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Exploring the Implementation of Project-based Learning at an Alternative High School

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EXPLORING THE IMPLEMENTATION OF PROJECT-BASED LEARNING AT

AN ALTERNATIVE HIGH SCHOOL

by

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It's education that's meant to take us into this future that we can't grasp. No one can be certain what our future holds … What we can be certain of, however, is that students must be creative in order to deal with our ever-changing educational and job landscape.

Ken Robinson, *Schools Kill Creativity*

To my supportive Capstone Committee, friends, family, and community. Thank you for standing by me as my mantra continued to be, "Just a few more steps." These steps turned into years, but with your love and support, it is now complete.

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Thank you, Tyler, my love, for being my biggest cheerleader. This world we live in will be a better place because of your patience and wisdom.

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CHAPTER ONE

Introduction

Public schools are one of the most influential elements of American society in the United States. Every year in the United States, millions of parents enroll their children in our public schools with the hopes that their children will be educated and taught the essential skills and knowledge to prepare them for a successful future. Educators, school administrators, and politicians all influence current education policy and practice. Not everyone agrees, however, on what policies and educational practices are best for students. The Department of Education currently drives the conversation with required national and state content-based standards and high-stakes standardized testing. Subsequently, many public schools align their curriculum to these national standards and tests so that their students will be more successful on the required standardized tests. Not all schools, however, are letting this climate of testing discourage their creativity and passion for a diverse curriculum. Schools like Future Academy, which will be described later in detail, have taken a bold, innovative, and project-based approach to both invest its high school students in learning and prepare them for future success.

Current pedagogical methods vary greatly, including the Montessori approach, teacher-driven lectures, online learning, and others (Dolby & Rahman, 2008). As an educator, I have felt overwhelmed at the plethora of methods and approaches to *best* prepare my high school students for successful futures. My first year teaching included many sleepless nights and early mornings as I tossed and turned, contemplating how I would teach students the following day about the effects of the Industrial Revolution or

contributing causes to societal oppression of racial minorities. One day, I would try a lecture-style class while students followed along by filling in their guided notes. The next day, I would have students delve into the information themselves and then present their findings to the class. On another day, I set up a simulation of life on a feudal manor where students had to act the parts of the lord, vassal, serf, and king. In these first two years of teaching, no matter what I researched about pedagogical practices, no matter what I tried in my classroom, I always left class feeling like I was missing something. In all honesty, I was waiting for my lead teacher, Olivia, to walk in my classroom and tell me, "You're doing this all wrong."

This angst from my first years of teaching, which still hangs with me in my fifth year, has led me to explore one specific pedagogical method in more depth: project-based learning (PBL). A recent colleague said, "Your classroom should be a reflection of your personal identity." This made me question my own teaching. Am I trying to fit into a specific mold of what I think a teacher is supposed to do and say, or am I being true to myself and my vision for my students? When I spend hours developing and then engaging my high school students in multiple-choice questions that align to the ACT test they will take as juniors, am I being true to why I became a teacher? If I force myself to answer these questions honestly, my response is a loud no. I desire a classroom where my students are driving their own learning, are joyful about their futures, grapple with societal and personal problems, and see a connection between the classroom learning and their futures.

This leads me, thus, to see value in PBL both for my students and myself as their teacher. PBL, which is discussed in the literature review, is defined by Harada, Kirio, and

Yamamoto (2008) as an "approach to teaching and learning that brings curriculum in line with the way the world really works" (p. 19). This approach to teaching content generally involves a group of students working together collaboratively to research, design, and create projects that will reflect their knowledge (Bell, 2010). In our increasingly global and technological world, I want my students to feel confident in their abilities to create, adapt, and collaborate with others to participate and change the world they live in, not just regurgitate answers on multiple-choice tests.

This chapter discusses my research questions and rationale and the background of the researcher and its relevance to this project. It describes the alternative high school observed, and then outlines the succeeding chapters.

Research Questions

In this study, I explored the existing research on the inquiry and student-based pedagogical approach of PBL and then inquired specifically into one alternative high school's experience with its early phase implementation of PBL. Two essential questions guided my research: *What are teachers' and administrators' experiences with implementing a project-based learning curriculum in their high school? What are students' experiences of participating in a project-based learning curriculum in their high school?* The goal was to learn from one alternative high school's early-stage implementation of PBL so that this type of pedagogical approach can be effectively replicated in other high schools and classrooms.

