking down to the assisted living facility with his class each Friday and interacting with the elderly. One day, they played a version of “The Price is Right” and Rowan was the host. Reflecting on this, Rowan recalled how significant it was for his teacher to get the class out of the classroom and involved in the community. The same teacher established a recycling program, which Rowan recalled years later to be significant for a small, rural community to consider their role in relation to the environment. Rowan reflected on the impact and influence of his teacher, and mentioned how the recycling bin he created all those years ago is still being used.

The researcher transcribed and open-coded the first interview, and shared the codes with Rowan in the form of a member check. As Rowan and the researcher discussed the open-codes and constructed knowledge together, the category of influence emerged. The influence of Rowan’s sixth-grade teacher along with the influence of the community and environment have been consistently incorporated into the PBL curriculum he creates. The category of influence was one of many revealed during the first interview with Rowan, which shaped the second interview protocol where Rowan and the researcher would delve deeper into this idea. Across three interviews, Rowan and the researcher would continue to explore and interpret their experiences and construct meaning.

The umbrella themes of supports and hindrances also provided a sort of “catch all” for teacher experiences. For example, Rowan experienced a plethora of support, even among some challenging moments, as a son and student, which shaped his ability or need to incorporate the
community and environment into the PBL curriculum he created in a loving, caring way. Rowan discussed his ambitions for his students to establish a school and community garden, which tie into the community, environment, and the influence of his experience as sixth-grade student.

Rowan hoped to make a similar impact on his students the way his teacher made on him. These categories defined the themes and findings of the study. Table 1 provides a sample of this process taken from the first interview with Rowan:

Table 1

*Pattern Codes from Round 1 Data Collection*

<table>
<thead>
<tr>
<th>Interview Dialogue</th>
<th>Codes</th>
<th>Category Construction</th>
</tr>
</thead>
<tbody>
<tr>
<td>-And we would spend our morning just talking to the elderly that were there and at one point in the year we to the entire prices right where we created all the different games and I played Bob Barker. We had all the elderly kind of come down and join us. And I think back to like you know 1993 being in her class and realizing like a lot of the things that I bring with me as a teacher really started then was a commitment to a connection to community…</td>
<td>Senior Citizens Engaged Participatory Inspired Reflective Dignity &amp; Respect Elements of a community</td>
<td>Community</td>
</tr>
<tr>
<td>-Building like dignity and respect within our classroom and that’s important to teach kids to get along with each other and to respect people...</td>
<td>Impactful Colleagues Encouragement Changing &amp; Adapting Planning Vision</td>
<td>Influence Mentors Flexibility Open-mindedness Goal oriented</td>
</tr>
<tr>
<td>-I remember... the principal... when I first started teaching... one of the things that she told me that always stuck with me is that don’t write down your lessons every day because they’ll change next year and that’s a sign of a good teacher, that you know are always changing and adapting and recognizing that every year is different.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>-He’s also a teacher, he’s years older than me so he’s kind of like an older brother. Right before I went to graduate school, he, like, mentioned to me, like, this idea of backwards design and the</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
idea of scaffolding and, like, having not been in education those are like my two first introduction points to what teachers do. And so, when I look at what is a facilitator it’s for me I know when I’m teaching... well, I have a long-term vision in my mind and I am making my actions on the day to day...

<table>
<thead>
<tr>
<th></th>
<th>Support</th>
<th>Influential</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Recycling</td>
<td>New process</td>
</tr>
<tr>
<td></td>
<td>Community</td>
<td>Simple resources</td>
</tr>
<tr>
<td></td>
<td>Longevity</td>
<td>Meaningful</td>
</tr>
<tr>
<td></td>
<td>Environment</td>
<td></td>
</tr>
</tbody>
</table>

- When I was in sixth grade, the teacher that I talked about before the year before us she and her sixth-grade class actually started the recycling program in this little town... Like they found a space. It became a program that was self-sustaining. And then when I was in her class, we created our own recycling boxes to take home. And my dad never recycled before. And when I graduated high school that stupid cardboard box with construction paper falling off it was still there and, like, to this day, my parents still have that recycling bin.

**Reflective journaling.** Another step the researcher took during the coding and member-checking process was taking analytical memos. As the transcriptions were read and re-read, the researcher not only made notes in the margins, but kept another set of more in-depth notes or memos. These notes and memos became reflective and reflexive responses. The researcher drafted his reflections of all three interview transcriptions for each research participant. The reflections ranged between 15 - 20 pages per research participant (Appendix B). These reflections provided 58 pages of interview analysis, providing the basis for a deeper understanding of all 12 interviews. When Tatum, for instance, consistently discussed the lack of resources as being a major hindrance in her ability to create curriculum, the researcher reflected on why this appeared as a significant theme for her and a less significant theme for the other teachers. The researcher found that Rowan rationalized the lack of resources due to the nature of PBL being a new program and that he felt others, possibly Tatum, would excuse him from
sharing his concerns as they were more vocal. Reflective journaling allowed the researcher to reconsider Tatum and Rowan’s concerns for resources in a way unique to them. Reflective journaling, along with the open-coding process, category creation, and member checks helped to reveal the themes and findings of the overall study.

**Member checks.** The open-coding process, the categories, and the emerging themes were consistently shared with each research participants as a member check. Member checks “are a common strategy for ensuring for internal validity or credibility” (Merriam, 2009). Member checks provided transparency between the researcher and research participant by creating an opportunity for further clarification. This process also influenced future interview protocols. For example, as the researcher recognized and shared the categories of environment and mentors with Rowan, it was decided that these topics would shape the second interview. Table 2 provides a sample of this process taken from the first interview with Rowan and Tatum.

Table 2

<table>
<thead>
<tr>
<th>Name</th>
<th>Comments</th>
<th>Action Taken</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rowan</td>
<td>Never really thought of people like his dad, uncle, teacher, a few colleagues, church as influencing because influencing can have a negative connotation too. Mentors serve as role models in a positive fashion.</td>
<td>Avoid the term influential and consider mentor instead. Mentors influence but tend to have a lasting impact. Discuss the role of mentors in the next interview.</td>
</tr>
<tr>
<td>Tatum</td>
<td>Didn’t agree with the term rebellious to describe her approach to teaching and learning, granted instilling these qualities can promote critical thinking skills but as far as being a rogue or rebellious teacher, this is not a fair assessment. Tatum partly approaches teaching and learning in a manner that was shaped by her views of being a “cog” in the system.</td>
<td>Consider highlighting how a few struggles have allowed her to let go of certain expectations and experiment with curriculum, weaving dance and drama into student learning. Furthermore, discuss the role of song, dance drama, etc. and how it is connected to student learning in the next interview.</td>
</tr>
</tbody>
</table>
Validity and Trustworthiness

This study, and qualitative research in general, has strengths and weaknesses. One of the many strengths of qualitative research is that it allows the research participant to tell their story in a deep and meaningful manner. Qualitative research allows the researcher to ask follow-up, probing questions to further explore ideas as they are discussed. The researcher is the primary data collection instrument, and is “closer” to the reality (i.e., the researcher is a veteran teacher within the GSD), and because he is “closer”, the internal validity of the study becomes a strength (Merriam, 2009). A district leader would have collected different data simply because of the dynamic between the researcher (i.e., principal) and the research participants (i.e., teachers). The researcher’s “closeness” is a benefit as this study could influence district and building leaders to continue to provide and expand support and work to address the hindrances for teachers as they create the PBL curriculum. However, reality can never be presented and therefore, validity exists as more of a goal than a product (Merriam, 2009. This study is not the exception, the analysis of data, the thick descriptive writing, reflexive and reflective journaling, along with member checks promote the overall validity and trustworthiness of the study.

In the interest of validity and trustworthiness, it is necessary to acknowledge that the researcher has been a teacher within GSD for 12 years. During this time, the researcher has formed collegial relationships with district leaders and teachers, and has witnessed the successful and challenging growth of the district. Given the researcher’s interest in progressivist and constructivist learning frameworks, he was happy to learn the district initiative and intention to establish a PBL school. Therefore, the researcher is biased because he wants the school to succeed and grow, and wants the teachers to have the support the district can provide. The
The researcher also wants the hindrances shared by the research participants to be minimized and/or eliminated which the district can address.

The researcher addressed his bias during the study in a few ways. First, he acknowledged his bias by presenting it and elaborating on it. Second, he used member checks throughout the course of the study. Member checks encouraged the co-construction of knowledge and assisted the researcher in avoiding assumptions. Instead of assuming certain findings related to the coding practices, for example, the researcher would share his findings with the research participant. Furthermore, the researcher would share transcriptions along with notes and thoughts related to future questions, providing an opportunity for the teacher to add to and/or clarify any findings. Lastly, the researcher kept a reflexive and reflective journal, which allowed him to step outside of his own biases, as much as he could, and reflect on how they may have influenced the study. Reflexive and reflective journaling encouraged the researcher to more fully recognize his position as a teacher interviewing other teachers.

Several opinions exist on the topic of validity and reliability. Lincoln and Guba (1985) simply ask the question: Are the findings credible given the data presented? However, this study aligns best with Wolcott’s (1994) “absurdity of validity”, and the goal of this study is to simply seek out “something else” (Merriam, 2009). The “something else” in this study is to gain a better understanding of how teachers create a PBL curriculum, and understand the supports and hindrances they encounter along the way.

**Study Limitations**

As a teacher within the district researching how teachers develop curriculum and experience supports and hindrances—things he has experienced first-hand—the researcher’s perspective becomes skewed.
The researcher would also like the district to experience the successful implementation of new programs throughout the district as it continues to grow. However, this perspective may be beneficial as the researcher can interpret and analyze the experiences of his fellow colleagues and provide a point of view only obtainable by a teacher. The insight and analysis of how teachers create a PBL curriculum and experience supports and hindrances may be conveyed in a more honest fashion from teacher to teacher. These findings could influence the development, implementation, and direction of future district programs. The findings may also provide insight that could be useful for neighboring district interested in establishing similar programs.
CHAPTER FOUR

FINDINGS

The purpose of this study was to explore and co-construct knowledge with four veteran middle school teachers new to PBL as they created the PBL curriculum during their first year as teachers of PBL. Furthermore, the purpose of this study was to explore and co-construct knowledge as they encountered supports and hindrances as they created PBL curriculum. While the study explored the journey of each teacher, their personal and professional experiences were also shared. The purpose of exploring their personal and professional experiences was to hopefully gain a better, more developed understanding of how each teacher constructed knowledge as they created the PBL curriculum. Knowledge regarding their personal and professional experiences also afforded the researcher the opportunity to co-construct knowledge more meaningfully and as it related to creating PBL curriculum.

During the last 20 years, the community has experienced significant economic diversification, influencing its demographics. As a result of economic and demographic diversification, the school district has begun to diversify its approaches to teaching and learning. For nearly a century, the community was based on one industry, and as this industry struggled to survive, community leaders worked to diversify the local economy, which attracted several technology-based industries to the area. To illustrate this rapid growth, there were nearly 7,000 residents in 1990, whereas in 2016, there were 23,000. The GSD has reflected this change by adding several elementary schools over the last decade to accommodate the growth.

Recently, the GSD adopted the mission to “see and serve” all students, and to fulfill this mission, explored non-traditional teaching and learning frameworks, which included PBL. A
team of students, teachers, district leaders, and community members was assembled to discuss PBL, begin the design process of a new PBL middle school, and identify teachers within the district to teach at the new school. Planning began during the 2015-16 school year and towards the end of the year, a building, along with a large piece of land, was acquired from one of the neighboring high tech industries. The purchase of the building and land expedited the opening of the school by a year. The PBL school opened in the fall of 2016. The middle school consisted of a sixth and seventh grade class, and a total of 130 students and four teachers.

This study was co-constructive in nature and explored how teachers created PBL curriculum and encountered supports and hindrances during their first year as PBL teachers. The findings will be presented in four case studies and will include perspectives of the “inside” and “outside” classroom factors that helped shape their experience. For example, each teacher had “inside” characteristics defined by personal and professional knowledge unique to them that allowed them to be a dynamic teacher. However, when these “inside” characteristics clashed with “outside” factors, such as lack of professional development, their ability to create curriculum was hindered.

The conceptual framework (Figure 1) guided the review of the current literature and emphasized the “outside” characteristics of PBL, such as professional development, and Common Cores State Standards (CCSS), among other aspects.
This study explored the “inside” characteristics of four veteran teachers new to PBL, their personal experiences, teaching epistemologies (i.e., professional, pedagogical, and content knowledge), and their interactions with the “outside” characteristics and places, as well as the teacher and researcher in the center of PBL encouraging the co-creation of knowledge and as it relates to the creation of PBL curriculum (Figure 2). For example, all participants of this study had the same “inside” characteristics of only teaching within the GSD and all had veteran teaching status who chose to transition from a traditional middle school setting to a new progressive-based PBL framework.

Figure 1. Conceptual framework.
The current literature placed a considerable amount of research on the “outside” factors as opposed to the “inside” factors. For example, an “outside” factor contributed to the success or challenges experienced by PBL teachers and can be attributed to the providing of (or lack thereof) consistent and continuous professional development (Abrami et al., 2004; Blumenfeld et al., 1991; Fairbanks et al., 2010; Fallik et al., 2008; Han et al., 2015; Harris et al., 2015; Kilinç & Evans, 2013; Parker et al., 2013).

A lack of research regarding the “inside” personal and professional characteristics such as personal, and pedagogical and content knowledge was somewhat presented in the current literature but needs further exploration. Abrami et al. (2004) found that the lack of teacher motivation, an “inside” characteristic, may dissipate because of an “outside” force, such as professional development. Professional development may boost teacher confidence, and pedagogical and content knowledge, giving the teacher an increased sense of ownership of curriculum. Personal and professional knowledge have also been found to be an important

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**Figure 2.** Conceptual framework with Teacher and Researcher
“inside” characteristic of PBL teachers (Azano, 2011). A further exploration of “inside” characteristics could provide a better snapshot and/or understanding of a PBL teacher.

The following presents four case studies of veteran teachers as they developed PBL curriculum as first year teachers of PBL. As the following findings are presented, the first focus is on the creation of a PBL curriculum. The curriculum is then discussed within the context of the participants’ views of major influences of that curriculum, from both inside and outside the classroom. Lastly, how the teachers interpreted the “inside” and “outside” characteristics of supports and hindrances they experienced during their first year of teaching PBL is presented.

**Case Study - Rowan**

Rowan has taught language arts and social studies in the GSD for over a decade. During this time, Rowan has navigated around the district serving as a teacher and teacher on special assignment (TOSA). Rowan has successfully navigated between two middle schools and served as a district TOSA, providing resources and trainings for new and veteran teachers. Rowan is unique in that he has taught both students and teachers. Rowan was selected to be one of the four PBL teachers which, he expressed, allowed for continued personal and professional growth as a lifelong learner. Rowan had high expectations of dramatic, extravagant project creation, which over the course of the year, were consistently scaled back largely due to “outside” factors and a lack of resources.

Rowan’s skills as a teacher reflect his relationship to the community and environment. His ability to connect the school with the community reach back to his experience as a student. However, his vision of what could be has been somewhat hindered by a perceived lack of support during his first year as a PBL teacher. A lack of resources, from paper-clips to professional development trainings, has forced Rowan to become more resourceful. This need to
be resourceful is also defined by the “outside” challenges of establishing a new program and framework.

Community and environmental themes were consistently incorporated into the PBL curriculum Rowan created. For example, as his students learned about their community and environment, they celebrated both with a “Procession of the Species” parade which, highlighted the study of animals, the environment, Earth Day, and a specific environmentally-minded community member. Rowan’s ability to address the themes of community and environment were constantly supported and hindered by “inside” and “outside” characteristics related to curriculum development.

**Project-Based Learning Curriculum Creation**

The PBL curriculum Rowan created over the course of the year presented themes of community, environment, family, and mentors. The “Procession of the Species” unit exhibited these themes. Students researched and presented their findings related to an endangered species. His students also created a costume representing their species and organized a parade for the community. Rowan’s perception of this unit was to better connect his students with the community and the environment, whereas the researcher perceived the unit to also incorporate his personal and historical experiences. While the community is partly defined by an environmental activist, and Rowan’s curriculum highlighted and further connected his students to the community and environment, the researcher, however, perceived Rowan’s creation of the PBL curriculum as also having been supported and influenced by his past experiences. Rowan’s family and school experience instilled the values of community, environment, and respect, which were also encapsulated in the “Procession of the Species” curriculum.
Rowan also mentioned the role of mentors as being significant in his life, whereas the researcher perceived them as also being significant to the PBL curriculum he created. Rowan’s sixth-grade teacher, for instance, served as a mentor who consistently emphasized the importance of the community and environment in the curriculum she created. Rowan’s colleagues, serving as mentors, challenged him professionally and personally. Professionally, Rowan was challenged to consider the creation of the curriculum as an ongoing process, one which would never end, and to assume so was disrespectful to his future students. Students, he mentioned, are a component of the curriculum-making process. Personally, a colleague influenced Rowan to begin commuting to work by bike. Rowan perceived this as a challenge, if he was going to “talk the environmental talk” he had “better walk the environmental walk”, and so he began riding his bike to school. Lastly, his family—specifically his father—mentored and modeled the value of respecting others despite their views. The researcher perceived the role of mentors as significant to the PBL curriculum Rowan created. The “Procession of the Species” unit highlighted, on the one hand, the themes of community and environment, and on the other, the role of family and mentors. Rowan created the PBL curriculum in a respectful manner, a manner which allowed for student voice and choice. The following explores the themes of community, environment, family, and mentors, along with the perceptions Rowan and the researcher had as they related to creating the PBL curriculum.

**Community and environment.** Rowan discussed the impact his sixth-grade teacher made on him as a student. His teacher helped him make connections to the community and the environment. Rowan reflected fondly on the time he contacted his sixth-grade teacher, “I started off the year [first year teaching] actually emailing my sixth-grade teacher or sending her a message on Facebook and telling her that, ‘I’m finally teaching sixth grade and that this is what I
wanted to do since I was in your class.’” Rowan’s early experience as a student instilled in him the importance of the community and environment, themes which are found in the PBL curriculum he has created.

Rowan also recalled the connections to community his teacher made. Every Friday, his class would make the journey to the assisted living facility in their community, where they would entertain the residents by playing games with them, such as the “Price is Right” and where Rowan played the host. In his perception, this allowed him to grow and develop an appreciation for a group within the community that he may not have otherwise interacted with. Rowan reflected on the spark he experienced from his sixth-grade teacher, the spark which inspired him to become an educator:

As far as, like, being the spark for me as an educator, she was a teacher who every Friday, would go into the nursing home that was five, six blocks down in the town I grew up in, and we would spend our morning just talking to the elderly that were there, and at one point in the year, we performed an entire “Price is Right” where we created all the different games and I played Bob Barker. We had all the elderly kind of come down and join us.

Playing the role of Bob Barker and performing a game show allowed Rowan to develop a relationship with a group of community members that he may not have otherwise formed. This marginalized group of community members may have inspired Rowan, as a marginalized gay man, to create curriculum that is inclusive.

An inclusive curriculum provided opportunities for all community members to be involved and heard. The theme of community was consistently included in the PBL curriculum created by Rowan. Perhaps the themes of community and working together most notably
appeared as teachers and students problem-solved issues related to resources. For example, Rowan challenged students to build the resource of a library and did so by reminding them that this library would not be coming from the “top-down” (from the district), but from the “bottom-up” (from the students). This project included the voice of all students as they worked in small and large groups to brainstorm, problem-solve and ultimately, establish a library. The success of the library also depended on effective collaboration between the teacher and student, student and student, and the ability to reach out to family, community members, and other resources for book donations. By the end of the year, the students created a small but significant library within their school.

Rowan’s sixth-grade teacher also encouraged her students to consider the environment and their relationship to it. This was during a time when recycling services, especially in rural communities, was non-existent. Rowan’s teacher and his small class decided to do something about the lack of a recycling program by creating their own recycling bins. They were simple, decorated cardboard boxes that allowed for the easy separation of aluminum cans from the trash. Rowan was reminded of the impression his teacher made on him on his visits home when he would see the recycling bin he made still sitting in his parents’ garage. The theme of environment was consistently included in the PBL curriculum Rowan created. Throughout the year, Rowan’s PBL curriculum produced a butterfly garden, a “Procession of the Species” parade, and a project related to aquaponics, all which placed emphasis on the environment and students’ relationship to it.

**Family.** Rowan’s perception of his upbringing also influenced his approach to teaching and learning. When Rowan was young, his mother left, leaving his father to raise him alone. Rowan recalled the challenges his father faced but also observed how his father never made any
disparaging remarks regarding his mother. Rowan mentioned that his father led by example, which was set by the church they attended, to treat others as you hoped to be treated, and do “good works.” Rowan discussed the role the church played during his childhood:

I grew up in a Methodist Church. I’m not religious now, but Methodist teachings are about going out and doing social good, not about going out and imparting a view of Christianity on others, but going out and doing good works. So, to me, that’s a big part of my life as well. You go out and work for others, you go out and work to make the world a better place. So, I guess a big part of my upbringing was putting others before myself and working to lift others up.