Background of the Researcher

I believe all educators have a moral imperative to engage in discussion and reflection around the effectiveness of our school systems, curriculum, and pedagogical

practices to evaluate whether we are in fact preparing students to be successful and engaged citizens. This section describes how my experiences and frustrations as a social studies and English language teacher in a metropolitan area, an after-school program director in Washington, a literature teacher in an urban district, and a graduate student in education, have influenced my interest in alternative methods, such as PBL, to better equip our students for the future.

When is the test? Will this be on the test? What if I don't pass the test? Do you allow re-takes? These are questions that I heard from my high school students over and over again my first two years teaching. When I taught at a small charter school in a Midwestern urban school district, I initially envisioned my career teaching social studies to high-school English language learner students as being transformative for the students. They would leave my classroom engaged in heated discussions about the past and how we as a society can and must improve upon the mistakes of our predecessors. I would present them with opportunities to learn and engage with important issues related to oppression, power, social systems, economic policies, and government impact. They would leave my classroom as capable, active, and engaged citizens who would pursue college degrees and meaningful work.

To achieve these idealistic goals, I attempted a variety of pedagogical approaches to teaching the social-studies content. I never felt confident in the effectiveness of one specific approach. My high school students were reading and writing with a range in skills from first grade to twelfth grade. This provided a great challenge when assigning grade-level reading and writing projects. My utopian vision of a classroom filled with rich discourse and learning was far from the reality of my actual classroom. Students

were confused with texts I gave them, had difficulty expressing their ideas with accurate sentence structure, grammar, and vocabulary, and classroom management was a continual problem. I desperately wanted to support students' learning and growth in reading and writing, but I also wanted them to be creative, curious, and visionary. To do this, I tried to incorporate projects into my curriculum that would support my students' creativity, autonomy, and research skills. Many of these projects were group efforts in which students were required to research an issue such as global warming or the Guantanamo Bay Detention Center, analyze the issue, and form their own opinions effectively, and make recommendations for possible courses of action. These projects were met with a variety of responses from students. *Can I just do this on my own? Will my grade be affected by my group-mate's participation? Why do we have to do this?* And eventually it always came back to: *Will we be tested on this information?* Furthermore, many of students' written portions of the projects lacked basic writing skills and evidence of higher-level thinking.

These frustrating experiences led me to an even more confusing space: How can I teach these young people the basic skills they are lacking, but still make their learning meaningful? Additionally, students' questions resonated with my own experiences as a student. I have found myself annoyed when professors assigned group projects. My responses often included: *I know I can complete this with more efficiency and accuracy on my own. This group member doesn't have the right mindset or skills to help us. I'd better be receiving an individual grade for this project.* As a teacher who values collaboration and creativity, but simultaneously has a difficult time doing this as a student, why am I making my students go through these same frustrating experiences?

My response leads me to wonder how our society and school system have encouraged this type of individualistic and absolutist thinking.

Ken Robinson, in a 2010 TED Talk titled *Changing Education Paradigms,* spoke about the importance of divergent thinking in today's age. He described divergent thinking as "an essential capacity for creativity; it's the ability to see lots of possible answers to a question" (http://www.ted.com/talks/ken_robinson_changing_education_paradigms.html). He discussed a study that measured divergent thinking in school students. Results showed that kindergartners to be the best divergent thinkers in comparison to their older peers. As students experienced more years in the school system and were continually reinforced of the *right* answer, their ability to think divergently decreased quickly (Robinson, 2010). As schools and educators today use standardized tests and other classroom assessments to measure student learning and progress, Robinson suggested that there is a large negative side effect--the loss of creative or divergent thinking among students.

Our schools also operate on a system of success defined by five letters: A, B, C, D, and F. These five letters loom over students' heads as they approach assignments and teachers' heads as they use their best efforts to grade assignments objectively. Typically the more right answers, the higher the letter grade. Is it a wonder, then, that students in our schools today often do not jump for joy as they are presented with a group project instead of a unit exam?

Despite my reliance on grades and scores for affirmation as a student, in my job as a teacher, I do not define my own success by five letters. Over the past five years I have been evaluated based on detailed and varied rubrics. I have been evaluated on my

ability to present information in a clear and concise manner, the organization of my classroom, my response to students, the joy factor of students, the quality of questions I ask, my vision for my classroom, the structure of my lesson, the percentage of students that are on task, and students' mastery of specific learning objectives. I remember one particular meeting in my fourth year of teaching where two of my administrators marked me as a Beginner in a few strands of the rubric. I was livid. How could someone walk in my classroom and tell me that I was a Beginner after all my hours of preparation, study, emotional and physical energy put into this exhausting job? I felt humiliated. I went home that afternoon ready to start looking for a new career. Luckily, however, I went home to a husband who is not a teacher, who reminded me that this one rubric score did not define me. He reminded me of the joyful stories I continually brought home about my students. He reminded me of the creative projects my students were working on. He reminded me that my efforts for students could not be evaluated in one snapshot, in one classroom observation. I knew this was true, but somehow the label Beginner, an F in my mind, D at best, prompted an irrational and volatile response from me. Had we simply discussed my growth areas, would I have been more open to conversation about my classroom?

In designing learning units and projects for secondary students, my ideal is to collaborate with other teachers, research a variety of sources, and create units and lessons that synthesize all this information in an authentic manner. This process is not unique from other professions. Architects, project managers, CEOs, and bloggers alike are asked to research, synthesize, create, and collaborate. I got a taste of this when I left the classroom after completing my second year teaching. I was exhausted, confused about

how to teach students in way that was both effective and authentic to who I am. My husband and I moved out West for the year where I became the program director for an afterschool program at a high school in Washington. I was working with a grant that required enrichment activities in addition to developing students' skills in math, reading, and writing. The grant was targeted at students who were not passing state standardized assessments. Some days we would provide small-group tutoring from our math teachers, other days the woodshop teacher would work with students to build furniture after carefully planning and making measurements. Every Wednesday I would lead a cooking class that incorporated math, reading, healthy living, creativity, and socialization. These cooking classes became a favorite time for both my students and me. When the last bell of the day rang, these students were lined up at the kitchen door, just waiting for me to unlock it with my milk crate full of that day's food. Classes were joyful, often student-driven or led, collaborative, and based on process and outcomes.

Leading this cooking class sparked my interest in working at a school that embraced a more creative approach to its curriculum and learning. Upon my return to Minnesota, I found a school that seemed like the perfect fit. The new charter school, Voyagers (pseudonym), was in its initial planning stages of hiring staff, visioning, recruiting students, and fine-tuning its pedagogical approaches. While the administration and teachers did not want to brand the school as a PBL, many of the proposed practices were perfectly aligned with the student-centered, collaborative, and problem-based approach to teaching. In the interview process, I was asked to design my own school, respond to questions about how students learn, and submit projects and student work from my classroom. I felt invigorated by the amount of creativity infused into their

interview process. As I awaited a final phone call to accept the job, I envisioned myself

working with students and teachers to provide meaningful, creative, collaborative, and

visionary learning opportunities. When my phone finally rang and it sank in that another

applicant got the job over me, I was devastated. This was perhaps the first real let-down

in my professional career. Voyagers had seemed to be the answer to my frustrations with

my previous teaching experiences and new-found love for a PBL curricular approach.

Accepting a high-school English Literature position at my second-choice school

was difficult. This school was the opposite of Voyagers in almost every way except for

the population of students it serves. Most students at both schools receive free and

reduced lunches and underperform on state math, reading, and science tests. While I

agreed completely with my new school's mission to send 100% of students to college,

there was not a good fit for its pedagogical approach. Students were required to wear

uniforms; follow a very strict system of rules that included receiving a detention for

wearing tan socks instead of white or black; double up on classes in math and language

arts; and be limited to one elective class--music. All teachers were required to align long-

term, unit, and lesson plans to the College Readiness Standards that are assessed on the

ACT$^{®}$. Even the music teacher was required to incorporate multiple-choice reading into

her weekly curriculum. Despite my qualms with the school practices, I felt passionate

about working with this population of students, and hoped I could infuse some of my

PBL ideas into my classroom.