Rowan’s father led by example of doing “good works”, and treated others with respect. Rowan reflected on his father’s strength of character as it related to Rowan’s mother leaving, as well as maintaining a familial community:

Never in my life have I heard my dad say anything negative about her, even though she made choices that should have hurt him. But, he never would let those emotions or feelings be manifested around me as a child. And then, even to this day, like, my dad’s mom and my mom’s parents live within a mile of each other and live within 15 minutes of where my dad lives. And when I come to town, my aunts and uncles on my mom’s side will come to my dad’s house. It feels like a picnic... they still have a relationship and a closeness and a sense of, like, family is still there. And every bit like a sense of respect. So, I guess the other thing I’ve learned from my dad is, like, when somebody does wrong, you forgive and you love.
Rowan’s personal experiences found their way into the PBL curriculum he created. The theme of community and more specifically, relationships, played a significant role in Rowan’s life (i.e., teachers, family, church); however, he has not always found other teachers to share the same appreciation; “When I look at, like, being a teacher in the classroom, one of the things that I find most difficult with other teachers that I’ve worked with here in the past are teachers who will immediately label a student and make no effort to build a relationship with them.” Rowan works, like his father, to build and maintain relationships as opposed to labeling a problem and creating a divide. To illustrate this idea of relationship-building, Rowan provided an example of a minor issue he had with a student who would not eat his lunch in an appropriate area, and how he used this as an opportunity for both to learn and build a relationship. They ate lunch together and discussed why certain rules had to be created. Here, Rowan discusses this “learning experience”:

So, like, for example, like, today I have a student who is involved in sixth-grade boy drama is what I would call it. And you know, that juvenile bullying and then kids just making dumb decisions. He is the reason we do not eat in this space, and he was eating in here yesterday. So, I came up to him as a natural consequence. Tomorrow you are going eat lunch with me. So, it was not so much a punishment but it was clear. We do not eat in here. This time you’re going to lose the privilege of going and eating lunches with your friends. So I came in today and sat down and had lunch with him and we watched YouTube videos together and just talked about what was going on with the other kids and how you can maybe step back when you know somebody is, like, poking all your buttons and go well,
what am I doing that’s poking their buttons? So, it was, like, trying to not make it a punishment but just like a learning experience.

Rowan perceived this natural consequence as a learning experience that perhaps strengthened the relationship he had with his student.

**Mentors.** Another characteristic that shaped Rowan’s approach to creating the PBL curriculum was mentors. Rowan’s sixth-grade teacher, his father, and church not only shaped his views of community, the environment, and how to treat people with respect regardless of the circumstances, they also served as powerful personal mentors. Professionally, Rowan experienced the mentorship of two colleagues, which further defined his ideas of community and environment. During his evaluation as a first-year teacher, Rowan reflected on not being able to complete his curriculum. His evaluator and mentor remarked that curriculum making is an ongoing process. This revelation allowed Rowan to consider his community of learners as he developed the curriculum. Rowan reflected on this evaluation:

And one of the things that she told me that always stuck with me is that I don’t write down your lessons every day because they’ll change next year and that’s a sign of a good teacher that you are always changing and adapting and recognizing that every year and every student is different. So, for me, that’s always kind of been a big part of my philosophy of teaching is, like, constant adaptation and just being prepared and knowing every group on many things.

To honor this theme of mentorship, Rowan recognized that his curriculum needed to stay incomplete. He also recognized the increased role technology played in the lives of his students. Thus, Rowan created the curriculum with his students to address their need for technology, and
they received a grant for the first classroom set of iPads in the district. In addition, their
continued work established the first classroom-based Wi-Fi network in the district.

A colleague and mentor also subtly inspired Rowan to consider the theme of environment
and commute to school by bike. Rowan recognized that if his colleague, mentor, and friend—
who happened to be around 15 years older than him—consistently biked to work, than he had no
excuse to at least try it as well. Rowan remarked on the mentorship of this colleague and his
decision to begin commuting to work by bike:

So, I do think that like it’s those subtle actions you know she influenced me to
start biking because I always said I can’t because... that’s too far. Then I found
out that she, who was I think turning 50 at the time took the bus from downtown
and biked home. I was like, oh, well, if she can do it I can do it. I just need
somebody to show me how. So, with her influence, she became kind of like a
mentor for me so that I could learn how to be safe.

Rowan also reflected on the impact of simply parking his bicycle in the classroom and
the conversation he had with his students about transportation. Below, Rowan provided his voice
and the student voice:

When I started biking to work, it was always important to me that I left my bike in
the classroom and not somewhere else, it created conversations with the kids.

They would walk by, “Oh, where do you live Mr. Rowan?”

“Well, half the time, I live in downtown.”

“Oh, you come all the way? You bike that?”

“Well, I ride the bus and then I bike home.”

“You ride the bus to get around? Well, why don’t you just drive?”
“I feel, like, alone in a car. It seems kind of like a waste of gas, don’t you think?”

This action allowed, in Rowan’s perception, the opportunity to naturally incorporate the theme of environment into his curriculum:

It wasn’t me coming out and saying let’s protect the environment or be an extreme activist. It was me just saying it’s just a decision that I made, it makes me feel healthier, and I know that I’m doing good for the planet. Those little conversations on that visual symbol that was always there, it was like something that I hoped would be inspirational or influential.

The environment appeared repeatedly in Rowan’s curriculum. For example, as his students learned about the agricultural revolution, they considered building a school garden. Rowan believed that the project of building a school garden would allow students to develop their critical thinking, communication, collaboration, and creativity skills, and Rowan imagined building a school garden that could feed the school and possibly the community, along with connecting the students to the environment in a meaningful way. However, Rowan’s vision was scaled down to a small, albeit significant, butterfly garden where students learned about the importance of butterflies in relation to the environment.

**Supports and Hindrances**

Rowan perceived support in having veteran teacher status, team-teaching, through the autonomy he was given to create and experiment with the PBL curriculum, and the overarching support of the district’s decision to establish a PBL school to support students. Rowan also perceived the hindrances as a lack of resources, which included tangible resources (i.e., paper-clips, paint, etc.) and intellectual resources such as consistent professional development.

Another hindrance, according to Rowan, was himself. He described his “Type A” personality as
getting in the way of PBL curriculum-making. However, it could be possible that Rowan had rationalized and/or accepted the hindrances he experienced during the early part of the year and devised ways to work around them (i.e., donations, scaling back of projects) as opposed to blaming or addressing the lack of district and building support. For example, he had been frustrated with the lack of paper-clips at the beginning of the year and by the end of the year, he blamed his “Type A” personality as opposed to the district’s inability to supply them.

Supports. Rowan’s process for creating the PBL curriculum was shaped by both personal and professional experiences. For example, he reflected on the inspiring nature of his sixth-grade teacher’s ability to incorporate themes of community and environment, as well as the influence of a colleague who motivated him to commute to school by bike. Rowan discussed a colleague motivating him to commute to school by bike and how the colleague served as a mentor who emphasized the theme of environment—a theme which appeared throughout Rowan’s PBL curriculum. However, Rowan consistently integrated themes of community, environment, family, and mentorship into his PBL curriculum.

Rowan’s veteran teaching status was a support which afforded Rowan the ability to navigate within the district with relative ease and in regards to borrowing resources from other schools (i.e., aquaponics aquariums, libraries, etc.), resources he believed necessary for PBL curriculum-making. Furthermore, Rowan’s veteran teaching status, along with his blend of personal and professional experience, also helped to define his resourcefulness. Rowan’s previously mentioned experiences as a student, (i.e., visiting and playing games with the elderly and creating a recycling bin), may have also encouraged Rowan’s resourcefulness.

Rowan’s teacher did not require a significant amount of resources to make a profound impact on her students. All that was needed was permission to visit the assisted living facility to
make a powerful connection to community, and cardboard boxes for recycling bins to consider the environment. Rowan exhibited a similar level of resourcefulness during his first year as a teacher creating the PBL curriculum. Lacking the resource of paint, for instance, Rowan worked with students and investigated how to make paint for a specific project. They also reached out to community members for paint donations. As a result of their work, a few gallons of white paint were donated, which they learned how to make into a variety of colors. Another example of Rowan’s resourcefulness, which can also be attributed to his experience and veteran teaching status, occurred towards the end of the school year when he recognized a need to fulfill a few remaining science standards and realized that the resources he desired were not available. He remembered there was a set of aquaponics aquariums that had been collecting dust in a district closet, and realized they would work as a substitute to fulfill the requirements of the standard.

Rowan also discussed the benefit of team-teaching. Team-teaching provided a consistent outlet for teachers to brainstorm ideas as they generated the curriculum. Rowan recalled the flexibility team-teaching promoted as he could easily check in with his teaching partner and ask, for example, if he could have a few more minutes to work with the students before she took over. Team-teaching also allowed for a therapeutic component as teachers engaged in open conversations related to the frustrations and challenges they all experienced during their first year of PBL.

**Hindrances.** During the first interview, Rowan discussed his frustration in relation to physical, tangible resources, and the missing pieces he believed were somewhat symbolic of bigger challenges faced by the new PBL program. During the first interview, Rowan reflected on the fact that there were no paper-clips and recognized that even though this may have appeared
as trivial, it may also have been a symptom of a bigger problem he believed would impact his ability to create the PBL curriculum all year long: a lack of resources.

Rowan perceived the inconsistent access to resources as “representational” of the “new program” and would therefore cast them aside. Throughout the year, Rowan consistently scaled back his projects due to a lack of resources. If any program needed consistent physical, tangible resources, it would have to be that of a new program—especially a program based on students demonstrating their learning via projects.

Consistent access to resources was perhaps the most significant concern shared by Rowan over the course of the school year, and ranged from paper-clips to a need for a library. In regards to the library, Rowan recognized that if his students wanted a library, they were going to have to make it happen. “I was, like, you know, at this library we can build a library but it’s not going to come from top down it’s going to come from bottom up. So, what can you donate?” As a result Rowan’s students established a library, albeit small, with donations from the community, colleagues, and other schools. Rowan and his students tackled the issues of resources by consistently tapping the resource of building, district, and community members for assistance. Fortunately, Rowan’s veteran status and ability to be resourceful allowed him to successfully navigate through the first year of creating and implementing the PBL curriculum.

In addition, Rowan placed some of the blame on himself for not being a part of the community because he did not live in the community, and believed this further stifled his ability to obtain the resources necessary for PBL. Rowan perhaps misplaced blame for the lack of resources by assuming it is not “representational of a new program” or because he does not live in the community, as opposed to blaming the district. Rowan also believed the lack of resources, specifically paper clips, was not worth complaining about. “No, I can complain about a few
things but I’m not going to go into those because I think you’ll get that from other people who
get more caught up on this.” Rowan, having worked in the GSD for more than a decade as a
teacher and a TOSA, perhaps perceived teachers as having negative attitudes and therefore,
avoided directly discussing hindrances. The hindrances (i.e., a lack of resources, professional
development, etc.) largely played off Rowan’s nature and he was possibly taken advantage of by
assuming he would address the lack of resources in his own way, which he did by consistently
scaling back projects (i.e., school garden to a butterfly garden), and without necessarily
challenging or confronting building and district leadership with his concerns, assuming others
may be more vocal.

Regardless of who was responsible for providing the resources necessary, whether it was
the district, the community, teachers, or students, Rowan scaled back the scope of every project
he attempted to create over the course of the year. For example, Rowan reflected on his hopes of
having a parade that would celebrate Earth Day—which was tied to the community—but
recognized he had to scale it down to a parade within the school and with minimal resources. In
addition, Rowan and the students hoped to build a school and community garden, but because
the resources were not available, the garden was scaled down to a simple garden designed to
attract butterflies. However, despite having to scale back his projects, Rowan managed to keep
his students engaged.

The lack of professional development also concerned Rowan. This was a new program
and he felt that while the GSD had supported them with superficial things, it had not supported
them intellectually:

Our biggest hindrance has been, even though we get a lot of support in the
superficial things, the intellectual support. Has been like the knowledge that we
need the experience of learning from people who have gone through the process isn’t there.

Even though Rowan navigated around the GSD in the past, serving as a teacher and as a TOSA, he was somewhat unfamiliar with the PBL framework and would have benefitted from professional development that elaborated on the process of program creation. The few opportunities for professional development resulted in “superficial things” such as a few brief project ideas to share with the students. Rowan needed the experience to be shared by “people who’ve gone through the process” so he could ask question, glean ideas, and understand PBL more fully.

**Summary**

Rowan’s resourcefulness, along with his veteran status, paired well with the lack of resources available to him. Rowan benefitted from his personal and professional experiences and his veteran teaching status as he created the PBL curriculum. Rowan’s experience allowed him to problem solve, adjust expectations, and still find success as a creator of the PBL curriculum. Rowan also believed that his ability to create the PBL curriculum would have been further supported by having consistent access to resources (both tangible and intellectual). Rowan dedicated a considerable amount of time to the procuring of resources during the process of PBL curriculum-making, which could have been spent in several other beneficial ways (i.e., creating the PBL curriculum, finding and attending of professional development offerings, etc.).

**Case Study - Linden**

Linden has taught in the GSD for over twenty years. During this time, she has developed her teaching philosophy and understanding of her content area, language arts and math. As a middle school student, Linden experienced an incredible connection to her classmates, teachers,
and school. Her middle school was small, ranging from around 400-600 students. Her teachers formed relationships with their students and the students knew they were cared for. Linden moved quite often as her parents were in the military, so the concept of relationships and community was important to her while she was at school. Linden’s school experience changed for the worst when she began high school. The small middle school she had attended fed into a high school of over 2000 students. Linden felt anonymous in high school. The sense of community and relationships had disappeared.

Linden ultimately dropped out of high school and decided to get a job in retail. Working for years in the retail industry, she realized she needed to finish high school if she wanted to advance in her field. An opportunity was presented at another job—the opportunity to attend college to become a teacher of adults. While Linden was at college, she decided she was not interested in teaching adults in the corporate world and decided to teach middle school children instead. She believed she could have the same meaningful impact on middle school children that her middle school teachers had on her. Linden wanted to make learning applicable to the lives of students, something she had experienced in middle school and something she did not experience in high school, influencing her to drop out.

Linden was also part of the PBL building design team during the 2015-16 school year, and in an expedited manner, became a PBL teacher during the 2016-17 school year. Linden had originally anticipated an opening date of 2017, allowing for more time to plan, attend professional development trainings, adopt a math textbook and so on. However, the PBL teaching team created the PBL curriculum as they taught because the school opened a year ahead of schedule. Her first year of teaching and creating the PBL curriculum was defined by several supports and hindrances.
Project-Based Learning Curriculum Creation

Throughout the study, Linden discussed her perceptions of the theme of “connections” as it related to PBL curriculum-making. Linden’s approach to creating the PBL curriculum was overwhelmingly shaped by her personal experiences (i.e., constantly moving, dropping out of school, becoming a teacher). For instance, Linden mentioned her parents constantly moving around the country and her struggles to make significant ties or connections to her community. Therefore, Linden’s PBL curriculum allowed students to develop social skills and make “connections” with their community and peers.

Linden’s approach to creating the PBL math curriculum, for example, illustrates this theme. Linden created math “playlists” which allowed students to pace themselves through their work. They could work independently, in small groups, or one-on-one with Linden. This opportunity, woven into the curriculum, allowed Linden to establish relationships with her students. However, Linden’s perception of the theme of “connections” was also driven by necessity. The reality of the PBL school was that there were no math textbooks, which forced her to create math “playlists”. The following explores the theme of “connections” as it relates to Linden’s personal and historical experience and the creation of the PBL curriculum.

Connections. Linden’s personal experience of struggling in school and later dropping out played a powerful role in shaping Linden’s skills as a teacher. Linden believes that school needs to be relevant, applicable, and fun for students to learn. Making connections with teachers and students and being engaged in learning are driving components of Linden’s teaching philosophy. Linden reflected on her own learning as she spoke about ‘Home Ec’, one of her favorite classes when she was a student. “[It] was very engaging because we learned how to keep a checkbook and you know, we learned how to sew and you know, it was like hands-on real world
application.” Linden applied the elements of engagement and real-world application that she experienced in Home Ec to the math PBL curriculum she created. Even though math is normally taught in a traditional fashion, within a PBL framework, the themes of connection, engagement, and real-world application are present.

For example, Linden developed what she referred to as a math “playlist” (a collection of math exercises) which allowed students to choose how they wanted to learn. Each student accessed the “playlist” via their personal Chromebook that the GSD provided. Linden found the Chromebooks to have benefits and drawbacks, “I think it’s [students being at different levels of understanding] because they all have their own Chromebook and it’s the one-on-one time they’re able to have and the time that we allow for work, so a lot of them finish it.” Students worked independently or collaboratively and they worked at their own pace. This format, even though students were experiencing different levels of understanding in regards to math, allowed Linden time to regularly work with, check-in, and establish connections with her students. Linden perceived the “playlists” as a safe place for students to make and learn from their mistakes with her support. Linden’s approach to creating the math PBL curriculum also provided the opportunity to recognize when her students struggled with a particular concept and she would get them back on track. Linden discussed her approach to creating the math PBL curriculum:

When it comes to time, the easiest thing to fall back to is direct instruction or not having resources or I do not know. There are obviously some things that I have searched for math and I am just not finding anything that fits or it would be hard for me to do, it does not jazz me so I do not know if it would work for the kids. The other thing it’s interesting here with trying a lot of different things the kids have said though that the balance is nice that if it is all kind of them exploring or
them on their own with a playlist they are working through. They miss having the interaction, they missing having the validation that yeah you know this is how you do it and yes, you are on the right track.

Even though Linden taught math in a somewhat traditional fashion (i.e., direct instruction) within the PBL framework, the connections and engagement were still present. She found if the material did not “jazz” her that she needed to try something different. While she experimented with creating the math PBL curriculum, Linden found that the “playlist” allowed her to provide feedback in a timely manner.

Linden also believed that the formation of relationships with students became a component of the PBL curriculum she created. As a student, these connections disappeared as she moved from middle school to high school, which played a role in her decision to drop-out. Linden discussed the connections she had with her middle school teachers and community:

It was the connection with the teachers is honestly, what it was. We moved here as a seventh grader and it was a middle school that was sixth, seventh, and eighth. I moved in seventh grade, new kid, small environment, we came from the south so that was an interesting transition more for the other people than it was for me because my mom and dad are from [the West Coast]. It was really the connection with the teachers because right away, I mean with kids because it was a small learning environment, everybody in the school knew each other, families were very close, we lived close to each other. It was also the connection with the teachers. I can remember every one of my middle school teachers. In fact, I tease the kids when we are diagramming sentences that Mrs. Clyan taught me how to
diagram sentences when I was in seventh grade. But with high school, it was just kind of a blur because I just didn’t have those same connections.

Linden believed that the relationships she formed with students helped establish a community which worked together to address specific needs, such as building a library and an outdoor learning area.

Linden created the PBL curriculum (apart from math) that continued to emphasize the significance of relationships and community. For example, the teaching team established a time each day where students researched and ultimately produced something they were passionate about. “Passion Projects” were designed and implemented with the idea of maintaining a high level of student engagement. Linden discussed the challenges as students shared their ideas for a “Passion Project” and then struggled to follow through with their ideas:

There is a group that wants to have spirit weeks once a month or you know, like they do in the middle schools and it is just OK great, you know? Here’s the classroom, get it organized, let us know, propose what you’re thinking but they’re just not taking the time or taking the initiative beyond just whatever time is given. And so, we are trying this every Tuesday and Thursday and we just started it this week and it is just the seventh grade that is doing it. But it is really cool it is like we do not have a library here but we have lots of people that want to give us books. And so, ok group that is focused on the library, you know, what is that going to look like? Is it just going to be a lending library or is it going to be a check out? You know, so anyway Tatum [teaching partner] and I will sit in the center area at a round table and kids can just come and you know, groups can come and we can push them in different directions. A lot of it is asking questions
rather than telling.

“Passion Projects” allowed students to consider the needs of their community, for example, the need for a library, and then brainstorm the work it entailed to make it a reality. Students connected with their teachers for guidance related to the project. Linden and her teaching partner, Tatum, pushed students in different directions in hopes that they would take the “initiative beyond whatever time is given” to follow through and meet the goal of their project. Linden and Tatum questioned their ideas, and engaged students in their learning as opposed to simply providing the answers.

**Supports and Hindrances**

Linden perceived the support of her teaching team, district and building leaders, along with community members as an incredible support for her first year as a PBL teacher. However, Linden also found the lack of resources, specifically the curriculum, textbooks, and time to develop curriculum, hindered the program during the first year.

**Supports.** Linden created her PBL curriculum throughout the school year and adapted some of her curriculum from her previous school, even though doing so was challenging due to a lack of resources. The themes of building relationships and student application of learning were sources of support. These themes of support were personal and historical for Linden. She experienced the relationships and the application of her learning as a student, which influenced her as a teacher to weave them into her PBL curriculum.

Linden was responsible for the math and language arts components of the curriculum. She realized, however, that effectively incorporating math into a project was not always appropriate, and would therefore need to be taught in a traditional manner. The support of technology made it possible in the absence of a math textbook for Linden to continue keeping
students engaged and learning. Every student was paired with a Chromebook which allowed Linden to create and share the math-based “playlist” with them. The students would work on the assignment in collaboration with their classmates and with the support of Linden.

Linden also mentioned the support of the district and building leaders, as well as the community. Specifically, Linden found that the relaxed and trusting nature of building leadership was a benefit because it gave her the freedom to experiment, create, and learn from the mistakes she encountered while creating the PBL curriculum. However, the district and building leaders were left with almost no choice but to provide Linden the freedom to create the PBL curriculum as they did not provide a textbook (or many other resources associated with curriculum development for that matter) due to budgetary constraints.

Linden found team-teaching to benefit the PBL curriculum she created. She recognized that Tatum, her teaching partner, was almost her exact opposite; therefore, they complemented each other well. Linden considered herself organized and disciplined and her teaching partner to be more creative and imaginative. Collaborating with Tatum allowed for integration of history and language arts:

The integration that Tatum and I have been able to do has been huge in terms of... they did a state history project where they designed, studied the history of the state, did just kind of an overview, then they had a timespan which they were responsible for within their group. They created an album cover and a playlist of songs to share kind of the key things from state history during that time frame. So, she was doing the history side of it. But when it came to the writing, the putting together, the presentation, the language arts piece was integrated. So, it’s been in a way, more integration.
Their team-teaching dynamic allowed for both of their qualities to shine within the PBL curriculum they created. The project, mentioned above, explored state history and blended writing with art, components naturally appeared as they collaborated. For example, Tatum viewed the landscape of the school grounds as symbolic of the state itself and as an opportunity for students to get outside and learn, whereas Linden incorporated a novel regarding westward expansion to inspire her students to begin considering the past. Students ultimately created a brief three to five song soundtrack and an album cover in which they provided an analysis of the songs as they related to their learning of state history.

**Hindrances.** As a traditional classroom teacher, Linden tended to lean on the resource of a math textbook for guidance. However, this resource was non-existent and therefore, inspired her to join the math textbook adoption team to hopefully avoid the challenges of not having a textbook in the future. In the meantime, Linden worked to develop a solution to the missing resource of a math textbook, and developed a math “playlist” for her students, as discussed earlier. According to Linden, the hindrance was the time spent procuring a “playlist” that could have been otherwise addressed by a textbook or professional development training. Another hindrance was the potential for missing the finer details covered in the textbook. This hindrance was a source of concern for Linden regarding the coverage of material, specifically the breadth of the material versus the depth of the material.

Linden was also responsible for teaching language arts, and once again, struggled with the availability of resources. For example, her previous middle school had class sets of novels which were readily available; however, her new PBL school only had one copy of a particular novel available; therefore, she ended up reading it aloud to her students. Below, Linden discusses the challenges of creating language arts curriculum:
Everything is either me creating it or I had you know, like, scanned copies or whatever. I have no novels unless they are novels that I brought that I have had from my classroom that I purchased of my own money or you know, professional funds along the way. And some of them don’t really fit so much for our environment here.

The lack of resources could have been addressed by the building leadership throughout the year. Below, Linden describes her view with regards to building leaders, specifically her building leader, Ryan, addressing this issue:

There are other books that I am aware of that I would much rather use and Ryan is supportive, don’t get me wrong, but when it is seven hundred dollars or fifty cents for a class set of books I want to use. You know, he is kind of like, ‘oh you know our budget is pretty tight’ so... we don’t have a state history textbook, there is one online and this is where I get a lot of my math online but it’s just, it’s not traditionally what you have... we kind of knew that’s kind of how it was going to be [in reference to a lack of resources].

A lack of resources and funding made the year a challenge for Linden and a year she had, to a degree, expected. The missing components of resources and funding forced Linden to become creative in her approach to teaching math (i.e., “playlists”) and language arts (reading novels aloud to students) which in some cases was not ideal for her or her students.

Summary

Linden was a veteran teacher in the GSD and had over eighteen years of experience teaching. Her path to becoming a teacher was shaped by her experience of struggling in school. She recognized the power of connecting with students and building a community. Instead of
complaining about not having textbooks, she chose to find a solution by joining the textbook adoption team in preparation for the following school year. Acknowledging that this was the first year for the PBL program, she knew she had to be flexible and let go of the control she had at her previous school.

**Case Study - Lennox**

Lennox graduated from the GSD and has now taught middle school math for more than five years. As a middle school student, Lennox felt somewhat lost in the subject of mathematics. Her teacher pushed her to take more challenging math classes. As a result of her teacher’s support, she overcame her challenges and found success. During college, Lennox was unsure of the path she wanted to take. She visited with a career counselor and took a simple test which revealed an interest in banking and/or teaching. Coincidentally, Lennox’s father worked in banking and her mother worked as a choir teacher, which coincided in her teaching math. Lennox’s student teaching experience consisted of a small cohort of 12 pre-service teachers. During this time, she mentioned she learned the importance of collaboration and communication. As she searched for a teaching position, she realized she wanted to move back to the community that had supported her learning. Lennox interviewed at the high school she had graduated from and realized that the culture and atmosphere did not fit her personality, but found the middle school she had once attended to be a better fit.

**Project-Based Learning Curriculum Creation**

Lennox created a PBL curriculum that reflected the challenges she experienced as a student. As a student, Lennox felt “dumb” in math class, but as math became applicable to her life, and with the guidance of a teacher, she accelerated and began taking more challenging courses. The PBL math curriculum she created for her students ensured that their learning was
applicable to their lives outside of school. For example, Lennox created a PBL math unit involving cereal, which also included aspects of diet and nutrition. Her students learned the necessary math but were also able to share their knowledge with their parents and apply their learning to the world outside of their classroom.

Lennox’s approach to creating the PBL curriculum was also shaped by mentors. Her middle school math teacher instilled a sense of confidence and pushed her to take more challenging classes. The idea of creating a sense of confidence and empowering students was woven into Linden’s PBL curriculum, specifically the “Passion Projects” Lennox implemented. Students were challenged to push themselves and create something they had never considered before. As a result of Lennox’s guidance and mentorship, her students learned to make three-tiered cakes, magnetic board games for people in the hospital, and video games, to name a few.

Lennox perceived her ability to create the PBL curriculum as mostly practical. Resources were limited and forced teachers to become creative when creating the PBL curriculum. As previously mentioned, math textbooks did not exist which influenced Lennox to construct a unit on ratios by purchasing an inexpensive bag of cereal and developing the related curriculum. The “Passion Projects” further illustrate the practical nature of creating the PBL curriculum with limited resources as the projects relied on the students to provide the resources necessary for the completion of their projects. The following explores the themes of mentors and empowerment as they relate to Lennox’s personal and historical approach to creating the PBL curriculum.

**Mentors.** The same teacher who pushed Lennox to challenge herself in math and who helped her overcome her feelings of inadequacy was now her mentor during her first year as a middle school math teacher. Characteristics that shaped Lennox’s approach to teaching and learning are influenced by a powerful mentor, a connection to community, and a desire for
students to become independent learners. However, several aspects supported and hindered Lennox’s first year as a PBL teacher.

During the first interview, Lennox reflected on her abilities or lack thereof as a math student. She believed she was “dumb” when it came to math, even though she had consistently been placed in advanced classes. Lennox felt out of place sitting next to older students. Lennox comments on this experience, saying, “... I just didn’t feel like I was one of them.” However, she recognized the role her teacher played in supporting her to take challenging classes. “She really pushed me and she always believed in me and she always thought I was, like, so smart. She just thought I was smart, you know? That’s how it felt anyway.” Lennox’s teacher served as a mentor and shaped Lennox’s approach to teaching and learning.

Lennox strives to be a mentor for her students and does so by challenging and guiding them to “success.” For example, Lennox developed a unit related to economics and trade. It began with a current event—shipping the earliest human remains to museums around the world and the steps required to make this possible. The fragility of shipping the remains from museum to museum amazed the students. As the students learned more about transportation and communication, Lennox suggested an item they could try to ship: a potato chip. The project became known as “Ship the Chip” and students researched shipping and packaging methods used to ship fragile items. They developed packaging and worked to ship 30 or so chips. The shipping company found that only two of the packages were suitable for shipping. Lennox viewed this project as a failure for several reasons. First, because only two packages were suitable for shipping, and second, because students wasted time with distractions as opposed to researching and creating an acceptable package. Even though most students failed an opportunity for a conversation between Lennox and her students related to PBL appeared.
They all failed, you know, but it was awesome because we had that conversation like yeah “we’re not going to go back.” But it was good because they all felt like, “Oh, so I was supposed be doing my research during that time and actually think through what I should be searching.” And part of that’s I think just being a part of it because they are not used to not being told... you know? And I do not know if that is because they have gone through six years of being in that kind of environment.

This failure allowed Lennox the opportunity to push her students, much like she had been pushed by her teacher at their age. By allowing them to fail, she presented her students with an opportunity to reflect on their actions and hopefully prevent this level of failure in the future. In this manner, she attempted to encourage her students, as a teacher and a mentor, to take ownership of their learning.

**Empowerment.** Lennox perceived the PBL curriculum she created as empowering for her students. Her curriculum encouraged her students to take control of their education which, may have stemmed from her own personal feelings of feeling “dumb” as a student. For example, Lennox created a unit where students learned about ratios and health—two topics she realized can overwhelm students—by exploring breakfast cereal:

They all chose the generic brand, which was better than the name brand, and I was like you guys this was a $1.69. Do you know how much cheaper this was then this? Go home and tell your mom and dad you prefer the generic brand stuff. Total blind taste test, oh yes. We did a bunch of things we looked at their nutrition and like you know it’s actually healthier for you, the generic brand was healthier for you.
This brief project engaged students and made the exploration of ratios less daunting since they compared something they were familiar with. Doing so gave them a boost in confidence and their math skills developed. Aside from learning about ratios, students explored their health and the associated costs, which empowered them to consider what they consume.

Throughout the year, Lennox observed several of her students taking control of their learning. Students selected a “Passion Project”, and were given the time to do research and create. Students researched the process of writing books, building libraries, and baking cakes. Below, Lennox enthusiastically describes the time set aside for “Passion Projects”:

Seriously, you should walk in there and you could hear a pin drop or you know there’s maybe a couple of people working together over here but really it’s like they are so focused and they’re so interested in what they’re doing. But what they’re essentially researching whatever, this one girl was like “I want to write a book.”

It was also during the time allotted for “Passion Projects” in which Lennox guided and facilitated student learning by asking students to consider specific aspects of a project as they conducted their research and began producing their products. Lennox reflected on her interaction with a student who was researching baking a tiered cake:

Like what size you’re going to make these? So how many layers? You know, to kind of guide them into what they need to know and I guess that’s what I mean by that in terms of helping them. They’re on their own as soon as she figured it out. But then the mom brought in the kid she didn’t want to bring it on the bus, with you know a three tier, it’s a full on three-tiered cake with nine layers. So, there were three layers on each tier. I mean it was intense and she made her own
fondant. She made a little bow. I mean she had she learned how to do all of it.

This particular “Passion Project” allowed Lennox to guide and facilitate student learning as opposed to telling her students what to do. This project allowed students to research, plan, make mistakes, and learn.

Supports and Hindrances

Lennox recognized several supports and hindrances as she created the PBL curriculum. The supports consisted of building leaderships, while the hindrances were defined by a lack of resources, which included professional development.

Supports. Lennox’s supports were also personal and historical. For instance, Lennox mentioned teachers who supported and pushed her to take challenging classes. At times, the challenge resulted in a failure and an opportunity for her students to explore and learn from their mistakes.

Lennox found the flexibility and understanding of the building’s leadership to be conducive and supportive of her teaching style. The building leadership provided the physical and intellectual freedom for Lennox to create and implement the PBL curriculum. Lennox reflected on Ryan’s administrative style, “I think Ryan [building leader] has been really supportive and really just kind of letting us do what we need to do. I mean, it’s really just like hands-off, like, I trust you, do it.” The freedom to create and experiment with the PBL curriculum allowed Lennox and her students to grow. The “Ship the Chip” project, for example, emphasized a need for students to take responsibility for their learning as well as an opportunity for Lennox to reflect upon her curriculum while moving ahead.

In a more practical aspect, the building administrator also provided flexibility in the student and staff schedule. Students were no longer confined to a 55-minute bell schedule, which
allowed for teaching and learning to begin and end naturally, as opposed to being guided by a bell. In regards to the teachers schedule, the building leadership was open to and accommodating of teachers’ requests for further plan time, as opposed to attending district-wide meetings, for example.

**Hindrances.** A lack of resources, including professional development, curriculum support, and budgetary issues hindered the PBL program. The lack of resources during the first year of PBL can be attributed to, according to Lennox, budgetary issues. The PBL school was new and small and as a result, did not have the same budget to develop programs compared to bigger schools. During the first interview, Lennox shared her frustration and understanding with the lack of supplies:

Supplies, we don’t have, I would love to do all these cool projects and science experiments and cool things and what am I supposed do that with? I mean, I don’t even have science beakers, you know, when we were doing “Ship the Chip” we had to weigh our boxes, I don’t even have scales to weigh the boxes. I have to take up my plan time to go drive over to another middle school, to interrupt that teacher to see if I can borrow their supplies, to get back in the closet, and that is awkward for me and she is having to interrupt her classroom and it’s my plan time but I need what I need, you know? It’s things like that that keep popping up and you know, it’s not that I don’t understand, I know that this school started very quickly, I know that it’s a program with only 112 kids. I realize all of that, you know, I get it, but it’s just really difficult to make it just as awesome as we want it to be.
A lack of supplies forced Lennox to get creative, adapt and/or scale down projects, borrow supplies, or buy supplies with her own money. For example, Lennox bought cereal to teach ratios or borrowed beakers from a neighboring school to conduct science experiments. The lack of resources hindered, to an extent, each teacher throughout the school year.

As the whole team moved from a traditional classroom to a PBL setting, they were responsible for creating and implementing a new PBL curriculum—one they had never experienced or facilitated. Each participant repeatedly voiced concerns regarding the lack of professional development provided throughout the year. Lennox reflected upon two attempts to provide a form of meaningful professional development. The first consisted of a colleague who had no experience facilitating PBL with students providing professional development and the second, a consideration of a veteran PBL teacher in a nearby district to guide professional development, but which never took place. A lack of professional development, in Lennox’s opinion, may have been a result of simply being a middle school.

We’d like to see just how to do it [observe PBL teachers as PD]... I almost think it’s unique to our situation because the middle school was never intended, right? This was not, the high school was absolutely in the planning. Like, we [the middle school] don’t have professional development. We don’t have the funds.

The PBL school was originally planned to begin as a high school. As a result of an opportunity for the GSD to purchase a building and land, the school opened earlier and opened as a middle school. Lennox believed that the opening of a PBL middle school, which was not originally in the plans, may explain the limited resources and a lack of professional development.

Summary
Lennox found a progressive framework that worked with her personal experiences and teaching style. She facilitated learning, mentored, and encouraged students to make connections with their learning. Her first year as a PBL teacher was also defined by several supports and hindrances. Building leadership and team-teaching supported her ability to create the PBL curriculum, while a lack of resources, including professional development, served as a hindrance.

**Case Study - Tatum**

Tatum did not share her experience as a student; however, she shared the impact her parent’s divorce had on her. As a child of the 80s with divorced parents, Tatum had to learn to entertain and take care of herself. This experience influenced her sense of responsibility and independence at an early age. Tatum attended a smaller suburban school district like that of the GSD. The community was defined by one industry, again similar to the history of the GSD, and after graduation, to work in this industry was expected. Like Linden, Tatum experienced more community in middle school than she did in high school. Her middle school fed into a large high school where she felt anonymous. However, during high school, she created a community for herself by participating on the dance team.

As a middle school teacher, Tatum described herself as a “creative weirdo.” Tatum viewed herself as a “creative weirdo” because she taught kids to consider learning in different modalities such as dance, drama, and musical performances. According to Tatum, administrators, colleagues, and parents have come to recognize her as a unique and engaging teacher. However, her approach to doing things differently goes back to Tatum’s childhood and school experiences, and these experiences have found their way into Tatum’s ability to create an engaging and impactful curriculum.
Tatum has, like the rest of the participants, only taught in the GSD, and has done so for over a decade. During this time, she learned what to expect from district leaders in regards to support. She considered herself somewhat jaded as time and experience have given her a deep understanding of how the school system works. Throughout her interviews, Tatum consistently voiced her concerns for the program and the possibility of her leaving the PBL program after the first year. Her concerns for staying with the PBL program may have also stemmed from an experience during her first year of teaching in the GSD—an experience she discussed as though it occurred yesterday. This experience put teaching and learning in perspective for Tatum, which she kept near to her during her transition from a traditional middle school setting to a PBL environment. The other participants voiced their concerns of the PBL program, including a lack of resources and professional development, but their concerns dissipated or turned into acceptance over the year, whereas Tatum’s remained until the end of the school year.

**Project-Based Learning Curriculum Creation**

Tatum created a PBL curriculum that emphasized the themes of independence, interactiveness, and acceptance. These themes also appeared to be shaped by her personal and historical experiences. However, in Tatum’s perception, her curriculum was mostly shaped by a lack of resources. For instance, Tatum created a PBL unit regarding the water cycle (which required minimal resources) and where students were responsible for displaying their understanding through dance. This unit encouraged students to learn about and interpret the water cycle in a way that was unique to them. The responsibility students experienced as they developed their dance also afforded them a sense of independence. Tatum mentioned the high level of engagement as students took risks sharing their interpretations of the water cycle through dance. She spoke about a new student that, in her perception, existed somewhat outside of the
learning community, and who took a risk and danced a complete routine in front of his peers. She reflected on how nervous she was for the student having “put himself out there” and how it could have gone wrong. However, she was pleased to observe that her students accepted him into their community.

This unit was a result of Tatum’s personal and historical experiences. Tatum mentioned the divorce of her parents and the need to be responsible and independent at an early age. Her students dancing the water cycle required that they be responsible and independent. Tatum was also opposed to incentivizing education as she reflected on an experience in her graduate program and believed students would be engaged in their learning if it was interactive. Again, the students were engaged because their learning was interactive. Lastly, she found the independence she had experienced early on (due to her parents’ divorce), coupled with her love of dance, was defined by a community of acceptance when she joined the dance team in high school, and witnessed among her students as they danced the water cycle. As Tatum discussed her perceptions of her PBL curriculum, it was noted that they mostly aligned with those of the researcher. However, Tatum found the lack of resources (i.e., material and intellectual resources) greatly hindered her ability to create the PBL curriculum. The following explores the perceptions of the themes of independence, interactivity, and acceptance as it relates to the PBL curriculum Tatum created.

**Independence.** Tatum’s approach to teaching and learning was shaped by three powerful experiences. Tatum’s parents divorced when she was a child and this event forced her to grow up quickly. Being the youngest child, she learned to take care of herself, be independent, and to take ownership of her actions. She realized, at an early age, that she was not going to be able to depend on anyone and that people would let her down. To a degree, the divorce of her parents
shaped Tatum’s ability to create the PBL curriculum with an emphasis on independence. Tatum reflected on the impact of her parents’ divorce, saying, “Part of it, I think, was really good because I had to do things for myself that other kids didn’t have to do and so, you know, having to problem solve things at that young age and just figure things out.” Her PBL curriculum and students’ projects consistently displayed these problem-solving skills. For example, when her students researched and developed an album cover and playlist related to state history, they would ask Tatum questions such as “does this look okay?” Tatum’s gentle response would be, “If you have to ask if it looks okay, then you probably already know the answer,” and she would send them back to continue researching and working. This interaction may be interpreted as unsupportive, but what Tatum was instilling in her students was a level of independence and ownership in the work they produced.

**Interactive.** During her teaching program, Tatum was alarmed by some of the methods implemented by other pre-service teachers to entice their students to learn or pretend to learn. She observed pre-service teachers bribing students with candy bars, which inspired her to never bribe her students. Reflecting on this powerful moment, Tatum said:

I just remember thinking I will never, ever bribe children to want to show up to my anything. Like, they are either going to want to show up or they are not, and I am not going bribe them and I am not going to give them candy, which has filtered into my classroom like to detriment of some of the school systems that I am supposed to be a part of.

Tatum wanted her students to learn for the sake of learning. She wanted her students’ inherent desire to learn to drive them; not a candy bar. She also recognized that as a teacher, you could not be boring, and considered that maybe the other teachers had to bribe their students because
they were boring and disengaged. Students found Tatum appealing because she taught through the lens of art, which was consistently defined by song and dance.