My limited teaching experiences have led me to believe that we must teach

students to work together, to question, to create, and to engage in important discussions,

despite the era of high-stakes testing. Basic skills in reading, writing, and math should be

taught to help students participate and engage more fully, but the learning goal should never be simply to get the right answer, a higher score, or the best letter grade.

Over my two years teaching in this school, I found it extremely difficult to infuse PBL and more student-centered learning into my lessons. I do not disagree with the school's mission that the ACT®, is in fact, a student's ticket to college; the higher the score, the better the school and more scholarships that student will receive. I truly wonder what students are missing when they receive instruction that is targeted towards finding the right answer on multiple-choice questions instead of encouraging creative and divergent thinking and research skills. The school rewards teachers monetarily at the end of the year for student growth measured by the EXPLORE®, PLAN®, and ACT® tests. When teachers and students are evaluated by this narrow definition of learning and growth, one can only predict that students' learning opportunities are also narrowed.

Not by coincidence, the school I explored in this study, Future Academy (pseudonym), embraces creativity, student-driven learning, and PBL. This public, alternative school is located in a rural school district in a western state. Having relocated to this region of the country once again, I wanted to investigate this one specific high school's approach to using PBL as its primary curricular method of instruction. Future Academy currently serves students in grades 9-12. This school, recently opened in July of 2014, is in the early stages of implementing PBL. Students spend a majority of their day in inter-curricular, community, and service-based projects. Mandatory state standardized assessments are given; however, the school aims to rely more heavily on authentic measures of assessment such as writing, physical projects, and work samples. It is important to understand that during my research, Future Academy was in its first year of

operation and was engaging in ongoing reflection on the implementation and effectiveness of the pedagogical practices. By reflecting on the experience, I hoped that I and other educators and schools can better understand teachers' and students' experiences with PBL and use this information to inform our instructional practices, and give a real-life example of a school that is embracing creativity, divergent thinking, and PBL in a current educational climate of increased standardization and high-stakes testing.

Summary

Chapter one introduced to this study on PBL and painted a picture for the reader of the researcher's educational path leading to PBL. Chapter two provides an in-depth look at the current research existing on PBL. It focuses on the history of pedagogical approaches, the current state of education, learning theory, implementation of PBL, and educators' experiences with it. Chapter three explains the research design. In chapter four the focus is on trends found in the data and explanations for their significance and application. Chapter five reflects upon the findings of this study and its implications on further research and for educators implementing PBL in our nation.

I believe it is our imperative that K-12 educators question the effectiveness of our schools, curriculum, and practices so that our schools meet the needs of our students and respond to our rapidly changing workplaces. We must also reflect upon *what* we are teaching and *how* we are teaching in order to best serve our students. As I am coming to understand, this process is unique to every teacher and school. I find PBL is a creative and timely answer to *how* we can authentically teach students and engage them in meaningful learning experiences; PBL also matches my teacher identity and vision for my students. Although our schools are currently operating in a time of increasingly high-

stakes assessments, there is still hope for student-driven learning that encourages creative and divergent thinking. I argue that that educators must educate a generation of adaptive thinkers and creators who actively question this complex world we live in. It was and is my hope that this research will also be a tool for reflection, inspiration, and guidance for educators around the nation as they look for ways to encourage and support authentic and relevant student learning experiences.

CHAPTER TWO

Literature Review

The review of the literature focuses on a brief history of pedagogical methods and the relevance of project-based learning, a discussion of the current state of education, and a review of the current literature on PBL and learning theory. It continues with a discussion of the rationale for using PBL strategies and curriculums, successful implementation in the classroom, necessary teacher mindsets and skills, and concerns of this pedagogical method. The goal of this chapter is to discuss the PBL method and rationale in detail and to look at examples of curriculum and schools employing PBL so that it can be seen as a relevant, authentic, yet helpful method to help students achieve academically in our public schools. This chapter will also build the background information on PBL for the research I conducted. The discussion will focus on the relevance of PBL as a pedagogical approach, but also explore the implementation and effectiveness of a PBL model in secondary schools. Two research questions guided my research:

- What are teachers' and administrators' experiences with implementing a project-based learning curriculum approach in their high school?
- What are students' experiences of participating in a project-based learning curriculum approach in their high school?