As a first year PBL teacher, Tatum consistently capitalized on the energy her students brought to school each day. As opposed to just talking about the environment and science, the PBL curriculum she created made her students interact with the environment by going for nature walks, growing gardens, and building outdoor learning areas. These experiences proved to be powerful, as students about life-cycles and their relationship to the environment. They witnessed firsthand what the impact building a new school would have on the wildlife, as they toured the campus. On their nature walk through a large field that had recently been mowed, the students discovered a rabbit that had been injured by the mower. When they looked towards the sky, they discovered birds of prey circling the rabbit. This experience made the life-cycle real for the students, and provided a platform to discuss the benefits and drawbacks of development.

Tatum mentioned her ability to create dynamic curriculum had established a reputation for engaging students and which parents sought out for their children.

Acceptance. Regardless of her positive reputation, Tatum viewed herself as an easily replaceable “cog” in a giant education system because of an incident that occurred during her first year of teaching. This view was shaped during her first few weeks as a middle school teacher. When Tatum received a teaching position in the GSD, she began setting up her classroom and excitedly prepared for her first year of teaching. A few weeks into her first year, she was transferred to another school, challenged to collect her students from other teachers’ classrooms and begin teaching. Her assignment had changed completely and she was without the necessary resources to support her students. For the first year, Tatum treaded water and pretended like she knew what she was doing. However, while this event left an impression on
her, it also encouraged her to let go and define who she wanted to be as a teacher for herself and for her students. The system, in Tatum’s understanding, made it clear that she was a “cog” but in a twist, also allowed her the freedom to begin experimenting with curriculum development.

Tatum’s personal and professional experiences shaped her ability to create a consistent and powerful PBL curriculum. Tatum’s first year teaching PBL was similar to her first year of teaching. Several hindrances, such as issues of leadership and lack of resources, consistently challenged her throughout the school year and forced her to consider not returning next fall. However, Tatum found support in her teaching partner, the freedom to experiment, and the community as they provided much needed resources to make PBL possible.

**Supports and Hindrances**

Tatum experienced supports and hindrances as she created the PBL curriculum. Having over a decade’s worth of experience in the GSD, allowed her to anticipate where she could find support and where she would be challenged.

**Supports.** Personal and historical experiences influenced Tatum’s ability to generate a meaningful PBL curriculum that places the student at the center of their learning. Tatum instilled a level of responsibility and independence in her students through the PBL curriculum she created. This allowed her to guide her students’ learning as opposed to simply telling them what they need to know. Her students were responsible for “figuring it out” for themselves. A lack of resources, professional development, and planning time have been emotionally-charged frustrations for her throughout the school year.

Tatum mentioned finding support in her teaching partner and the community. Tatum perceived teaching partners as necessary to developing the PBL curriculum as they provided a platform to brainstorm curriculum ideas, flexibility, and an ear to voice concerns. Tatum
discussed the benefit of team-teaching in regards to brainstorming curriculum ideas, “Linden and I develop our own sort of thing but we’ll bounce ideas off of each other.” Team-teaching also allowed Tatum to debrief at the end of the day and make changes, if needed, for the following day. Tatum created engaging and sometimes outlandish projects that Linden added parameters and structure to. For example, the project of creating an album cover complete with a compilation of songs related to state history was Tatum’s idea, but was further shaped by both as Linden taught the language arts and Tatum taught the social studies component. For Tatum, this level of team-teaching was professionally rewarding. She stated, “I love this, I love working with Linden, the collaboration that we have, like, I thought I collaborated with teachers before but this is on a whole other level and it is genuine and it is real.”

Tatum found the community to be a support as well as a consistent source for resources. For example, the community donated resources to establish the mud room which allowed the students to go outside in the rain. The community contributed resources such as time, labor, and materials to create the outdoor space. Extensive projects such as this would have been scaled back had the community not been involved.

Hindrances. The lack of resources and the lack of transparency in relation to resources was an issue of building leadership. Tatum was challenged by a lack of resources which culminated in a tough conversation with the building leader towards the end of the school year. Tatum strived to create a powerful PBL curriculum for her students, but was consistently challenged by the lack of funding and resources which forced her to scale back the scope of her projects and ultimately settle for less. For example, Tatum worked throughout the year and correlated her curriculum with the outdoors, which required the establishment of an area similar to a locker-room, that could house boots and umbrellas, among other things. Realizing that the
funding was almost non-existent, she reached out to community members for support, as well as spent her own money on the materials required to make her PBL curriculum a reality.

To fulfill some science standards before the end of the year, Tatum realized she needed a set of beakers for her class, and unwilling to pay for them herself, she requested the building leader to pay for them. He agreed. Tatum planned on beginning the science project Monday, but when Monday arrived, the beakers did not, as they were not purchased. Tatum had a tough conversation with her building leader about the lack of support and resources, as well as feeling like she was being taken advantage of—feelings which she had experienced all year. The following is Tatum’s reflection on the frustrating conversation she had with her administrator regarding resources:

And there came a point where, like, at a staff meeting, I had a list of materials that I needed for things. I cannot buy anymore materials. I can’t do it and gave him the list, I mean it was at the staff meeting and he was, like, yeah ok. Monday morning came, no supplies. And so, I went in there, in the office and I was, like, OK, I need you to understand that I am so frustrated right now that I’m about to walk out. It’s a very dramatic scene but at that point, I was, like, crying because I was, like, I don’t know why you didn’t get the supplies, like, at this point it feels, like, on purpose, like, I’m telling you the answer you need to give me, like, you need to give me the answer. We’re not taking advantage of you. I didn’t get these supplies because I knew you would take care of it. It was, like, because it feels like you’re ignoring our request because we’re so good at taking care of it. And we get stuff done. You don’t have to worry at all. And so, I was super frustrated that it’s, like, I am not going to do this for the next three years until things are onboard like
supplies need to be here for us... and I wasn’t going to go spend another $200 to get things that I shouldn’t have to get. And that was just I was kind of, like, just the straw that broke the camel’s back because I’m not doing it and I was, like, so you told me they would be here and they’re not. What do you want to go tell the kids about why they can’t do the project that they have planned for as you watched them present their design ideas to each other and give feedback you cheered them on Friday? You want to go tell them about why there’s no supplies for them to do their project?

Tatum’s frustrations were emblematic of a bigger issue: communication. Tatum also believed that they were partly to blame for their own frustrations related to resources because they “get stuff done” with little to no leadership support; hence, assumptions were made. In this case, assumed the beakers would be ready for Monday, while the building leader, who promised a set of beakers, believed she would simply take care of it as they had done with several projects in the past.

Tatum was also concerned with the lack of professional development and release time to create the curriculum. The team requested eighty hours of curriculum pay to compensate for the lack professional development and release time. The GSD responded with little over 10 hours, which was insulting, but provided insight into how the district viewed and supported teachers of a new program. Tatum made connections to the challenges she experienced during her first year of teaching (i.e., being moved to another school, feeling a lack of support) and therefore, identified as a “cog” in the giant system of education.

Summary
Tatum’s personal experience afforded her the opportunity to be independent and to take ownership of the PBL curriculum she created. Themes of independence, interaction, and acceptance were woven into the PBL curriculum she created. Tatum’s students took risks, failed, learned from their mistakes and tried again, and in doing so, formed their own sense of independence. During her first year as a PBL teacher, Tatum also experienced several supports and hindrances as she created the PBL curriculum. Her frustrations were similar to that of her first year of teaching in which she made it through and learned a lot about herself.

Each teacher integrated their personal and professional experiences into the PBL curriculum they created. They also shared the need for more consistent access to resources, which included tangible resources, professional development and time to plan, brainstorm, collaborate, and create the curriculum. The personal and professional experiences each teacher incorporated into their approach when creating the PBL curriculum, along with the supports and hindrances helped define the findings and the following themes:

1. Teachers integrate their personal and professional experiences as they create the PBL curriculum. Further inclusion of these experiences could result in a PBL curriculum that continues to emphasize themes of independence, collaboration, relationships, communication, critical thinking, creativity, and environment.

2. Consistent access to resources, including professional development, tangible resources (i.e., material supplies), and time, could further benefit and develop teachers’ skills as they relate to creating a PBL curriculum.

In the next chapter, a brief cross-case analysis of the case studies, discussion of findings, and recommendations for further research will be presented.
CHAPTER FIVE

DISCUSSION

The conclusions of this study were the result of analyzing artifacts, observations, interviews, and reflective journal entries. The process of transcribing, coding interviews, and sharing the findings with each research participant in the form of member checks also shaped the findings. Furthermore, member checks informed the creation of interview protocols throughout the study. It was noted that the personal and professional experiences of each teacher influenced the construction of knowledge as it related to the creation of a PBL curriculum and how they dealt with supports and hindrances. The four teachers in this study revealed characteristics unique to their personal and professional experiences, which also make the findings specific to them. However, as unique as each teacher was, the data also revealed common, overarching themes. This chapter consists of a review of the purpose of the study and research questions, discussion of the data, implications, and limitations.

Review of the Purpose of the Study and the Research Questions

The educational system in the United States has remained largely the same since the late 1800s. The bell schedule has remained intact, and students have been trained to be compliant as they march through their school day in preparation of one day joining the workforce on the factory floor. However, the factory jobs have, for the most part, disappeared due to outsourcing and automation. In other words, while the job market has changed drastically over the last century, the education system has not. The education system has always played a part in shaping the workforce. However, only recently have attempts been made to provide students with what has been referred to as 21st century skills (i.e., communication, collaboration, creative thinking,
and creativity). Progressive educational frameworks, such as PBL, are providing opportunities for teachers to create and implement curriculum that emphasizes the 21st century skills.

Figure 1 served as a guide for reviewing the literature. The literature tended to focus more on the “outside” supporting and hindering factors (i.e., professional development, community involvement, standards, etc.) and their impact on PBL programs. The literature placed less emphasis on the “inside” factors and less on the teachers as they created the PBL curriculum, and how these factors amalgamated.

![Conceptual framework](image)

**Figure 1.** Conceptual framework.

For example, Kokotsaki, Menzies, and Wiggins (2016) provide this definition of PBL:

“Project-based learning (PBL) is an active student-centered form of instruction which is characterized by students’ autonomy, constructive investigations, goal-setting, collaboration, communication and reflection within real-world practices” (p. 267). What they fail to consider is the role of the teacher as they create the PBL curriculum.
The conceptual framework places PBL in the center, acting as a conduit trying to make sense of the supports and hindrances coming from the “outside” and “inside” influences. The literature provides a great deal of attention to exploring the role of professional development, an “outside” factor, as it relates to teachers, student learning, and program development, which helps teachers develop collaborative skills, personal and professional content knowledge, and leadership skills (Abrami, Poulson, & Chambers 2004; Fallik, Eylon, & Rosenfeld, 2008; Han, Capraro, & Capraro, 2015; Harris, Penuel, D’Angelo, DeBarger, Gallagher, Kennedy, & Krajcik, 2015; Howley, Howley, Camper, & Perko, 2011; Kanter & Konstantopoulos, 2010; Ketterlin-Geller, Baumer, & Lichon, 2014; Kokotsaki, et al., 2016; Ronfeldt, Farmer, McQueen, & Grissom, 2015).

Fallik et al. (2008) found that veteran teachers showed increased ownership over the curriculum they created and were also more confident in implementing their curriculum. Fallik et al., attributes this increased ownership and confidence to continuous professional development. Fallik et al., did not explore the “inside” characteristics of veteran teachers, nor did they consider what makes them more confident than novice teachers. This is where the research falls short, as it fails to include the significant role the teacher, much like the definition of PBL provided by Kokotsaki et al., (2016).

Purpose of the Study and the Research Questions

The purpose of this study was threefold: to explore and to co-construct knowledge with veteran middle school teachers new to PBL while they created PBL curriculum and encountered supports and hindrances, and to provide recommendations for the GSD as the school continues to grow. Figure 2, a slightly adapted version of Figure 1 (above), is a conceptual framework that
places the teacher and the researcher in the center of PBL as they co-construct knowledge related to creating a PBL curriculum based on the “outside” and “inside” factors.

![Conceptual framework with teacher and researcher.](image)

Figure 2. Conceptual framework with teacher and researcher.

This conceptual framework guided the study during the data collection phase, as well as the early analysis of the data via member checks and interview protocol creation. The researcher co-constructed knowledge with the research participants as it related to PBL curriculum development and the encountered supports and hindrances.

This study explored the following research questions:

1. How do veteran middle school teachers new to project-based learning construct knowledge as they create a PBL curriculum?
2. How do veteran teachers new to project-based learning construct knowledge as they encounter supports while they create a PBL curriculum?
3. How do veteran teachers new to project-based learning construct knowledge as they encounter hindrances while they create a PBL curriculum?
Each teacher was interviewed three times throughout the school year. Each interview allowed for the collaborative co-construction of knowledge. The construction of this knowledge took shape in ways unique to each teacher and which was briefly explored via a cross case analysis.

Each teacher was interviewed three times throughout the school year. Each interview allowed for the collaborative co-construction of knowledge. The construction of this knowledge took shape in ways unique to each teacher and which was briefly explored via a cross case analysis. As a result of this study, two general themes emerged:

1. Teachers blend their personal and professional experiences as they create a PBL curriculum. Further inclusion of these experiences could result in a PBL curriculum that continues to emphasize themes of independence, collaboration, relationships, communication, critical thinking, creativity, and environment.

2. Consistent access to resources, including professional development, tangible resources (i.e., material supplies), and time, could further benefit and develop teachers’ skills as they relate to the creation of a PBL curriculum.

Research Participants

Rowan is a veteran teacher in the GSD, and has served the district in many capacities. He taught at both middle schools and served as a Teacher On Special Assignment (TOSA), which allowed him to develop a deeper understanding of how the GSD operates. This understanding afforded Rowan to navigate certain aspects of the district more intimately than most teachers, novice or otherwise. Having veteran status within the GSD, Rowan was consistently resourceful as he created the PBL curriculum. Throughout the school year, Rowan blended his personal and professional experiences to create a meaningful PBL curriculum. For instance, his experience as a student, son, and teacher influenced his ability to create a PBL curriculum that emphasized
community, environment, family, and mentorship. With his sixth-grade teacher, father, and mentor in mind, he created the “Procession of the Species” parade, which reflected the environmental aspects of his teacher, respect related to his upbringing and his father, and his mentors’ guidance with regards to the environment as he created the curriculum.

Linden’s experience within the GSD prepared her to navigate the first year of creating the PBL curriculum and establishing a new school. Her personal and professional experiences also prepared her to navigate the GSD, create the PBL curriculum, and establish a new program. Her personal experience of constantly having to move around when she was a student, emphasized the need to establish meaningful relationships with her students. As a veteran teacher, Linden had established what worked well for her within the traditional classroom setting, and was better prepared to incorporate elements of her experience as she created the PBL curriculum. For example, she created “playlists” which allowed her to continue developing relationships with students, while providing them with the necessary math skills.

Lennox was pushed to work hard as a middle school math student, and found success as she rose to the challenge. As a teacher, Lennox pushes her students to challenge themselves and consider their learning in ways that are applicable to their lives, in the same way her teachers/mentors pushed her. For example, the “Ship the Chip” project and the ratio lesson provide examples of lessons that apply to the lives of her students, while teaching them pertinent math skills. The PBL curriculum she created, highlighted the critical thinking, creativity, communication, and collaboration skills of her students.

Tatum provided her personal and professional experiences, and incorporated themes of independence, innovation, and acceptance into the PBL curriculum she created. For example, the creation of an outdoor learning area emphasized independence as students reached out to
community members for donations; innovation, as students repurposed materials such as tires into chairs and logs into game boards; and acceptance, as students worked together to create their space. Tatum was also the voice for the other teachers when it came to drawing attention to the lack of resources. While Rowan rationalized the lack of resources, Linden joined a textbook adoption team in response to the lack of a PBL curriculum, and Lennox complained but spent her own money on resources, Tatum voiced her opinion and even considered leaving the program.

Cross Case Analysis

Even though the findings present two general themes, the path taken to arrive at these themes was different for each teacher. The following presents a brief cross case analysis of the teachers while they created the PBL curriculum, and as they encountered supports and hindrances doing so. Each teacher was frustrated by the lack of support and resources they experienced early in the school year. The level of frustration varied for each teacher throughout the study.

Rowan was concerned with the lack of resources. During his first interview, he mentioned the lack of paper-clips. The lack of paper-clips was symbolic for Rowan as he believed that if the school could not provide teachers with something as simple as paper-clips, they were going to be constantly challenged when creating the PBL curriculum. However, over the course of the study, Rowan’s frustration turned to acceptance. Rowan accepted the fact that this was a new program, and that the program was small—with only 120 students. Because of the small student population, the school did not receive the same funding as other middle schools in the GSD. After accepting the lack of funding, Rowan, worked with his students and consistently problem solved resource-related issues. For example, he reached out to community members for paint donations and books for the library. He encouraged his students to create a vision of the
school, and he understood that almost everything was going to come from the bottom up and not from the top down. In other words, if he or his students found they needed a resource (i.e., a student library, paint, etc.) they were going to have to figure out how to make it happen.

In contrast to Rowan, Tatum’s frustration remained constant throughout the study and unlike Rowan, she did not accept the premise that funding and resources were limited and/or should be limited because of the small student population. Tatum believed the image and reputation of the GSD was a higher priority than providing teachers with resources, as the local newspapers, neighboring schools, and government leaders were constantly touring the school. Despite her frustrations and feeling she was left with little choice, like Rob, Tatum also became resourceful. She reached out to community for donations and spent her own money to create the PBL curriculum. For example, Tatum created a mud-room for students. The mud-room was complete with rain boots, jackets, and umbrellas—all of which were donated. Towards the end of the year, Tatum reached out to local companies for donations to create an outdoor learning space. The space was filled with repurposed tires, which had been turned into chairs, logs which served as a checker board, and plastic bottles which had been repurposed into bird feeders. Tatum’s frustration, unlike Rowan’s, was very much present during the last interview. During the last interview, Tatum discussed needing a class set of science beakers for her students and unwilling to spend anymore of her own money, she requested that the school purchase them. Tatum needed the science beakers for class on Monday. When the science beakers did not arrive, Tatum confronted her administrator and expressed her frustrations. During her final interview, Tatum mentioned not returning the following school year because of the lack of resources, respect, and frustration she endured during the first year.
Linden was frustrated with the lack of resources and support she received, but unlike Rowan or Tatum, she was less vocal. Linden was frustrated with not having the resource of a math textbook. However, like Rowan and Tatum, she became creative and resourceful. Linden generated math “playlists” for her students, which were a compilation of math exercises collected from several online resources. However, the compiling of these exercises took time. Linden was constantly preparing math “playlists” for her students, but she could have made better use of her time had she had a math textbook as needed. In addition, Linden joined the math textbook adoption team so she could count on having the resource of a textbook the following year.

Lennox exhibited similar concerns regarding the lack of resources. Lennox envisioned the creation of school gardens and floats for the community parade, but both were significantly scaled back due to a lack of resources. Lennox, like the other teachers, became resourceful as she created the PBL curriculum. For example, when her students learned about global economics and the shipping of goods, Lennox presented them with the challenge of shipping a potato chip. Students had to consider the packaging and shipping cost among other aspects as they engaged in the “Ship the Chip” project. The resources were inexpensive and the collaboration and critical thinking skills demonstrated by students were significant. Like the others, Lennox was creative and resourceful while creating the PBL curriculum.

**Discussion of the Data**

The data was significant as it considered the teachers’ professional and personal experience as it related to the creation of the PBL curriculum. For example, when Rowan created the PBL curriculum, he consistently incorporated themes of community and environment—both of which stem from his personal and professional experiences. Even as Rowan scaled back the
scope of every project, the themes of community and environment remained. For instance, his hopes to construct a garden that supported the school and community were replaced by a butterfly garden, which also highlighted themes of environment and community.

Much of the data was also consistent with the literature. For instance, all four teachers wished for professional development, planning time, and tangible resources—all of which was highlighted in the research presented in the literature review. According to the literature, and which has been mentioned previously, continuous and consistent professional development allows for teachers to develop other characteristics of PBL such as collaborative skills, personal and professional content knowledge and leadership skills (Abrami, Poulson, & Chambers 2004; Fallik, Eylon, & Rosenfeld, 2008; Han, Capraro, & Capraro, 2015; Harris, Penuel, D’Angelo, Debarger, Gallagher, Kennedy, & Krajcik, 2015; Howley, Howley, Camper, & Perko, 2011; Kanter & Konstantopoulos, 2010; Ketterlin-Geller, Baumer, & Lichon, 2014; Kokotsaki, et al., 2016; Ronfeldt, Farmer, McQueen, & Grissom, 2015).

Each teacher in this study discussed feeling hindered by a lack of professional development. Abram et al. (2004) found that as teachers experienced a lack of motivation due to a plethora of reasons (i.e., lack of congruence between teaching philosophy and curriculum, influence of principal, school climate and culture) that they were best addressed via professional development trainings. Professional development offerings for the teachers in this study were minimal and lasting no more than a few hours.