Historical Relevance of Project-based Learning

From their onset, American schools have experienced paradigm shifts in how they approach different pedagogical methods because of relevant research, influential educators, and education policy. The purpose of this section is to provide historical

context for PBL by outlining major contributions of well-known educators on pedagogical methods used in our public schools.

In the early 19th century, Thomas Jefferson led the public-school movement in the United States by proposing a system of schools in Virginia that would be paid for by the state (Beyer, 1997). By tying education to public funding, Jefferson set the stage for our government's involvement in *what* our schools teach and *how* they teach it. Many educators credit a different man as the "Father of Education." Horace Mann, a 19[th-]century education reformer after Thomas Jefferson, is given this title by many because of the reform he brought to public schools (Eakin, 2000). Mann was largely influential in the transition of public schools becoming compulsory, secular, and publicly funded (Peterson, 2010). He also sought to "mold children into the rational, tolerant, civilized adults a modern society seemed to require" (p. 17) by teaching important subjects such as spelling, arithmetic, music, and physical education (Eakin, 2000). Horace Mann found fault with the current unregulated public schools; he wanted to improve the schools to ensure that what they were teaching was appropriate for all students and to prepare them to be knowledgeable and productive citizens (Eakin, 2000).

In the next century, reformer John Dewey's ideas began to take hold in schools around the nation. Dewey (1938) stressed the importance of experiential education within our public schools over rote memorization and acquisition of knowledge. He wrote of "an organic connection between education and personal experience" (p. 25). He believed that teaching students what were deemed important skills and facts would not prepare them effectively for life beyond school. This pedagogical and content approach was vastly different from Mann's previous educational approach to shaping the

knowledge, character, and moral beliefs of students. (Peterson, 2010). Dewey had a more

pragmatist philosophy, which was appealing to many schools around the nation (2010, p.

41). Schools modeled after Dewey's ideas offered a variety of experiential classes that

encouraged students to practice and learn a variety of subjects and practical additional

skills to arithmetic and spelling (Peterson, 2010).

John Dewey was not the only reformer calling for change in the public school

system during his time. William Heard Kilpatrick, Dewey's colleague at Teachers

College at Columbia University, was also extremely influential in the experiential

pedagogical approach (Beyer, 1997). Kilpatrick also believed that teachers were social

and political undertakers and needed to be extremely capable and intelligent (p. 7). With

capable teachers in the classroom, Kilpatrick saw the need for meaningful learning in

which students were invested in the purpose and were interacting socially with one

another (p. 8). He coined the term *project method* for a pedagogy that is student-centered

with limited teacher guidance. His ideas, along with Dewey's, were progressive for the

time and shared a belief that all students are capable and deserve treatment and

opportunities similar to those of adults (p. 12). Kilpatrick believed by "unifying students

interests with action in the world… provides one example of the way in which education

and life, knowing and doing, are continuous. (p. 9). The purpose of education, according

to Kilpatrick, is not for the student to regurgitate facts and figures; it is for them to

participate in and make meaning of the content (Beyer, 1997).

Current State of Education

With influential reformers such as Mann, Dewey, and Kilpatrick, it might be

logical that the current best practices employed by educators and public school districts

around the nation would focus on experiential learning. Because of the current state of

high-stakes testing, this is not necessarily the case. This section explores the current US

education system; heightened stakes for schools, teachers and students; national learning

standards; and the demands of our increasingly global society on student knowledge,

abilities, and skills. It is hoped that this discussion sheds light upon the necessity for PBL

and the difficulty in doing so amidst current public-education policies.

   Although Dewey and Kilpatrick made excellent cases for why schools and

educators should be using experiential and student-driven approaches to teaching, the

current education policies do not make this an easily attainable reality for educators. The

Reagan Administration started the pendulum swinging toward standards-based school

reform when it published *A Nation at Risk* in 1983. This publication called for an

increase in accountability of our nation's failing schools (Orfield & Wald, 2000). The

passage of the No Child Left Behind Act (NCLB) in 2001 continued the movement

toward high-stakes standardized testing. Public schools' measures of success were now

based on their Adequate Yearly Progress (AYP), which is a measurement of students'

achievement on specific content standards (Fritzberg, 2003). McCarthey (2008)

describes the core subjects that NCLB focused on: reading and math, with less emphasis

on other subjects such the arts, skills-based classes, and even writing (p. 462). In our

system today, when a public school fails to meet its AYP, it often faces reorganization

and loss of federal funds and students (Zhao, 2008, p. 48). It is especially difficult for

teachers and students in low-income schools that are not passing AYP to branch out from

the required tested subjects, leading to a narrowing of the curriculum offered

(McCarthey, p. 464).