However, the veteran status of each teacher ensured significant content and pedagogical knowledge which allowed each teacher, in ways unique to their experience, to consistently overcome the challenges of creating PBL curriculum (i.e., lack of resources, etc.). Azano (2011) found that content and pedagogical knowledge played a role in alleviating some of the pressures
experienced by teachers (i.e., time, PD). Throughout this study teachers were supported by their veteran status within the district as they acquired resources through collegial relationships they had developed at other schools and outside the district as community members consistently provided resource support via donations.

Fallik et al. (2008) also speaks to the benefit of veteran teacher status in regards to curriculum implementation. Fallik et al. found that veteran teachers benefit from a higher degree of confidence in the implementation of curriculum, more so than novice teachers. Even though the teachers in this study were frustrated by a lack of support they consistently created and confidentially implemented curriculum.

What proved to be of more interest, however, was the way each teacher encountered and/or constructed knowledge related to these challenges. There appeared to be a communication issue between the teachers and administrators, making the development of the PBL curriculum challenging. Nagel (2015) discusses the benefit of including teacher voice at every level of program development. The inclusion of teacher voice increases teacher engagement, motivation, attitude, and general buy-in to the goals and/or mission. In this regard the teacher becomes the conduit making sense of the “outside” and “inside” factors as, in this case, curriculum is developed. The lack of concern regarding teacher voice during this study resulted in a few of the teachers questioning their interest in returning to the program.

**Implications**

The GSD and community has experienced significant growth as the population soared from 6000 residents in 1990 to nearly 24,000 as of 2016. The economy has also shifted from having just one industry to the inclusion of several high-tech companies. As the community
continues to grow and diversify, teaching and learning should align with the changes, especially when considering the mission of the GSD to “see and serve” all students.

How teachers create knowledge is a complex process. During this study, each teacher demonstrated a level of resourcefulness and creativity that shaped the PBL curriculum they created and their knowledge related to this process. Their conceptions of curriculum shifted throughout the study as they realized professional development and resources, for example, would not be provided. Applying this knowledge to their practice encouraged them to become more creative and resourceful than they had been prior to being a teacher of PBL. Rowan, for instance, exhibited both creativity and resourcefulness as he learned, and shared with his students, how to mix paint. The “Procession of the Species” project required the need for paint. The community (serving as a resource) donated gallons of white paint, which Rowan and his students learned how to make into other colors. This display of resourcefulness and creativity became part of the curriculum. Lennox exhibited qualities of resourcefulness and creativity as she designed math curriculum. She used the inexpensive resource of cereal to teach about ratios and nutrition. Lennox consistently demonstrated creativity and resourcefulness as she created PBL curriculum. Linden applied the same characteristics of being resourceful and creative as she designed her math “playlists” and overcame, in her perception, the challenge of not having a textbook. Tatum, describing herself as a “creative weirdo”, continued being resourceful and creative, the creation of the mudroom, for instance, illustrates the support of the community and the resourcefulness of her students to gather the supplies necessary for making the space a reality. The design and creation of the mudroom is an example that demonstrates the creativity and resourcefulness of Tatum’s PBL curriculum and the knowledge she constructed as she considered it important for her students to journey outside.
The creativity and resourcefulness of each teacher had been shaped by primarily by professional and personal experience and was not necessarily nurtured and grown by becoming a PBL teacher. Each teacher consistently voiced concerns regarding the lack of professional development and resources and continued to construct their own knowledge and understanding PBL curriculum creation. The PBL curriculum they created which was consistently creative and resourceful provided, in their perceptions, meaningful learning experiences for their students. Each teacher either worked with their teaching partner or independently as a culture of collaboration had not been established. Teachers ventured in many different directions as they considered and created PBL curriculum. This movement in many directions created tension among the teachers. For instance, Tatum, recognizing a need for her students to venture outside, took it upon herself to establish a mudroom which resulted in feelings of frustration and resentment from the other teachers as they had not been consulted and were concerned about how the space would be used and who would be able to use it. However, had a culture of collaboration been established these feelings could have perhaps been avoided or at least discussed.

Each teacher incorporated their personal and professional experience into the PBL curriculum they created and they feel they could have benefitted from professional development, material resources, and planning time. Regardless, they consistently created PBL curriculum that encouraged future curriculum. For instance, as Tatum created PBL curriculum she realized it was necessary for her students to learn outdoors and to fulfill this desire for her students required a space for them to change into and out of their rain gear. By establishing this space, Tatum considered the development of future PBL curriculum despite the frustrations she expressed throughout the study and the consideration of not returning the following fall. Again,
the construction of knowledge as it relates to creating PBL curriculum is complex. The curriculum created by each teacher incorporated their lived experiences and in this regard the curriculum, as Slattery (2014) discusses, should not be considered as a noun but rather an adjective.

Since this study, I have transferred from the traditional classroom to the newly built PBL high school in the GSD and I have applied my knowledge from this study to the PBL curriculum I have created just as the four teachers have continued to do. For example, the lack of professional development regarding the creation of PBL curriculum encouraged me to critically consider the need for professional development and to begin asking questions regarding teacher confidence. Each teacher in this study was a veteran teacher who had experienced years worth professional development training and each teacher created, in their perception, meaningful PBL curriculum with minimal PD and resources. Why was their confidence to create PBL curriculum dependent on PD? Why was their confidence to create PBL curriculum intertwined with a lack of material resources? Furthermore, how long can a program exist if teachers feel neglected (regardless of the perceived benefits PD and resources) and if a culture of collaboration is not established and supported? These are a few questions that should concern the GSD as the district and the PBL high school continue to grow.

District and building leaders should continue to provide a level of autonomy where teachers can continue to take risks when creating curriculum without fear of repercussions. District and building leaders should also consider providing continuous and consistent access to resources both tangible and intellectual. As teachers continue to create the PBL curriculum, tangible resources will continue to be needed, as students will be required to demonstrate their learning via projects. Consistent and continuous PD offerings should be considered by district
and building leaders for all PBL teachers, but perhaps even more so for new teachers. Professional development related to PBL can help demystify the framework for teachers who, to no fault of their own, were most likely taught in traditional settings and therefore, teach in a traditional manner.

The content and pedagogical knowledge of each teacher in this study had been shaped by years of teaching in a traditional, self-contained classroom. To transition from a traditional classroom to a progressive, collaborative framework such as PBL takes time understand, adjust to, and create curriculum for which could partly be addressed by offering professional development opportunities. PBL is a collaborative experience for teachers and students. Teachers, as the knowledge holders, could benefit, shape, and offer the PD trainings for the district (assuming release time is provided). Teachers creating and offering PD would support teacher voice, confidence, motivation, and better prepare teachers to take on the challenges of PBL (Nagel, 2015; Fallik et al., 2008; Abrami et al., 2004; Kokotsaki, et al., 2016). All of these benefits should be considered as the school continues to grow.

**Recommendations for Further Research**

This study explored four veteran teachers and their first year in creating a PBL curriculum. As the GSD continues to grow, the PBL middle school will grow and will feed into a high school, which will result in the need to hire more teachers. Teachers who are not opposed to ongoing challenges of curriculum development, who may consider themselves lifelong learners, who work well in a team dynamic, who are adaptable, flexible, resourceful, and have a passion for teaching and learning would complement a PBL program. Therefore, further research exploring the growth and addition of more teachers, as well as the continued approach to creating
a PBL curriculum would not only benefit the GSD, but also neighboring districts and schools who are considering using student-centered, progressive frameworks.

Future research could also explore the role of providing (or choosing not to provide) continuous and consistent access to resources, including both tangible and intellectual. Each teacher discussed the challenges of not having access to the resources they believed were necessary for PBL; however, they were still able to create an engaging PBL curriculum. In addition, when they voiced their concerns about this during the interviews and to administration, they rationalized the lack of resources as the “growing pains” of a new program. Furthermore, despite their concerns surrounding the lack of PD, they nonetheless, created an engaging, student-centered curriculum. Further exploration of the resources needed within a PDL curriculum could provide further insight regarding the provision of such resources.

Research questions regarding how teachers construct knowledge and the creation of a PBL curriculum are vast. Some noteworthy questions include: How might this study be compared to an urban PBL program? How might this study be different if it consisted of novice as opposed to veteran teachers? How might this study be different in a school hindered by socio-economic issues? The possibilities for future research are endless.

The hope is that as the GSD and PBL schools grow, the district and building leaders will continue to support the “lived experiences” of the teachers they hire, and allow them the autonomy to create PBL curricula which incorporates their personal and professional experiences. Furthermore, the hope is that teachers are provided the resources they believe necessary for creating an engaging, student-centered PBL curriculum.
REFERENCES


APPENDIX A

ROUND I INTERVIEW QUESTIONS
Round 1 Interview Questions

1. Tell me a little about yourself (Where are you from? What was school like for you? What was your childhood like? etc.) How do you find your personal and professional backgrounds influencing your approach to teaching and learning?

2. Tell me about a learning experience you had as a young adult and as a teacher.

3. How has your approach to teaching and learning changed over the course of your career?

4. How has your approach to teaching and learning stayed the same over the course of your career?

5. How do you create Project-Based Learning curriculum and/or what do you consider when creating PBL curriculum?

6. Tell me about collaborative experiences in relation to creating curriculum?

7. Can you provide an example of curriculum that has worked well?

8. Can you provide an example of curriculum that has not worked well?

9. How do you view and/or experienced supports and hindrances in relation to curriculum making?

10. Is there anything else you would like to share?
APPENDIX B

CASE STUDY REFLECTIONS
Case Study - Lennox

Lennox has a very long history within the school district. She grew up in GSD community. She attended elementary, middle, and graduated from high school in GSD. Her mother was/is a music teacher and her father works for a bank. Lennox chose to become a teacher she marched off to college and had to decide upon a path. Her mother inspired the idea of becoming a teacher and her father, along with several great math teachers along the way, influenced her to focus on becoming a math teacher. After finishing her graduate program Lennox returned home and applied for a few math and teaching positions within the school district and community she had attended and grown up in.

Lennox interviewed at the bigger of two high schools within the district. This was the school where she had learned to appreciate math. However, during the interview, she realized the high school was not going to be an ideal fit for her personality, desire, and needs. The high school came across as cold and off-putting. Lennox had an interview at one of the middle schools. It was at this interview where she felt a level of comfort and welcomingness to the school and climate that matched up with her overall personality. She commented on the bright colors, polka-dot decorated walls, and the office dog that all made the school feel like where she needed to be.

Who is Lennox?

Lennox’s support from her parents, community, and teachers, some of which are now her colleagues, has also shaped her ability to identify the school district as being very student centered. As a sixth-grader Lennox was pushed early on by a teacher who placed her in advanced math classes and motivated her to work hard. Lennox, inspired by her teacher and
despite feeling ‘dumb’ (int 1 2:49) thrived in the advanced math classes and began to appreciate the logic and order of math. Lennox continued having math teachers who continued pushing her and as a result her appreciation for math and teaching grew as well. Perhaps unaware of the student-centered approach to teaching and learning that she had experienced as a student Lennox commented on her earlier experience of teaching at the middle school as the students being the center of everything and the teaching as somewhat secondary. (int. 1 7:10 pg. 2). Her past experiences to a degree have shaped her ability to place the student at the center of their learning. It is the experience as a student coupled with her experience as a teacher that has influenced Lennox’s and shaped her role at the PBL school.

Lennox has only taught within the school district. She has taught and coached within the district for six years. Early on Lennox felt an incredible amount of pressure to get kids through the math curriculum, which she relates to her ‘type A’ personality along with a perceived reputation for the excellent reputation the schools have for preparing the students, academically, for the next step after school. However, Lennox’s philosophy began to evolve and began to slow-down, in a beneficial way as she recognized that the students she was serving “needed so much more” (int 1. 14:03 pg. 3). If, for example, students were not eating breakfast how could she expect them to focus and do well in her math class. This evolution of philosophy has also allowed to Lennox to appreciate and better serve all students especially as she transitioned to the PBL framework. The transition from a traditional based school to a school emphasizing projects and student choice continued to challenge Lennox’s evolution and approach to teaching and learning. The regimen she had been accustomed to of 55 minute periods and a set curriculum to a more or less non-existent schedule and curriculum at the PBL school. The transition from a
predictable approach to teaching and learning to an open-ended framework and possibilities would challenge her experience and teaching philosophy to become more flexible.

**What has Lennox experienced?**

Over the course of the PBL school year Lennox has experience several challenges range from the facilitation, development, and implementation of PBL curriculum. Lennox has endured several challenges some of which have become significant hindrances to the overall PBL program whereas other challenges have been overcome with specific supports.

Lennox’s move to the PBL school is interesting because it comes across with several contradictions. For example, she is nervous about failing, being constantly observed by her colleagues and then talks about the pull factors being a need for change and a desire to team teach. A few of the challenges Lennox experienced early on came about as result of this transition from her own little isolated classroom to being thrust into working with another teacher, being constantly observed and her teaching being on display in front of her colleagues. Lennox was nervous about being a good enough teacher for the PBL school.

For me I was so nervous to not only not have a space but then to have to share that space and share my teaching and my kids all day with somebody else. Like I was so nervous to come in. And what if we didn't click what it's like. I felt subpar like like am I going to be good enough to just come in here and start like I'm leading a group of 60 kids and somebody else is going to be another teacher is going to be watching you know I have bad anxiety like I did because I didn't know Rob like all of a sudden here I am going from having my own little classroom where you know you're lucky to get a visitor in a month to then all of a sudden it's everything you do is with somebody else another teacher every lesson.
(Interview 2)

Lennox then followed up her nervousness with discussing this need for a change and not being someone who can just sit in the same place for the next 20 years. So her ability to take a risk, as anxiety producing as it may have been, was necessary for her to continue on. One of the pull factors for Lennox was a change in scenery, not that she didn’t feel supported at the middle school she was leaving, but yet a change was still needed. Another pull factor was Lennox’s interest in collaboration and team teaching. The team teaching and the idea that all the teachers were in this together was relieving to Lennox as she wanted to change her approach to instruction. The freedom of collaboratively developing a PBL curriculum allowed for mistakes to be made and corrected together. She believed she could have tried a PBL in her traditional classroom but that there was a lot more at stake whereas at the PBL school there was an expectation to do things differently and it was safe to fail.

Early in the school Lennox noticed a definite difference between the traditional classroom she had taught in for six years and the PBL classroom. Lennox discussed the almost scripted nature of the traditional classroom and how she had more or less become accustomed to the 55 minute periods and pushing through the curriculum. She discussed, even though she didn’t like this aspect, but how she had become somewhat robotic too scripted and how her students were also somewhat robotic. Upon reflection Lennox also recognized the inability or lack of attention given to struggling learners in her experience in the traditional classroom. She felt an obligation to move through the material and teach student mathematical concepts. If the students were able to learn the concepts they did well and if they didn’t they fell behind as the class moved on. This obligation came from a pressure to get the students through a certain
amount of material so they could be successful in the next math class. However, the pressure to move students through the material also came from state standards as well.

Transitioning to the PBL school Lennox experienced more freedom to simply experiment with teaching practices. Lennox commented on this transition being somewhat difficult as she defined herself as having ‘type A’ personality and always needing to be in control of a particular situation. However, having a growth mindset allowed Lennox to slow down, to try new approaches, to better ‘see and serve’ students, and to reflect on her practices. This transition also afforded Lennox the opportunity to collaborate with colleagues to develop a curriculum and begin to define the meaning of project-based learning.

As Lennox ‘slowed down’ she commented that the PBL curriculum was almost secondary and what took priority was working with students who trying to navigate the expectations of this new school. Lennox reflected on teaching the kids ‘how to be’ and not necessarily be so concerned with the particular class they were in or how they were going to be graded on a particular assignment but ‘how to be’ engaged in their learning. She observed PBL students, as opposed to traditional middle school students, developing an ability to exist ‘outside of the box’. Lennox was also able to address struggling students better as opposed to just moving on to the next lesson. As students, for example, worked on small scale projects Lennox along with her colleagues had more opportunities to work with struggling students individually or in a small groups.

A few early projects exhibit this freedom for both Lennox and the students to be engaged in their learning. As the PBL teachers worked to understand and develop a PBL curriculum on a day-to-day basis they recognized a need for routine. The teachers came to an understanding early in the year that math was going to need to be taught in a very traditional way and then the
concepts could be added to a particular project later on. As a result the students and teachers, more or less, experienced a fairly structured first half of the school day and a less structured more project-based second half of the day. As the students and teachers came back together after lunch students were given time to engage in a passion project. They were given 30 minutes to one hour to learn about something they were truly passionate about. During this time Lennox and the other teachers were able to guide students in their learning by asking probing questions, assist in their researching of a particular topic.

Lennox reflecting on a discussion with a substitute teacher who was confused about the purpose of passion project was happy to share that it was the complete opposite of chaos students were quiet and deeply engaged in their learning. For example, a few students worked together to establish a library for the school. Students actively engaged teachers a discussion regarding the construction of a library. They researched the particular needs of the school, how they could acquire books, the possibilities of donations and every other aspect a library needs to be complete. The student project resulted in a small but growing library. Lennox attributes the ability for students to take on and fulfill a task such as building a library, largely from the freedom of a PBL framework, or at least the PBL framework she and her colleagues were working to understand.

Another example, of a passion project Lennox discussed was a student building a three tiered cake complete with a fondant icing. Lennox found this project interesting because it incorporated the math of fractions taught earlier in the day into the recipes the student began researching. The student encountered a few hurdles during the project but overcame them and completed her cake. Lennox reflected on this particular project as it was a definite shift from the traditional middle school to a PBL classroom. Her students were no longer simply learning math
concepts for the sake of learning math concepts but they were now learning these concepts, applying them to real scenario, encountering problems, developing critical thinking skills and overcoming challenges. Lennox attributes the early success of her students to the freedom inherently and in this case thoughtfully embedded by her and her colleagues into the PBL framework.

However, Lennox commented on the fact that not every project was a success and how a few of the projects attempted throughout the year could have used more attention from the teacher in regards to planning and implementing. A few projects allowed an opportunity for more growth in the future. The freeing nature of PBL allowed for Lennox to experiment with an idea and when both the student and her didn’t find a high level of success the project allowed for a pivot, a discussion, and room for future growth. One such project Lennox discussed in great detail was the ‘Ship the Chip’.

After having learned about how the remains of Lucy were on constant tour around the world Lennox challenged students to think about the process of shipping these remains around the world. The challenge came in the form of researching, designing, and packaging a single potato chip and preventing it from being destroyed in transit. The students had a large amount of time research, design, and create. During this time Lennox guided students by asking them probing questions and encouraging them to make specific considerations as they prepared to pack their chip.

Two students out of thirty successfully designed a package worthy of shipping a chip. Lennox viewed this a failure but also an opportunity for her to reflect on her lesson development. This failure also allowed for a pivot as the teachers and students discussed what went so wrong and to prevent this level of failure from occurring in the future. For better or worse the freedom
of PBL, as the teachers have had no formal training or professional development seminars and are more or less developing the PBL curriculum on the fly, has allowed for teachers in this case to discuss and create a project about packaging and shipping of goods versus the significance of Lucy’s remains.

Creating PBL curriculum for Lennox and this group exists in a trial and error format. The ability to development and experiment with projects holds both benefits and drawbacks. The benefits allow for the teachers to reflect on their ability to create PBL curriculum. The drawback that this experimentation with curriculum may be at the expense of student learning. Lennox acknowledged the flaws within the ‘Ship the Chip’ project. The project allowed her to take a step back as a teacher, reflect with colleagues, explore what worked well and what didn’t work well in hopes of avoiding pitfalls in future projects.

Lennox also discussed the amount of interruptions and lack of communication as problematic throughout the year. As the teachers worked to establish a sense of normalcy and routine for students other things would be pushed onto their plate which would disrupt the overall routine. As a result Lennox developed a ‘go with the flow’ approach to PBL. For example, an opportunity for the students to learn how to code was presented to the teachers, it was going to happen. This opportunity was not relevant to anything the teachers or students were developing or learning. The chaos can sometimes be overwhelming to Lennox and she has to flip this scenario into a positive, a unique opportunity for students, and further emphasized the need to ‘go with the flow’ which she also believes to be a necessary component to be a teacher of PBL.

**How has Lennox experienced supports and hindrances?**

**Supports**
Lennox found support in four primary ways. She found support in the freedom of creating a new curriculum, collaboration, administration, and the community. The PBL teachers were tasked with creating a PBL curriculum and doing so with little to no professional development or training and minimal additional pay. Perhaps the support comes from a result of not providing professional development, trainings, and minimal additional pay is that the PBL teachers weren’t attached to a particular curriculum and had no obligation to fulfill specific expectations. The support came in the freedom she had to experiment, the autonomy to try new approaches to teaching and learning, and to take a step outside the box she had been teaching in for the last six years. Early in the year she discussed the impact of teaching in a traditional manner and feeling like she was churning out robots the transition to the PBL school allowed her the freedom to essentially reinvent herself.