The most recent addition to help standardize *what* students are learning in public schools is the Common Core Standards, which were released in 2010. These standards aim to "establish consensus on expectations for student knowledge and skills that should be developed in Grades K–12" (Porter, McMaken, Hwang, & Yang, 2011, p. 103). As of 2014-15 school year, 45 states have adopted these standards (http://www.corestandards.org/in-the-states). Funding is also tied to states' implementation of these standards and aligned assessments. For example, the United States Department of Education recently awarded millions of dollars in Race to the Top funds based on states' adoption of the Common Core (p. 103). With the increased focus on standards and assessment, it is difficult for school districts and teachers not to place a great deal of time and focus on the core subjects and knowledge that students are tested on, especially as noted previously, in school districts where students are not meeting the grade-level expectations. This results in a narrowing of the curriculum and an approach more similar to that of our pre-Dewey schools where the teacher is the expert (McCarthey, 2008).

Amidst the increased focus on standardization and assessment of specific core subject knowledge within our public schools, an increasingly global world requires us to adapt, change, and respond to changes in technology, business, and society. Zhao (2008) describes the troubling disconnect between the direction our public schools are moving and the direction our society is moving. Zhao (2008) posits that AYP does not measure the skills necessary for success in a global economy. As our students graduate and compete for jobs in the global market, there is an increasing number of cheaper but equally qualified labor from countries like China and India (Zhao, p. 49). Zhao posits

that what will give American students the competitive edge is not their acquisition of knowledge or excellent performance on our standardized tests. Rather it will be their ability to use right brain "simultaneous, metaphorical, aesthetic, contextual and synthetic" thinking skills" (p. 49). She adds that "American education needs to preserve flexibility, protect individuality, and promote multiple intelligences" (p. 52). Tony Wagner, the first Innovation Education Fellow at the Technology and Entrepreneurship Center at Harvard University, also writes about the new demands of students in this technological era. Wagner (2012) states the necessary skills for successful job applicants:

> The high school and college graduates who will get and keep good jobs in the new global economy and contribute solutions to the world's most pressing problems are those who can bring what the author and *New York Times* columnist Thomas L. Friedman calls "a spark of imagination" to whatever they do. They will be creative problem-solvers who will generate improvements in existing products, processes, and services, as well as invent new ones. (p. 1)

Providing classes and curriculum to support these thinking and skills that deviate from the tested core subjects can be difficult for school districts' employees, especially when their success and funding are directly tied to their adoption of common standards and their students' performance on standardized tests. It is logical that our schools should change and adapt to the needs of our society. As new technology and professions emerge, so should our education system modify to equip students with the necessary knowledge and skills to be successful contributors in our society.

Other concerns of our current system of high-stakes testing are student satisfaction and success rates in school. Tony Wagner (2002) of Harvard University

writes about the implications of our high-stakes testing attached to grade promotion and graduation on students. Wagner highlights the increasing high school dropout rates around the country (p. 6). He states that when interviewed about their negative school experiences, these students describe their schools as being impersonal systems where teachers are the sole possessors of knowledge, and they experience a great disconnect between learning in school and real life applications (p. 24). Orfield and Wald (2000) echo this sentiment stating that high-school dropout rates are rising most dramatically for minority students (p. 38). What is more, there is a lack of evidence linking high test scores with economic productivity (p. 39). If high-stakes testing is causing our students to drop out at higher rates than before with no correlation to improved economic productivity, clearly something needs to change in our approach to measuring schools' and students' educational success.

There is evidence of school districts and educators around the country employing inquiry and project-based pedagogy to support student learning (Geier et al., 2008; Gordon, Rogers, Comfort, Gavula, & McGee, 2001; Harada, Kirio, & Yamamoto, 2008). However, these changes are not catching on like wildfire. Increased standardized testing, narrowed curriculum in response to the common core standards, and funding tied to student performance on tests help explain why experience-based learning is not a common pedagogical practice in all public schools. John Dewey called for increased experiential learning; Kilpatrick voiced the need for project learning, and scholars; and educators like Tony Wagner, Thomas Friedman, Yong Zhao, Sarah McCarthey, and Ken Robinson call out for education reform to reflect our changing economy and society. These individuals all call for an increasing need for students to think, create, and analyze

in order to make meaning of the work they do in school. With the existing disconnect between education policy and our global world, as Zhao (2008) explains, something needs to change.

<p style="text-align:center;">**Project-based Learning (PBL)**</p>

One response to this call for change is project-based learning (PBL), a pedagogical approach to foster creativity and divergent thinking within our schools. This section discusses the emergence of experience-based education in American public schools, and then describes existing research on PBL in order to present a common definition for this study's purpose. As previously mentioned, the idea of students learning through experience is not a new idea. Early education reformer John Dewey (1938) called for a shift in teaching pedagogy: for a move from traditional to progressive approaches in which students engage in meaningful experiences rather than rote memorization of facts and knowledge. William Heard Kilpatrick followed in Dewey's footsteps at Teachers College at Columbia University (Beyer, 1997). Kilpatrick was the first to describe the pedagogical method now referred to as PBL. He echoed Dewey's educational theory that learning experiences must be meaningful and relevant to students. Beyer (1997) describes Kilpatrick's project method: "What is crucial within the project method is that there is some dominating purpose – which of course may not be observable – in which students whole heartedly participate" (p. 8). Dewey and Kilpatrick believed students needed to engage in meaningful experiences at school. They also influenced pedagogical methods in the early to mid- 20th-century American public schools.

In 1983 the education landscape began to change with the publication of *A Nation at Risk* by the Reagan Administration. This publication influenced the standards-based reform movement in drawing the public's attention to the currently failing public schools (Orfield & Wald, 2000). This standards-based reform movement caught more steam with the introduction of No Child Left Behind (NCLB) legislation in 2001 (Fritzberg, 2003). McCarthey (2008) writes about the effects of NCLB legislation which links student achievement on standardized tests to school success and funding. She found that with an increased focus on mathematics and reading, schools are placing less and less focus on other skills and subjects; schools are narrowing their curriculum and class offerings based on the required standardized tests in math and reading their students are measured on. In the light of this high-stakes testing era, there are schools and teachers around the country who still choose to infuse creativity, experience, and student-driven learning into their lessons and curriculum. "School districts across the USA are beginning to adopt curricula that follow a PBL approach with an emphasis on developing students' twenty-first century skills" (Rogers et al., 2011, p. 894). It may not be a national movement, but PBL is slowly gaining popularity again in the education world demonstrated by the numerous studies and articles on PBL and other innovative teaching techniques (Childress, 2012).

Currently there are many different names and terms for experience-based, student-centered teaching approaches. These include inquiry-based learning, problem-based learning, case-based learning, discovery learning, just-in-time teaching, and project-based learning (Prince & Felder, 2006). All of these methods focus on students creating meaning through collaboration, creation, and employing high-level thinking

skills rather than acquiring knowledge from an expert, the teacher, and then

demonstrating this knowledge on a standards-based assessment. In order to help

maintain clarity in this study, I focused on project-based learning (PBL), not problem-

based learning or other inquiry-based methods. The definition of PBL for this study will

take into account Helle, Tynjala and Olkinuora's (2006) statement that, "The most

distinctive feature of project-based learning is problem orientation, that is, the idea that a

problem or question serves to drive learning activities" (p. 290). Bell (2010) add to the

definition of the process:

> Learners pursue knowledge by asking questions that have piqued their natural
>
> curiosity….Students develop a question and are guided through research under
>
> the teacher's supervision. Discoveries are illustrated by creating a project to share
>
> with a select audience. Organizers support systematization of the processes that
>
> will be implemented throughout the research and project phases of PBL. Student
>
> choice is a key element of this approach. (p. 39)

With this problem orientation, PBL can be and is used across all curriculums and age

groups to help students engage in authentic and meaningful learning experiences.