Even though Lennox was initially nervous about team teaching, being in a state of constant collaboration, sharing a space with her colleagues. Her team teaching partner proved to be an excellent match. They complimented each other well which was important for Lennox to acknowledge as she was concerned about the changing dynamics of team teaching especially as the school grows. She discussed, as the school continues to grow, the need to hire the right people, people who have a proven record of collaboration and communication. Lennox also discussed the importance of veteran teachers being the key to success as the school grows.

Lennox, to a degree, found support from the administration. The administration was consistently present, walking around, observing and providing feedback. She also found support of the administration in the trust placed in the teachers as professionals to create a meaningful, engaging, exciting experience for the students as they ventured into unknown territory, created, implemented and refined a brand new curriculum.
Lastly, Lennox found support in the community. She knew the community supported the teachers in the fact that they were going to be doing things a little different than had been done in the traditional setting. The support from the community comes in the form of trust. The support from the community also comes in the form volunteers and in some cases the request for resources.

**Hindrances**

There were three primary hindrances Lennox experienced over the course of the year, a lack of curriculum, professional development, and communication. As freeing as it may have been to have the ability to create a brand new curriculum it proved stressful at times. However, some form of curriculum could have been useful as a place to begin, a something to work with, a jumping off point instead of building the plane in mid-flight. Lennox’s experience with the ‘Ship the Chip’ project may have been better planned, implemented, and success may have been experienced by more students.

Professional development trainings related to PBL provided throughout the course of the year could have lessened this stress. The opportunities for release time and professional development, along with additional pay for developing a brand new curriculum were minimal. Lennox discussed a professional development opportunity in the form of a learning walk at another PBL school within the region where she could collaborate with other veteran PBL teachers. On the opposite end of the spectrum Lennox was the one conducting learning walks for other teachers within the district.

Lastly, the lack of clear communication was consistent throughout the year and this lack of clear communication created other logistical hindrances. For example, Lennox needed extension cords to move a screen, she would clearly communicate this need and it was
acknowledged but unfulfilled. Lennox, too often, would purchase these necessities with her own money. A few other examples include a need to have some sort of student storage and an ability to make copies. These requests were ultimately fulfilled after several months and requests.

**Case Study - Linden**

For Linden the most important aspect of teaching is providing an opportunity for the students to form connections. Through these connections a deeper understanding of the curriculum can also be made. These connections also allow for Linden and her students to make their learning relevant to the world beyond the walls of the classroom. Linden is the most veteran teacher of this study having taught middle school for 18 years within the district. Linden, like all the other case studies, has also only taught within this district.

The opportunity to move from a more or less traditional setting to a project-based setting allowed for Linden to continue working with students on forming relationships with each other, the community. The PBL framework afforded Linden the opportunity to continue learning as well. Linden’s path to becoming a PBL teacher has been shaped by choices. Project-Based Learning is also shaped by choices especially in this case as the teachers are developing the curriculum making it somewhat of a natural fit to Linden’s approach to teaching and learning.

**Who is Linden?**

As a student, Linden thrived during her middle school experience. However, as she advanced to high school everything changed and she dropped-out during her junior year. It wasn’t too long after making this decision to drop out that she realized she needed to earn her diploma which she did by taking an alternative path. This would be one of the several choices of paths Linden would end up taking to ultimately earn her a position in the PBL school.
Linden reflected about the reasons for some of these early choices to, for example, drop-out of high school, to return to school, and to ultimately earn her undergraduate and master’s degree. All of these paths are largely defined by the connections she felt with a particular school and/or company. She argues that if students experienced and authentic, relevant connection to their learning and the real world that they wouldn’t experience the same struggles she had as a student.

Linden’s middle school experience was powerful. There were around 100 students, everybody knew each other, everybody was connected. The teachers knew all of the students and were able to play a powerful role in their learning experience. Linden reflects upon her middle school teachers being able to name each one of them. Linden also reflected upon her ability to her students how to diagram a sentence as the exact same way her 7th grade teacher, Mrs. Lycan, taught her so many years ago. In other words Linden’s middle school experience made a powerful impression on her in general.

As Linden advanced to high school everything changed and not for the better. In general the connection to the teachers and students in middle school had, for the most part, disappeared. Linden had gone from a middle school of 100 students to a high school of over 2000 students. She became lost and uninterested in her education. The connection to learning for Linden no longer existed. During her junior year, and choosing a path, Linden decided to drop-out of high school to work full-time for a retail company. It wasn’t too long after choosing this path that Linden had reached her capacity working in retail and if she wanted to advance that she was going to need more education. She earned her diploma and continued working.

Linden had joined the real world, she had a job, she had bills, and was trying to make her way. As she reached her capacity at another job it was necessary for her to once again go back
to school if she wanted to advance with the company. Linden had realized during her time with this company that she had a knack for teaching and as she finished her undergraduate degree another path appeared. The choice was now to teach adults in the private sector or children in the public sector. It was during an elementary math course and the explanation of an algorithm that Linden realized how easy and powerful these connections to learning could be and she wondered why they weren’t presented this way when she was in school. As a result of her, now advanced education, Linden chose to serve students as a conduit for making these connections and to keeping them interested in their education. She wanted to provide students the connections she experienced in middle school, assist them in making relevant, real-world connections. Linden reflected on how guiding these students to make these real-world connections in middle school may make their high school experience more meaningful.

Linden reflected on her role as PBL teacher as she briefly discussed her philosophy and tied it into her experience as a student of home economics. The following illustrate the connections and the experience, in her opinion, students must experience to remain interested in their learning.

I want to say it [teaching philosophy] stayed the same but it’s probably even grown more in terms of feeling how important it is for kids to understand...what we’re doing her at school will benefit you in the world or how it connects to the real world...I mean that’s a lot of why I’m here that really feel like I guess the other that I have added on about is when I said connection. Connection. Engagement. So whether that’s engaged through a teacher or a personal connection or whether it’s engagement through whatever is happening in the environment. (Interview 1)
She continued on to illustrate her philosophy as she reflected upon her engagement as student during her sophomore year home economics class. “One of my favorite classes in high school was home ec...it was very engaging because we learned how to keep a checkbook...we learned how to sew...it was like hands on real-world application” (Interview 1). Student connections and engagement in learning have proven powerful in regards to Linden’s learning experience and she works diligently to incorporate them into her students learning.

As Linden’s experience has taken many different paths it has allowed her, in her own way, to make powerful connections to the role education has in life. Her education has granted her the ability to understand and incorporate into her teaching meaningful connections, to assist students in making these connections and to stay engaged.

What has Linden experienced?

 Throughout the school year Linden has experienced several challenges and successes and she made the transition from a more or less traditional middle school to PBL school. Linden had taught 18 years in a traditional middle school so this transition to a PBL school would sometimes be stressful and overwhelming and other times be enlightening and reaffirming to her teaching philosophy. Linden’s teaching philosophy in general is to work with and guide students to make connections, to be engaged, and to have fun while learning.

 The shift to teaching PBL presented a few circumstances that overwhelmed Linden. She defines her approach to teaching as highly organized and as someone who likes to be in control. Linden spends a significant amount of time after school and at home learning, organizing, and preparing material for the following day. Linden plans and prepares in the morning, after school, and at home as her daughter sleeps. Linden is trying to take care of the big planning in hopes of
understanding the direction the school year will take her and her students. She reflected upon this need to understand and prepare.

I do leave at 3:30 usually to pick my daughter up because she's out of elementary school at 3:30 and it's so I just go down right back up. And so that kind of forces me to leave but I take my work home with me and every night after she's in bed from 9 to 1, I do at least two hours of work for the weekend. You know it's just kind of that big of planning. I do find we have morning planned time. I'm finding that I'm using a lot more effectively than I did previously. (Interview 1)

The curriculum that Linden is learning, planning and organizing stems from her need to be well prepared as well as from her 18 years of teaching experience. Making the transition from a traditional classroom to PBL school for Linden has meant having to let go or to at least find a balance between of some of the teaching methods she has used for the last 18 years and the demands or expectations that PBL requires. For example, early in the year Linden recognized a need for direct instruction especially with regards to teaching math. Linden and her teaching partners realized that math was challenging to incorporate into a PBL curriculum especially one they were developing, implementing, and refining on the fly, and decided to create a schedule that allowed for direct instruction and PBL. This schedule afforded Linden less stress and feelings of being overwhelmed and somewhat grounded her, it allowed her to provide direct instruction and to begin adding elements of PBL into her practice. Linden recognized early on that for her and the students that a balance between direct instruction and PBL needed to exist and that students, who are also making this transition to PBL, also appreciate direct instruction.

They miss having the interaction they miss having that direct instruction to get the validation that yeah you're doing it you know this is how you do it you're on the
right track. And that's been kind of interesting. We tried to do a lot more kind of
loose to start with and now we found oh wait we need to give a little more
structure for the kids. That's something we're revamping for next year. Not
making it a traditional classroom but just a little more structure at the beginning of
the year and then slowly letting out the reins which is what I would typically do in
my classroom. (Interview 1)

Linden also acknowledged the need for flexibility in a PBL setting. Flexibility relates to
the actual space, the students, and teaching partners. The administration also had an appreciation
for being flexible as a desire for one major project to be attempted during the first year would
fulfill expectations. This freedom to be flexible allowed Linden and her teaching partner to
learn, develop, and experiment with curriculum. Linden found the early attempts to be
integrated lessons rather than project-based. For example, as her teaching partner taught about
oral histories and the power of narratives Linden would provide the language arts aspect. It was
during this process of creating and understanding PBL that Linden recognized the need for
flexibility and the meaning of PBL.

And so we've ended up with kind of having some many things that I would think
of as more integrated curriculum wise versus project based learning. So I guess
my idea of project based learning is obviously a very flexible environment where
kids are learning through various projects that they're participating in. So it's not
the project that is the end the end piece. It's the project that is the learning.

(Interview 1)

Early in the year and as Linden began to make the transition to PBL she recognized a
need to plan for the long-term goals and to also establish balance between direct instruction and
PBL for the day-to-day goals. This balance benefitted her and her students. She also recognized the flexibility to develop and experiment with PBL curriculum afforded to her by administration and supported by her teaching partners. The PBL school was going to be a safe place for teachers and students to make mistakes as they learned.

An early project that Linden undertook with her teaching partner was developing a ‘Choose Your Own Adventure’ story project. Students would develop a story where readers could choose their adventure as the progressed through the story. The story, however, was shaped by student interviews of family members and their personal histories. This project allowed for teachers to teach and for students to develop interviewing, transcribing, revisional, story-mapping, historical-thinking, and presentation skills. The finished projects were presented by the students to community members during a showcase night.

Linden appreciated the the ‘Choose Your Own Adventure’ story project because it allowed for students to stretch their learning. It allowed for her and her teaching partner to work with students in an environment defined by less pressure and flexibility. Linden commented on the benefits of teaching in a framework such as PBL versus her experience in the traditional classroom where she felt more of an obligation to keep on moving through the curriculum sometimes to the detriment of student learning.

You know keep moving gotta keep moving gotta keep moving. Sometimes to the detriment I think I wish that I had taken more time with things or just said OK I might not get to all how many standards there are in math but I I know that I've hit you know the big ones and the ones that I know are the most important for the us back here. I find that we stretch things out because if kids are struggling with something or they need more time then it's like oh yeah let's push it out today let's give them another day to work on it and then we'll take the next step. (Interview 1)

Linden has a desire to make learning meaningful and relevant for her students. Her understanding and early development and implementation of PBL curriculum has allowed her
students to make connections, establish relationships, and to make learning relevant to their lives. However, Linden wants students to begin making these connections on their own and asking questions that drive the curriculum. Linden reflects upon the water crisis in Flint, Michigan and the challenges of getting her students to ask these questions and begin making these types of connections to their own community.

In Detroit, Flint, Michigan. Right? So I read that in Junior Scholastic with my students last year and they were asking all these questions, well, could we have that issue here in the GSD community? Do we have that issue? What’s our water quality like? What’s our...And so in my mind, I'm like oh my gosh, if this was you know next year's project based learning that would be something that could totally take off and build a project around so it's kid driven. That's probably been the hardest part. I think that's probably because kids are, well, but they do ask those questions. I think we're having a hard time finding those things that really get kids asking those questions that we can take and run with where it's kind of a lot of kids that we're capturing. (Interview 1)

This reflection makes Linden aware that she and her teaching partners are the ones who need to present these types of scenarios to initiate a conversation and motivate students to ask powerful questions related to their community and in doing so connections are made and the learning and curriculum becomes relevant to their lives. These connections, according to Linden, makes a huge impact on the learning experience of the student.

**How has Linden experienced supports and hindrances?**

Throughout the year Linden has experienced a variety of supports and hindrances. Transferring from a traditional middle school to a brand new school and a brand new program
she anticipated the support of collaboration and flexibility. Linden also knew that because it was a brand new school and program that there would be hindrances as well. These hindrances were sometimes personal as they related to a shift in teaching methods whereas others were building a program related issues such as a lack of resources, time to plan, and professional development offerings.

**Supports**

Linden struggled somewhat with figuring how she was going to fit into this program, obviously as a teacher but more how was she going to maintain her identity that she had shaped for the past 18 years to being thrust into a program that relies on a daily practice of collaboration and team-teaching let alone developing a meaningful, project-based curriculum. Linden found support from the district, the building administration, her teaching partner, and her own teaching experience.

Based on her experience as a middle school student and actually being a student that “fell through the cracks” Linden found support in the sole fact that the district was willing to take a risk and establish a new school to better meet the needs of this exact population. Within this supportive step taken by the district Linden recognized an opportunity to make learning relevant to students, to establish powerful connections between her colleagues, students, and community, and to challenge her own notions about teaching and learning.

The environment established at the PBL school was one of less pressure to meet specific standards and/or goals and it is not say that these were not relevant it was that the school climate provided conditions conducive to teachers taking risks and experimenting with the new PBL framework when developing a curriculum. Linden found support in the fact that the building administrator had an expectation teachers and students attempting one bigger project over the
course of the year. Linden found this to be a support as she was busy teaching herself about the facets of PBL and developing the curriculum throughout the year.

Aside from the support of the district and building leadership, Linden found collaboration and team-teaching to be the most powerful support for first year experience as a PBL teacher. Linden reflected on teaching that doesn’t heavily rely on collaboration is “nice because you just do what you and to do” (Interview 1). but this year she has been challenged to collaborate, integrate, and develop curriculum which she has found to be more effect than teaching in isolation. The collaborative practice also provides a sense of security especially during the development of a new curriculum “when Tatum and I are working so closely together and integrating I feel like I’m not alone in my planning...I’m finding I am much more effective when I’m planning with other people” (Interview 1).

The district and building support along with an environment that encourages teachers and students to take risks has played a positive role in Linden’s experience. Collaboration and team-teaching has perhaps been the biggest support for Linden and for a few reasons. Collaboration has forced her to reflect upon her own practice and continue to learn and grow as a teacher. Collaboration has also provided the support of confidence, especially during the first year of a new program, to take risks and experiment with a developing a brand new curriculum.

**Hindrances**

Linden anticipated the hindrance of not having a developed curriculum or even significant resources to begin planning. She anticipated the work that it would take to develop a brand new curriculum. There were several hindrances that Linden didn’t anticipate and these are, in general, a complete lack of resources, ranging from enough novels for students to three-hole punch for preparing student materials.
Throughout her teaching experience Linden became use to being able to walk into a teacher work room and make copies, three-hole punch, and staple items, actions she didn’t believe she would have taken for granted as she moved to the PBL school. Linden found the absence practical items frustrating. Linden likes to plan and prepare her curriculum and she found hindrances in the absence of simple but necessary items such as a copier (which eventually arrived), staplers, three-hole punches. Items, she believes, necessary for the day-to-day functions of any school.

Linden wasn’t prepared for the complete lack of teacher and student resources such as textbooks. For example, as she learned math would best be taught as direct instruction she and her students would have benefitted from a textbook instead she scrambled more or less on a daily basis to create what she call “playlists” a sort of list of links students, who had all been furnished with technology, would be taught math. The lack of resources continued as Linden planned to have students read a novel but not having the ability to acquire a class set of a particular novel and settling for a novel that kind of fit her wishes for the curriculum or in other cases when only one copy of a novel was available deciding to read it to the students. Not having an established library within the school was also a hindrance to Linden. She admired the students creating a small library and her colleague establishing a time where students could go to the nearby middle school library but fact that a school was opened without a library was still a hindrance.

Linden also found a hindrance in the fact that the budget on a brand new program was limited and actually frozen towards the end of the year. The budget on a brand new program based on generating projects as learning forced the teachers to, too often, spend their own money on resources (Interview 3). Linden’s’s experience of hindrances maybe tied to the overall planning and establishment of the PBL school.
Linden also found the timeline for planning and opening the school to have at least negatively impacted at least the teacher perceptions of the establishment of the school. Linden had been on the planning committee, she had visited other PBL schools and the original timeline proposed to the teachers and community was sufficient however, when an opportunity to purchase land and a building became available the timeline condensed from a few years to a few months. Linden feels the hindrance lies in the idea that the district as well as the teachers hadn’t been afforded the opportunity to fully wrap their minds around and understand PBL, there was no curriculum, there was very minimal professional development, and the doors were set to open in a building still cluttered with office furniture. The expectations for success would be challenging to say the least.

No matter the overall hindrances Linden found that having taken this step in her journey to be rewarding. She was able to make a strong and meaningful connection to her team-teaching partner. She was able to teaching more relevant for herself and her students. Linden, having had an interesting journey in education, also enjoys the fact that she has been able to play a role in creating, developing, and implementing a curriculum that is not only brand new to the district but that seeks to make learning engaging to students who may otherwise not be interested.

Case Study - Rowan

Rowan grew up in a small town. He now teaches in a small town in Pacific Northwest. He has taught for 13 years within the district. This is the only school district Rowan has taught in and his experience within the district is vast as he has taught at both of the middle schools, and acted as a Teacher On Special Assignment (TOSA) for one school year. Rowan was sought out to become one of the four teachers teaching at the newly established project-based learning middle school, the third established middle school in an ever growing district.
Who is Rowan?

Rowan is a very open-minded, gay teacher in his mid-thirties. As mentioned, he moved from a small conservative community to teach in another small conservative community. Rowan began teaching at one of the two middle schools within the district 13 years ago and as a new teacher began to navigate and understand the political and social landscape of the district. The first middle school painted a somewhat gloomy cloud of negativity over education. For example, as he identified as a gay man he was also told to keep his identity to himself and warned that the community would not support his open identity as such. Rowan was also challenged with defining his identity professionally as a teacher. He worked tirelessly to create meaningful lessons, establishing a goal to create a curriculum that could be used in perpetuity. It was an administrator who would recommend thinking about curriculum as existing in a constant state of change and therefore could never be complete. Rowan’s administrator also suggested that thinking a curriculum could be complete was a disservice to himself and his students. His administrator knew Rowan was not the type to ever be satisfied with a finished curriculum and furthermore acknowledged that he could not be satisfied because he was knowledgeable enough to know as a young teacher that a particular lesson that may have worked well for one class may not necessarily work well for another class. More so, his administrator also recognized a disservice to future students if Rowan created a set curriculum because she knew that he knew all students didn’t learn the same and possibly more significant to the equation was the teacher student relationship that had not been established. Rowan had made assumptions about how students learned. Early in his career and at the first middle school Rowan faced and overcame challenges related to his personal identity as a gay man and understanding that each student also has a unique identity. However, this conundrum of recognizing the unique identity of each
student but not having your identity acknowledged would influence Rowan’s decision to teach at
the other middle school within the district.

It was at the second middle school Rowan was able to reinvent himself. He was afforded
a second opportunity to establish his identity and as he did he learned the community was a
much more loving and accepting one. Rowan shared with his students while introducing himself
that fact that his husband and him loved to travel. It was at this moment that students corrected
him and made suggestions “You mean your wife.” This became a teachable moment which
allowed for an open and honest conversation but perhaps more importantly a meaningful
establishment of teacher identity.

This move to the second middle school was important for a few reasons. First, as already
mentioned, it allowed Rowan to finally establish his identity and secondly it allowed him the
opportunity to reset his approach to teaching and learning. The first middle school had generated
a cloud of negativity. Rowan’s established relationships at the first middle school ultimately
created a barrier for continued growth. Rowan recognized he needed to reset his approach to
teaching and learning and the best way, in his mind, to do so would be to begin again in a new
school. It was at the second middle school, where he had actually student taught years prior, that
Rowan would be physically and intellectually detached from the school. Rowan taught in a
portable classroom and was therefore not forming relationships and/or collaborating with
colleagues as often as he had been at the first middle school. Rowan needed to now find his
identity as a teacher. Rowan grew in his approach to teaching and learning. He had honest open,
natural and authentic conversations related to social justice. He would ride his bike to school
and the bike itself would serve as a conversation piece related to the environment and the
students interaction with it. Rowan’s identity, at the second middle school, as a teacher was now taking on themes of social and environmental justice.

An aspect of social justice is empowering the marginalized. The setting he taught in had the ingredients to play to the students interests, they were engaged, and would become empowered. Rowan shared a particular lesson was identity shaping for him as a progressive teacher and engaging for his students. Towards the end of the school year his students were in need of some self-exploration as they had made it through the expected curriculum. Rowan suggested they conduct a research project related to something they were interested in, a passion project. However, he recognized the need for technology to conduct the research project so he engaged his students in the process of acquiring the technology. The class took the time to write and apply for a grant, which they received, and which allowed them to purchase the first class set of iPads in the district. This further shaped Rowan’s identity as a teacher bucking the status quo to a teacher empowering and engaging students through the process of grant writing. As the students earned their new technology they realized they were somewhat limited by the lack of WiFi so the next step was to establish a dependable, classroom based WiFi network. This is a great example of the Rowan facilitating student learning and the students facilitating the further shaping his identity. Rowan, years ahead of every school in the district and on his and students ambition, established one-to-one iPad within his classroom years before the district.

Rowan has also demonstrated a need for consistent and meaningful professional change within his career. After having taught at the second middle school for a few years Rowan recognized a need for further professional growth. Rowan became a Teacher On Special Assignment (TOSA) and served the district for a year collaborating with teachers at different stages in their careers in relation to curriculum development and implementation. To further
shape his identity as a teacher leader he found a need once again to re-establish his role in the district and did so as a TOSA. It was during this time that leadership at the district level began to change. A new superintendent was the result of a retiring superintendent. The new leadership brought a fresh look at education and ideas related to how best serve students. Discussions, which involved Rowan among other teachers, district leaders and community members, about a possible project-based learning school began taking place. Rowan’s professional path at this point had shaped his potential for being a teacher at the future PBL school. The trajectory of his experience within the district had more or less placed him on the path to being a PBL teacher.

Rowan’s experience and specifically influential people he has met along his journey are the topic of the next section.

What has Rowan experienced?

An idea of what Rowan has experienced has already been established but what has not been established is the influential people Rowan has experienced throughout his life and the role they play in shaping his approach to teaching and learning today. Throughout the interview Rowan has discusses several influential people, people who have made a lasting impression on him and who continue to influence his approach to teaching and learning. The following will be more or less a chronological addressing of influential people in his life. This section is important because it are the following people who shape have shaped and continue to shape his approach to teaching and learning. It is the same people that encourage Rowan to speak his truth as it relates to identity, social justice, and the environment.

Rowan’s parents divorced and for eight years he was raised by his dad and his grandparents. Rowan remembers tagging along with his dad to college classes. He also remembers his dad never making a big deal or talking negatively about his ex-wife Rowan’s
mother. Rowan’s dad established himself as a positive role model. The divorce in conjunction with Rowan’s exposure to the Methodist Church teachings influenced what may have established an early and negative outlook on the future wound up making a lasting impression his mindset.

Rowan reflects on the divorce, the church and his identity.

I try to live my life in a way where I'm like I guess the major influence where I'm not disappointing others. I go back to like I grew up with my dad and I was like a single child for eight years and that's a very strong theme of who I am is like. I have a very hard time if I feel like I've disappointed someone. So I think that's why influence when I find someone like a teacher or a family member or even my students who. Feel like it's my duty to not not like to be influenced by their expectations and for my students it's my duty to maybe set my expectations and influence them to try to reach a higher bar. (Interview 2)

Rowan continues on discussing his dad as an early role model and somebody who he models himself after. The values of the teachings of the Methodist Church also influenced Rowan in regards to his teaching and life in general.

I look at my dad as like you put others before yourself. That's something that I've always learned since I was a child. I grew up in a Methodist church. I'm not religious now but Methodist teachings are about going out and doing social good not about going out and imparting a view of Christianity on others but going out and doing good works. And so to me that's a big part of my life as well. You go out and work for others you go out and work to make the world a better place. And so I guess that's a big part of my upbringing was putting others before yourself and us and working to lift others up. (Interview 2)

Perhaps the longest-lasting impression made on Rowan as a young learner was a result of his sixth grade teacher. Rowan fondly reflected on his sixth grade teacher’s natural ability to connect the student to the curriculum, community, and environment. In the first interview Rowan discusses his experience during sixth grade of walking down to the senior citizen
community home to perform a game show for them and he was playing the host. The connection
to community for young Rowan may have not been completely apparent nor was the engaging
approach to teaching but upon reflection these had the some of the most profound impact on the
approach Rowan has taken to teaching and learning. Rowan enthusiastically reflecting upon his
sixth grade experience.

As far as like being the spark for me as an educator she was a teacher who we
every Friday would go into the nursing home. That was five six blocks down in
the town I grew up in. And we would spend our morning just talking to the
elderly that were there and at one point in the year we planned an entire Price is
Right where we created all the different games and I played Bob Barker. We had
all the elderly kind of come down and join us. (Interview 1)

His sixth grade teacher made learning engaging for both the students and the community.
Rowan keeps the community at the forefront of his lesson planning. Over the course of the year
he has hosted informational nights, where students shared passion projects. He also knows that
the community supports him and can be reached out to for resources and other materials crucial
for a successful PBL program.

Rowan comes back to his sixth grade teacher during the second interview and reflects
upon the same teachers ability to also connect the environment to his learning. It is during this
time in Idaho that his teacher and classmates decided to create and implement a recycling
program for the community. Again the teacher emphasizes the importance and significance of
community for Rowan which Rowan has consistently woven into his curriculum but it was
something else that he was able to take away from this particular project during sixth grade, a
developing appreciation for the environment and a need to begin recycling. Over twenty years
later as Rowan returns home for holidays and visits the same cardboard recycling bin that had been developed and decorated during sixth grade still plays a role in his parents house and remains a lasting imprint on his mind of the power found in both educational practices and the community. Rowan reflecting upon the recycling program.

When I was in sixth grade the teacher that I talked about before the year before us she and her sixth grade class actually started the recycling program in this little podunk town in Idaho. Like they found a space. It became a program that was self-sustaining. And then when I was in her class we created our own recycling boxes to take home. And my dad never recycled before. And when I graduated high school that stupid cardboard box with construction paper falling off of it was still there and like to this day my parents still have a recycling bin. Like right there you know like in that same spot in the kitchen. (Interview 2)

His sixth grade teacher also recognized an ability in Rowan that hadn’t been recognized before. This recollection also had profound impact on shaping his approach to teaching and learning, recognizing that all students learn in different and unique ways.

I think back to like you know 1993 and being in her class and realizing like a lot of the things that I bring with me as a teacher really started then. Was that commitment to a connection to community and having a classroom where we were making and doing and everything was kind of fun. A new challenge every day and it was also the first year that I had a teacher who recognized like had strength in math and so me and three other students that she couldn’t provide advanced math for we were actually with a special-ed teacher during that time doing accelerated math studies. And so I think I learned a lot just by being in that
experience. (Interview 1)

It is not surprising the impact and influence this teacher had on Rowan that he became a sixth grade middle school teacher. Rowan also recently reconnected with his early mentor and shared the news of being a sixth grade teacher and continuing the bonds of community.

Rowan also connected with his uncle who only happened to be 12 years older than him. Rowan considered him more of a brother figure than an uncle. They discussed lesson planning and curriculum development. His uncle suggested the merits of backwards design, establishing the goal first and then working towards accomplishing it. His uncle’s influence is one that remains with Rowan and has also been exhibited several times during his first year at the PBL school. For example, Rowan engaged students in some local, community and environment-based history related to the earth day. The project entailed students creating a parade or what is known as the procession of species, this was his goal. The students would then spend considerable time researching endangered animals, presenting information, and creating their floats for the parade. This project was hindered by a lack of resources but was still largely celebrated as a success. Rowan discusses the influence of his uncle, backwards design, and the facilitating of student learning.

He's also a teacher he's years older than me so he's kind of like an older brother.

Right before I went to graduate school. He like mentioned to me like this idea of backwards design and the idea of scaffolding and has like having not been in education those are like my two first introduction points to what teachers do. And so when I look at what is a facilitator it's for me I know when I'm teaching well I have a long term vision in my mind and I am making my actions on the day to day be a support to reach them. So for example when I'm having really bad teaching I
walk in and I'm like alright what are we doing? I guess I'm going to my vision for today is you're going to answer these questions and so I'm going to help you read this section to answer questions or I'm going to give you a little bit of background content and have you read it and then answer the questions. Yeah that's facilitating but I don't think it's progressive at all. You know it's like that’s like when I'm treading water as a teacher but when I am really facilitating I have, and this is where I like PBL like a long term vision and right now and it's a process and it's like I have to mull things over in my head. (Interview 1)

As Rowan earned his first teaching job in the GSD he began building a curriculum. During an evaluation he discussed the stress he experienced as he created and implemented lessons. He discusses aspects of a particular lesson that didn’t work and how he would have to readjust next year and that his curriculum wouldn’t necessarily be complete this year. Most likely having an early understanding, based on his experience with his sixth grade teacher, that curriculum is constantly adapting to the needs of the students he still needed a push from an administrator to confirm this idea. This particular conversation encouraged Rowan to view curriculum development in constant state of change from year to year.

I didn't say it but the very first thing I was going to say about growth was actually a conversation I had with [the principal] when it was my first year teaching and I was just talking to her about lesson planning and how it was like in my mind I was like oh and teacher needs to sit down and write their lessons every day so that they could come back and use them again in the future and if somebody asked you could give them a book the lessons that he taught. The show is actually what he and I kind of talking about and she's like yeah do you really think he'll use
those again next year. And I was like well of course. I mean she's like don't you think maybe if you just teach the same lesson every year you're not really considering the kids or how times have changed or like don't you think you'd get bored doing the same thing and I looked at her I was like yeah yeah I would. So why are you putting in so much like energy into trying to record a lesson down to like every action and what you say if it will be different. And I felt like that kind of set up a piece like growth for me because I don't think I've ever even when I taught US history you know eighth grade for six years never taught it the same probably too like the sheer frustration of my Lennox because it was like here he goes reinventing everything again. (Interview 2)

It wasn’t too long after this experience that Rowan recognized a need to reset his approach to teaching and learning (a topic discussed earlier). It is possible Rowan recognized that he was too heavily entrenched in the system of one school, having established a reputation and relationships with colleagues that he believed would benefit him or his students long-term in that he decided to move to another middle school within the district.

During his time teaching at the second middle school he was able to engage in a much needed reinvention of self. This is where Rowan would establish his personal and professional identity. It was also at this school that Rowan would be influenced by another colleague and consider or reconsider the role of the environment in curriculum. The role of the environment had been tied to his experience as a student creating a community and school-based recycling program as a sixth grader. This time he was influenced by the actions of another teacher, a colleague. He was intrigued by this teacher’s ability and/or drive to commute to school by bicycle which was further compounded by the fact that he knew this teacher lived a considerable
distance from the school. This teacher was also older. Rowan believed if a colleague of his could commit to commuting by bike that he should as well. Commuting to the suburban middle school by bike entailed leaving very early in the morning in sometimes less than hospitable weather conditions and facing the dangers of car traffic. An unintended result of riding his bike to school created a conversation about the environment among his students. Rowan had engaged his students in a topic that had engaged him as a student and now as a teacher. They discussed need to become more environmentally conscious and to consider how we interact with the environment in general. As Rowan also worked to redefine himself at the second middle school he found a mentor who would influence to consider the environment and commute to school by bike.

I do think that like it's those subtle actions you know Connie influenced me to start biking because I always said I can't because I keep working Kamis and that's too far. And then I found out that Connie who was I think turning 50 at the time took the bus from downtown Portland and biked home. And I was like oh well she can do it I can do it. I just need somebody to show me how. And so her influence then she became kind of like a mentor for me so that I can learn how to be safe.’

(Interview 2)

Parking his bike in the classroom led to a very natural discussion about his commute and reasons behind his decision to bike to school. The discussion he had with students also reflects upon his experience in the Methodist Church, mentioned earlier, of doing good acts.

When I started biking to work it was always important to me that I left my bike in the classroom not somewhere else where I don't do that. But it created conversations with kids they'd walk by oh where do you live. Mr. Rowan. Well,
half the time I live in downtown. Oh you come all the way. You bike that. Well I ride the bus and then I bike home. You ride the bus to get around. Well why don't you just drive. I feel like me alone in a car. It seems kind of like a waste of gas don't you think. It wasn't me coming out and saying let's protect the environment or be an extreme activist it was me just saying it's just a decision that I make it makes me feel healthier and I know that I'm doing good for the planet and those little small conversations on that visual symbol that was always there. It was like something that I hoped would be inspirational or influential to whatever you want to say. (Interview 2)

This consideration of the environment can be observed in many of the lessons developed by Rowan this year. For example, his intention for students to consider agricultural production and the attached political, economic, and social consequences for our actions in something as simple as going to the grocery store. An ongoing discussion throughout the course of the year was the agricultural revolution with the culminating project essentially being the established of a school and community-garden. This approach to teaching and learning and the themes of community and environment were influenced by several people throughout Rowan’s career. However, the goal of actually constructing a garden the first year did not meet Rowan’s expectations and was scaled back for a variety of reasons related to supporting and hindering factors, which will be discussed later.

The role of several influential people afforded Rowan the ability to consider his personal and professional identity, the community and environment. These influential people also have shaped Rowan’s approach to teaching and learning. As opposed to creating a set curriculum Rowan now understands curriculum as constantly changing and growing to meet the
needs of the learner. As a result Rowan has also gained a deeper appreciation of facilitating student learning he served students as more of a guide than one who imparts knowledge. As much a he may have wanted to just give the student the answer a need to guide the student in their learning and assist the student in making connections. Rowan enthusiastically contemplates the establishment of a community school-based garden as and how he would go about engaging students and facilitating the project. This would be an ongoing project and would be symbolic of the transition from hunting and gathering to farming, the agricultural revolution, one of if not the biggest shift in human history.

I've been starting to think about you know a garden doesn't just grow on its own and it seems we need knowledge you need resources so. As a facilitator like I'm already starting to think like now's the perfect time for us to find it. So. Now is a good time instead of like what we're doing agricultural revolution or we can do about two days to see how that change the life of a Paleolithic person in a Neolithic person. And then you know what opened up the idea of a garden here. What can you learn about the world. How would we go about doing that in the first place. What resources do we need where will we get those resources. So like my facilitation role because. I have a pretty good idea where I want them to go. Let's write a grant and say Yeah right. It's too late. The bread comes with questions to get there and they feel like they have ownership and that they're engaged in life. (Interview 1)

Leaving the traditional classroom for PBL is powerful shift in teaching practices. Establishing a new program in a new school is not without its challenges. The new program and school would need everything from developing curriculum to a library. Rowan, especially as a
13 year veteran teacher within the district new to PBL, has identified several supporting and hindering factors of the PBL program, which will be the conclusion of this case study.

**How has Rowan experienced supports and hindrances?**

Rowan’s experience over time has existed with support, his sixth grade teacher is an excellent example, but it has also existed with hindrances such as negative attitudes amongst staff members. To be veteran teacher chosen to teach a brand new, progressive, PBL framework, in a brand new school should be considered a daunting task for any teacher. The conclusion of each interview allowed Rowan to share his views related to how he has been supported as a teacher of a new framework and school as well as what hindrances he has experienced.

Throughout the course of the school year Rowan’s impressions as they relate to supporting and hindering factors of the newly established PBL program varied. For example, early in the school year Rowan expressed more frustration with the lack of resources and support he received and by the end of the year his frustrations had flattened out. However, the flattening out of his frustrations may be attributed to his “Type A” personality, which will be discussed briefly, by the fact that it was the end of the school year, the chance that an administrator may read about his frustrations (even though he comfortable sharing them with administrators), or possibly because he had recognized that his past complaints were never addressed and so what was the purpose of complaining. The following section will briefly explore both the supports and hindrances as experienced and viewed by Rowan.

**Supports**

When Rowan discusses how he has experienced support over the school year the major theme that appears is one of collaboration and communication. To a less extent Rowan found support from the district which he only mentions in the first interview. Further references to the
district are mostly related to hindrances and concerns experienced by Rowan and are discussed in each interview.

Rowan interpreted the district’s decision to open a PBL school as an attempt to acknowledge the ever changing landscape of education. Rowan specifically discusses the appointment of Betsy DeVos as the Secretary of Education and her support of the voucher system. Rowan connects these ideas, the creation of a PBL school and the threat of a voucher system poaching students, who could may be better served elsewhere, as a reason to open a progressive PBL school to better serve this population of students. In this regard Rowan feels supported by a district willing to take risks and provide multiple paths for student success.

In relation to the PBL program Rowan experienced several areas of support that generally relate back to the theme of collaboration and communication. For example, Rowan, over his years of experience, has more or less come around full circle. During his first few years of teaching he engaged in collaborative efforts and perhaps recognizing in the process that he also needed to focus on himself so he moved to another middle school to reset his approach to teaching and learning. These years shaped Rowan’s ability to effectively collaborate and communicate with his colleagues in the PBL setting. Rowan mentions the importance, during the first year of the PBL school, to focus on creating a culture of collaboration and communication with colleagues and students. Establishing this culture is considered priority over developing critical thinking skills. Once this culture is established the rest will follow (i.e., critical thinking skills).

Rowan provides several examples how creating this culture of collaboration and communication has appeared with his colleagues and within the PBL curriculum. Halfway through the school year a natural disaster had occurred somewhere in the world and they began
to student the environment and develop questions about being prepared for a natural disaster. Rowan worked with his teaching partner in developing the project of having students create a natural disaster preparedness kit. Rowan, having a language arts background, knew how to tie his expertise into the project but wasn’t sure how the math and science components would tie in. The support of collaborating and communicating with his teacher partner allowed for a rich learning experience as students created their kits, complete with enough water, food and other items to support four people for three weeks. The kits were stored away until the next safety drill was to take place. As students engaged in the safety drill they were instructed to get the kits and re-examine the contents. Rowan’s teaching partner, having a math and science background, asked the students to first check the expiration date on the foods they had packed and secondly check to see if they had packed a can-opener. The expired and canned food (assuming they lacked a can-opener) was immediately discarded. Next the math and science component consisted of researching how many calories the average person consumes per day and make connections to the amount of food available and estimate how long four people could survive. The students were shocked by the inadequacies of their kit. This project which Rowan had planned for a few weeks turned into several weeks as a result of supportive collaborative efforts and communication. The theme of collaboration and community, however, are not restricted to teacher collaboration but they extend to the community as well.

Rowan has also discussed the consistent support of community members throughout the school year. Rowan, having very memorable experiences collaborating with the community as a student, not surprisingly finds them to be an incredibly important supportive factor in the success of the PBL program. Several examples illustrate Rowan’s experience of a supportive community. The new school lacked a library and as a result Rowan scheduled library time at the
nearby middle school, where he used to teach, students would take a bus to the library for a portion of the day. Providing student access to the library is important for Rowan. Early in the school year Rowan and the students discussed the need for a library at their school. Rowan and the students discussed how this library needed to be established from the bottom up, by the students, because it was most likely not going to come from the top down. This empowered the students to reach out to the community. The community supported Rowan and his student’s efforts by donating books allowing them to create a small library. The community support also came in the forms of guest speakers, toastmasters, grandparents demonstrating sewing methods and helping students sew costumes for the procession of species event, and carpenters helping to build benches for the outdoor learning area. In a project based environment resources are absolutely necessary to learn and create. All the resources donated by community members over the course of the school year relieved a lot of the financial pressures faced by the teachers allowing them to create engaging curriculum.

As Rowan experienced support for the new program he also faced several hindering factors as well. The support of the community was incredible but still too much of the actual cost was largely left to the teachers. The following will discuss the hindrances endured by Rowan as he and his colleagues navigated through their first year of PBL.

**Hindrances**

Rowan experienced personal and professional hindrances throughout the first year of the PBL program. Some of these hindrances seem perhaps trivial but also speak to bigger issues that stifled teacher ability to sometimes facilitate and create fully developed curriculum. Rowan was more vocal about the hindering factors during the beginning of the school as opposed to the end of the school year and there a multitude of reasons for this shift. However, finding support in
the established culture of collaboration and communication along with the inclusion of the community as a resource, discussed earlier, most likely played a significant role in tapering his concerns throughout the school year.

Rowan has worked diligently to establish an identity as a teacher and learner. Going back to his personal sixth grade experience and experiencing how learning could exist as interactive, engaging, and embracing of the community Rowan would personally and professionally work to establish his identity. Rowan has demonstrated that he likes to be in control of shaping his teacher identity. For example, he needed to reset his approach to teaching and learning and one way he chose to go about this was to leave his position in one middle school for an opportunity to reset and begin again in another school. He would make two more major shifts one to a TOSA position and the other to the PBL school. Again, Rowan likes to be in charge or control and he would describe this as having a “Type A” personality. Throughout the year he would bring up his “Type A” personality in relation to PBL as a hindrance. In other words he was a hindrance to himself. Over time Rowan would learn and to a degree be forced to let go of some of the control. An example of his personality as being a hindrance is his goal to establish a community school-based garden by the end of the year. This elaborate project which would take shape over the course of the school year would be hindered not only, according to Rowan, his need to control the direction of a project but also by a lack of support in relation to funding and general resources. Rowan had to learn how to at one end of the spectrum scale back his control and expectations for projects and at the other end of the spectrum give up and/or let go of control.

Rowan provides, towards the end of the year, an example of giving up and/or letting go of control as it relates to one of the final projects, the procession of species. He discusses his
grand desire to establish the procession of the species project as an annual event including the community and culminating in a parade through town. As he collaborates with other teachers and develops the project he again realizes the resources, funding, and general support needed to accomplish this project. Having experienced frustrations of support and funding throughout the school Rowan more or less gives up some control. This has been a challenge for Rowan who has been in control of the direction of career and of his classroom for the last 13 years to relinquish a certain amount of authority over the direction of the curriculum. Rowan mentions the anticipation of seeing his grand expectations of a community parade scaled back to some small, cardboard floats with some decorations sloppily glued on being pushed around the classroom as he lets go of some project control. The project was ultimately scaled down to a costume procession of species parade in the classroom. Even more interesting is that Rowan blames his “Type A” personality as a hindering factor as opposed to blaming the district for not fully supporting a brand new program. To be clear Rowan isn’t asking for the district to support a grand parade but he is asking for the consistent support of resources necessary for a project-based learning program. These resources also range from something as small and ubiquitous as paper clips, planning time, funding, to intellectual based PBL professional development offerings of which little to none were provided throughout the year.

Midway through the school year Rowan continues to express hindrances as they relate to the general attitudes of the teachers as being pouty and negative. However, it is these teachers, Rowan included, who were selected to be a part of this brand new program and school that are in too many cases spending their own money to ensure the creation of meaningful curriculum and student success. For example, Rowan discusses needing paint for a particular project but again not having the funds for paints. He considers maybe not needing paint after all, to researching
ingredients to make paint, to ultimately using a donated 5 gallon bucket of white primer paint and mixing it with a purchase he made of very inexpensive acrylic paint. As much as Rowan may want to blame his personality or the negative attitudes of some teachers as a hindrance to the program he does present other hindrances to PBL.

Previously mentioned, a lack of planning time, curriculum and professional development offering are perhaps the most significant hindrances to the PBL program. The PBL teachers were concerned about not having a curriculum and developing a curriculum on the fly without any professional development or funds set aside to reimburse their work. Rowan discusses the need for professional development throughout each interview. He argues that we can have the resources but if we don’t know how to use them in a meaningful way or a way that supports the framework of a PBL program the program will continue to struggle and most-likely only exist as a PBL on a surface level. Rowan demands a need for experts in the field of PBL to be sought after for professional development trainings. He finds this to be a crucial and missing element especially as the school continues to grow and more teachers, unfamiliar with PBL, are hired. The success of the program hinges on a lot of components but meaningful professional development trainings is perhaps the most important.

**Case Study - Tatum**

Tatum grew up in a small town in Oregon. She now teaches in a small town in SW Washington. Tatum has taught in GSD community for her entire career, 12 years. Over the course of her career she has experienced the frustrations and joys of teaching. She has worked diligently to make her approach to teaching powerful and as such she has earned a reputation respected by administrators, colleagues, and community members for connecting with students that have typically struggled in a traditional learning environment. Tatum prides herself on
doing things differently and getting results from her students. She weaves in the arts specifically
song and dance into her curriculum to assist her students in making connections with the content.
She has consistently made learning interactive, engaging, and fun. Her ability to meet students
who struggle to learn in traditional middle school has also earned her a reputation among parents
want their students in her classroom. Her ability to ‘see and serve’ students made her a natural
fit for Project-Based Learning (PBL). Tatum has taught social studies in both of the middle
schools within the district and is currently one of the four veteran teachers teaching at the newly
established PBL school. As of this writing the PBL school serves around 120 sixth and seventh
grade students and will ultimately serve 600 students as it grows into a combined middle and
high school.

Who is Tatum?

Tatum was born on the west coast and her parents decided to move the small town in the
Pacific Northwest. The small town is similar to the district Tatum teaches in, a town with a one
industry based economy and one high school. Tatum’s parents divorced in the 1980s leaving her
to somewhat fend for herself but not necessarily in a bad way. From an early age Tatum gained
and continued defining what it meant to be independent and this idea of independence has deeply
woven its way through her approach to teaching. The experience of having divorced parents
afforded Tatum the opportunity to self-reflect as she observed her friends who had both parents
at home which she found somewhat annoying because it appeared to her that her friends were too
dependent on the constant and sometimes enabling support that they would struggle to become
independent. Her early developed sense of independence along with a few other factors, having
a need for a creative outlet, guided Tatum to begin a teaching program. It was during this
program where Tatum further realized the importance of supporting students to become
independent and to inspire students to learn for the sake of learning as opposed to learning for a tangible reward. As Tatum had developed her own sense of independence early on it allowed for her become, in her terms, a “creative weirdo” essentially about how to get students exposed to different methods of teaching and engaged in their learning. Perhaps, more importantly to get her students to become independent and not so reliant on the teacher for every aspect of their learning.

What has Tatum experienced?

Tatum’s early experience from her childhood to her first years have seemed to have largely shaped and encouraged her independent approach to teaching and learning. Tatum reflected upon her graduate experience and made powerful connections during this time in regards to the type of teacher she wanted to be and to a less extent has become over her 12 year career. As mentioned, her upbringing forced her to become independent very early on and it was this experience combined with several other experiences that continued to shape an independent approach to teaching and learning. The challenge of PBL has also forced her to find a balance between independent and collaborative teaching practices. The following will explore Tatum’s independent style as well as her recent collaborative experience.

Tatum recognized that she needed her students to be authentically engaged in their learning during her graduate program. As other teachers enticed their students with candy and other rewards Tatum identified this as the easy way to get students on your side but she wanted and needed more than that, she wanted her students to learn for the sake of learning. It was this experience that Tatum vowed to never be a teacher who bribed their students to learn instead work to become a teacher who could be both creative and engaging. Throughout her career Tatum has used song, dance, and drama to engage all students, to keep them interested in their
learning. Even as other teachers and parents questioned her methods, Tatum, defining her independent spirit, continued to implement these methods and as a result has created a reputation among administrators, colleagues, and parents as having an amazing ability to engage all students especially those who had never been interested in their education. During her first year at the PBL school Tatum has consistently woven music, dance, and the outdoors into her teaching.

As the PBL teachers learned and created a PBL curriculum they experimented with small projects. It is a requirement that students learn about state history. Tatum created a project where students learn about state history by making connections to music. Students, working in small groups, were responsible for making a compilation album of songs that they connected to specific events in the state. They were also responsible for designing an album cover and presenting their songs and cover. This project took place over a two week period. Students were able to learn about the state but also think about their thinking by making correlations between music and state history. All students were actively engaged in this process, even students who weren’t typically engaged in their learning. Tatum’s experience with this typically unengaged student accomplished several goals, the student became engaged in his learning and even shared his learning with his parents:

If their theme was like natural disasters about state history some of their songs were more like...I can’t think one...for the ice age...like ice, ice, baby for Vanilla Ice which is like okay it is super cute and fun but okay for the kid who chose that and made the connection he has got his IEP and not supposed to be engaged in school and he is not supposed to be able to connect and do these things on paper but that he did the factual research on the ice age and found the song that connects
that is not part of his pop culture repertoire you know like and maybe his parents, maybe he went home and worked on it with his parents and maybe they told him, it doesn’t really matter to me at that point because great you are talking to your parents about it. (Interview 1)

Dance has also been woven into the curriculum another way to encourage active learning. Tatum’s ability to engage students in their learning has also created a culture of trust in which allows and encourages students to take risks. This brief project encouraged students to learn about the water cycle through dance. Students internalized the stages of the water cycle and interpreted in many different ways as all students displayed different unique expressions of their understandings through dance.

I didn’t choose groups for them which dancing with kids is not something I don’t do that early in the school year because it takes a level trust...I don’t dance with them or teach them a dance it is them developing a model so we kind of talk about what do you remember from 4th grade, water cycle, and they had circle with arrows and not much else but um and so we took the circular idea that they all agreed on and then mapped it with the song and the repetition of how things go and the part of it and so they formed into groups based off...I don’t even really know how they got into groups...because it was I played the music over and over again and I just let them brainstorm with movement after we had talked about some of...how the water cycle works...different groups did different things like they followed a water drop as it moved through the cycle and the states solid, liquid, gas...and then the whole of the dances together awesome because when we watched them individually it’s like cool there is your example of the model of
how it works but when you watched them as whole then it took on a different life
because it predicted abnormalities in the cycle like when one drop gets stuck in
the area of the cycle for a while and so looking at the dances as not individual
group dances but as a whole this happens but in a model you can predict that this
abnormality will happen this abnormality will happen and looking at their dances
as a whole became the science of it...so facilitating that...like I don’t teach them a
dance and have them stand up and stay this is a water drop and it falls down...I
bring the music in and concepts in. (Interview 1)

Towards the end of the school year Tatum created and implemented another brief
where students learned about the life-cycle by taking field trips into the fields and forest
of school property. This project was particularly impactful because it allowed students to
make even further connections to their learning about state history and the water cycle.
For example, part of the property they were walking on will be developed into the future
school. The cost of this development is further pressure on the ecology of the land they
were walking on. They discussed the field mice having to flee and the impact that would
have on the food chain. At one point they came across a rabbit who had been hit and
killed by the riding lawn-mower and even though kids were understandably upset by this,
they made connections about the impact humans were having on the planet which
allowed for a powerful discussion about the expense of having such things and whether
the loss of one thing for the gaining of another is okay. It was during this conversations
that students realized the hawks circling the rabbit carcass from above and made
connections to the food chain, life cycle, and their role within it.
As powerful as these projects were they were not without their challenges and over last 12 years in which Tatum has experienced a plethora. One challenge that shaped Tatum’s point of view and approach to teaching and learning, and a mindset which she more or less maintains occurred during the first month of her first year teaching. Coming out of graduate school Tatum had several job interviews and as she explains, her first interview for the GSD would also be her first choice. She began at one of the two middle schools within the district. Three weeks into her first year teaching she was told that she would need to pack her things up and move to the other middle school as a result of a scheduling conflict. Moving from one middle school to the other middle school made an indelible mark on Tatum’s understanding of the public education in general. To add to this experience Tatum was than challenged to march around the second middle school, three weeks into the school year, and pluck her students from other classrooms. So here she was a first year teacher uprooting students from classrooms and relationships that had already been established and trying to make her way. During this march to collect her students veteran teachers made negative comments about students having to leave their classrooms to go with the new teacher. Within the first few weeks of teaching Tatum felt bitter and jaded. The first year of teaching was largely an independent struggle for Tatum as she navigated the expectations and politics of the school.

However, this event was also influenced Tatum to begin bucking the idea of traditional teaching and learning by engaging her students in a variety of ways. In many ways Tatum is again a first year teacher experiencing similar challenges but her veteran status and reputation now allows her to be the ‘cog’ that pushes back on the system. The first year of learning, teaching, creating, and implementing a new PBL program has been incredibly challenging and rewarding. Even though Tatum accomplished a lot with her students there always seemed to be
a lack of funding and resources to effectively fulfill or define a PBL program. These hindrances, experienced by all of the PBL teachers will be addressed later.

During the first interview Tatum reflected on this experience as an eye-opening, defining moment. Tatum discusses how this event allowed her to more or less compartmentalize her job. She didn’t see her role as valued. Throughout the series of interviews she refers to her role as simply a ‘cog’ in the giant education machine and this early experience of being shuffled from one school to another school cemented this idea. However, as negative as this may sound this early experience may have served Tatum well. She discusses how this early experience has allowed her to separate her personal and professional life. For example, when she is teaching her complete focus and attention is given to the craft of teaching, in other words her focus is all about the students. Over time she has continued to have little faith in administrators and district leaders which finds roots in her first few weeks of teaching and even though this may come across as bitter and jaded it has really allowed Tatum to be more or less free and really focus on the most important aspect of her job, her students.

Her early experiences have also provided Tatum with the courage and/or freedom to teach in a non-traditional manner. Her experiences also afforded her a certain independence as well. As mentioned early, Tatum branded herself as a ‘creative weirdo’ and enjoys doing ‘things’ a little differently but yielding positive results. Early in her career, Tatum found song and dance to work well with her students. She has continued to use these along with a plethora of other creative approaches to teaching during her first year teaching at the PBL school. However, the first year of learning, teaching, creating, and implementing a new PBL program has been incredibly challenging and rewarding. Even though Tatum accomplished a lot with her
students there always seemed to be hindrances. These hindrances, experienced by all of the PBL teachers will be addressed later.

Project-Based Learning requires collaboration with students, colleagues, and community. Tatum having been in a self-contained classroom for 12 years has largely developed, implemented, and refined her curriculum independently. An emphasis is placed on teachers throughout the district to collaborate and share with colleagues but almost all teachers will return to their classrooms, close the door, and work independently. Being thrust into a program in which collaboration is crucial can be challenging for teachers who have been working independently for the majority of their career. Making the transition from an isolated, self-contained atmosphere to one defined by collaboration was a major shift for Tatum. The PBL school is basically one massive open room. The teachers do not have their own office to retreat to, close the door, and work independently. The teachers established a nest of desks and when they had time to work at their desks they were always within arms reach of each other. This closeness worked when meaningful collaboration was taking place but was otherwise distracting. To counter the frequent disruptions and distractions Tatum would try to, when needed, find a place where she could focus and work independently. She worked throughout the year to maintain a balance between independent and collaborative work.

Over the course of the year the collaborative effort became shared between Tatum and Lisa, her colleague, became powerful for them and their students. Tatum and Linden collaborated on the state history unit in which the students created a soundtrack, album cover, and presentation (mentioned earlier) for a culminating project. Tatum enthusiastically reflects on her collaboration with Linden as they observe students making connections between music and state history.
It is super fun and awesome and the best thing I have found for history at least at this point for kids is building a soundtrack because they connect it to their everyday life...I don’t know how it works and I don’t know how long it is going to work for but they dive into their music like nobody’s business and what they pull out of it is so much deeper...Linden who has taught 7th grade and she was like “What is happening right now?” And I was like “I don’t know but I love it.”

(Interview 1)

Here students tend to enjoy the creativity and energy woven into their learning. Tatum took on the challenge of emphasizing the need for students to be in the environment, to be outdoors. However, the school didn’t have and didn’t provide the resources for students to be outside on a regular basis. Tatum took it upon herself to get the necessary equipment to be outside on a regular basis. She worked with community members to gain enough rubber boots, umbrellas and other tools necessary for kids to go into the environment. A small mudroom was also established for students to take on and off their gear. As a result Tatum made going outside a routine aspect of student learning. Students became engaged with nature and were able to make real connections with what they had been studying in the classroom. For example, as students studied state history along with the water cycle and the food chain they were able to go outside and make direct and meaningful connections with their environment. However, it is worth noting that Tatum accomplished this small feat of procuring enough equipment, establishing a small mudroom independently and with little communication with other teachers a few of which ultimately ended up resenting her efforts and accomplishments.

Towards the end of the school year it became obvious that Tatum’s independent nature and ability to address student needs without the support of the district and administration would
also become a major hindrance for her overall experience within the PBL school. During the second interview Tatum realized that she had her understanding of PBL and the other teachers had their understanding of PBL and the two understandings struggled to find agreement. Tatum also seriously questioned whether the transition to a PBL school was a good choice on her part and whether or not she would be able to stay with the program and/or the school district. However, she found that the PBL framework, which is what attracted her to this position, blended well with her teaching philosophy wasn’t the issue rather it was some political and logistical efforts which she didn’t anticipate that created real concerns.

**How has Tatum experienced supports and hindrances?**

**Supports**

Support for Tatum’s experience during the first year of the PBL program was limited. She did however find support from her teaching partner as they were able to collaborate, share, and generate powerful PBL curriculum for students. Tatum also found support from the community as the community tended to provide the much needed resources necessary for a successful PBL program. For example, as the school year progressed the teachers and students recognized a need for an outdoor learning area. However, the resources to build a few benches and plant a few flowers would not be forthcoming from the district and/or administration as they had frozen the budget for the PBL school towards the end of the school year. Tatum and her teaching partner reached out to local businesses and carpenters to provide the resources and expertise to construct the outdoor learning area.

Being a veteran teacher Tatum and her teaching partner were better able to approach local businesses and community members to secure the materials necessary. Tatum also discussed the fact that her reputation now preceded her, meaning that over the course of 12 years community
members and primarily parents knew Tatum as being a teacher that make learning exciting for students. As a result of her reputation community support and more specifically the materials and expertise were a little easier to acquire. The community came together to build around six benches, a local tire shop donated old tires that students were able to weave string through to create seats that could be rolled and placed around outside.

Tatum would again tap into the support of the community as she established the mudroom for the students complete with, as mentioned, boots, umbrellas, and other necessary gear for students to go outside. The community played a significant role in providing support in the way of volunteering as well as materials. When the community had difficulty supporting whatever the project was Tatum found support from the head secretary who tracked down the supplies and materials necessary for a project even leaving the school to go purchase and deliver the materials some of which had been negotiated with building leaders, requested well in advance, and simply never appeared.

When the community and head secretary were unable to support the teachers or a particular project, the teachers would spend their own money on supplies. This occurred several times throughout the year. Tatum reflected upon a need for beakers for a science project and debating whether to spend her own money on these necessary supplies. She also reflected upon the need for the district to support a brand new program by purchasing things such as beakers. After a tough and somewhat awkward conversation with her administrator he agreed to purchase the beakers. However, when Monday came around and it was time for the project the beakers had not arrived because they had not been ordered. This lack of support forced Tatum to have yet another tough conversation and really forced her to begin questioning her fit and role within the PBL program.
Hindrances

During the second interview and about halfway through the school year Tatum debated discussing the real issues and simply glossing over the questions and providing simple responses, she ultimately believed she needed to discuss these issues for the sake of the teachers and the program as a whole. She mentioned a few times that she loves the people she works with but in order for her to continue being a part of the school and the district the communication issues need to be addressed.

The most significant hindrance experienced by Tatum throughout the first year of the PBL program was one of communication. During the second interview Tatum discusses with the emotion the lack of communication and passive aggressiveness she experienced throughout the first year. She also admits to her own inabilities to engage in conflict resolution and as a result she assumes part of the blame.

She believes the majority of the conflicts that arise as a result of unclear, convoluted communication could be addressed by effective leadership. The anonymity the Tatum and other teachers experienced during the first year allowed for freedom but it also created several challenges. As teachers were largely left to address the needs of their students on their owns four teachers, more or less, went four different directions. As they met with administrators, district leaders, and media along the way and became obvious to Tatum that this level of dysfunction could not be sustained at least for her. During the second interview Tatum reflected upon an incident that occurred in a staff meeting where she was caught off guard and felt ganged up on. Another teacher felt that what Tatum had accomplished with the mudroom and outdoor gear made it impossible for their students to now go outside because she had essentially made the other teachers look bad. Tatum acknowledged that she had for the most part taken care of this
need independently and that perhaps this was a flaw. However, for Tatum this wasn’t the most important issue it was the ability to communicate with clear expectations. This evidence and several other incidences were ignored and feelings left unaddressed. Tatum feels that there was absolutely no need to literally begin crying to her administrator as a result of his inability to acquire the necessary beakers for her students to engage in a science project and for Tatum to fulfill the state standards had norms been established. This was a particularly trying incident for Tatum because it was close to the end of the school year, the brand new PBL school, which was in the midst of creating a curriculum and acquiring the resources necessary to implement the curriculum, had their budget frozen, and now she had to explain to her students why they weren’t going to have the science lesson.

An interesting hindrance was the fact that this was a new school with a progressive approach to teaching and learning. This approach hadn’t been attempted in to many other areas and therefore the media paid close attention to the school. Tatum also discussed on more than one occasion a level of superficiality to the new program because school was new it became a fishbowl or sorts, with neighboring schools visiting, the newspapers writing articles about the program, and even senators making appearances. Everything mentioned about the program was very positive and was contradictory to Tatum’s experience. She mentioned a few times that they were simply four teachers doing the best they could do to excite their students about learning just like teachers all over the state were doing and that they were no different. She became immune to the constant visits and stayed away from the photographers because the articles weren’t necessarily being honest in their painting of the school.

There are two other hindrances mentioned by every teacher. The need for resources and the need for professional development trainings as it relates to PBL. However, these hindrances
should not exist if the program had been fully supported from the beginning. Tatum believes that if the PBL teachers had professional development trainings, more than the 12 hours of curriculum pay, than perhaps the issues related to communication would have been solved or at least minimized. The lack of resources throughout the course of the year placed a significant strain and burden on the teachers. The PBL teachers were busy creating a brand new curriculum which they had little to no training, they were also busy, as were the students, cleaning a massive classroom with eight separate rooms in spite of a consistent custodian, the hindrance of consistently not having enough supplies made it extremely stressful for teachers who had made the transition from their isolated, traditional classroom to a brand new program with insufficient trainings and resources.