Students engaging in PBL may work individually, or more commonly in small

groups, to research, design, and produce a comprehensive report demonstrating their

learning. Harada, Kirio and Yamamato (2008) explain the process as an "in-depth

exploration. There are no quick and easy answers or definite solutions" (p. 13). In this

process students must create, solve, analyze, problem-solve and inquire into challenging

problems and questions. Students focus on the inquiry process rather than solely on the

end result and getting the *right answer*. Prince and Felder (2007) state that "project-

based learning involves assignments that call for students to produce something, such as a process or product design, a computer code or simulation, or the design of an experiment and the analysis and interpretation of the data" (p. 39). These projects simulate the type of work and learning that occurs in many work places outside of the traditional educational setting. Given these definitions, PBL in this study refers to a structured learning process that is guided by an underlying question, issue or problem in which students individually or in small groups to research, design, and produce something in response that demonstrates their learning. Entire curriculums, lessons, or even schools may be designed to incorporate PBL into their curriculum and pedagogy.

Learning Theory

In order to understand the relevance of PBL, it is important to discuss related learning theories. Discussing student learning theory is important for educators to reflect upon teaching practices and their relevance and appropriateness to students' learning experiences. This section will discuss the relevance and impact of the constructivist learning theory, cognitive learning theories, and their support for the PBL pedagogical approach.

The constructivist learning theory suggests that students learn best when they are helping to construct their own knowledge. Lundeberg (1997) writes that,

> Three key principles emerge from constructivist views: (a) People learn from new experiences based on prior knowledge and beliefs; (b) new knowledge is always situated in a context; and (c) learning is socially mediated and acquired within learning communities. (p. 60)

Using this theory, PBL is an effective model in which students learn by constructing

knowledge collaboratively. This practice was initially used in medical education and

continues to be the primary pedagogical method used to train medical professionals

(Prince & Felder, 2007). These authors indicate that medical students are presented with

the problem first, and then must work to find and create a solution. While it is necessary

for medical students to memorize certain facts and theories, it is more important they are

able to research, use technology, synthesize information, and problem solve to create new

solutions. Constructivist theory also suggests that students gain meaning from social

interactions and collaboration (Helle et al., 2006).

     Dewey (1938) is one of the first education reformers to gain popularity with his

alternative views on student learning. He believed students needed to engage in scientific

and reflective thinking, as well as to maintain their childhood curiosity for learning.

Current cognitive learning theory suggests that a metacognitive awareness, such as

Dewey advocated, is indicative of students' inductive problem-solving abilities. Helle et

al. (2006) state the connection between current research on cognitive learning and the

skills and processes that PBL encourages such as active reflection, construction of

concrete artifacts, learner control of the process, the use of authentic and simulated

learning contexts, creating multiple forms of representation of knowledge, relevant but

complex problems, and a sense of student ownership and motivation. Looking at

constructivist and cognitive learning theory helps frame the relevance for using PBL in

the classroom.

Why Use Project-based Learning?

Educators and schools around the country, even students, may ask why PBL is appropriate to use in the classrooms when it is not clearly connected to the standardized assessments students must take in reading, math, and science. Joel Rose, an education entrepreneur in New York City, wrote an article for *The Atlantic* calling for school reform in response to the technological era we now live in. He stated,

> It's time to unhinge ourselves from many of the assumptions that undergird how we deliver instruction and begin to design new models that are better able to leverage talent, time, and technology to best meet the unique needs of each student. (2012, p. 4)

Incorporating PBL in the classroom is an attempt to change the model used to educate our students to better fit the age we live in today. This section first discusses the need for creativity in our schools and the current state of the U.S. education system in relation to our increasingly global world. It then describes the benefits students experience when engaging in PBL and the benefits for educators and school districts.

Despite the raised stakes for standardized testing and student, teacher, and school accountability, the United States education system continues to fall behind countries around the world (Rose, 2012). Zhao (2008) posits that many of our public schools are failing to teach our students the skills and nurture the mindsets they need to be successful in our increasingly global world. Robinson also spoke eloquently about the future of our education system and society. In a recent TED talk (2006) he stated,

> It's education that's meant to take us into this future that we can't grasp. No one can be certain what our future holds, what jobs will be available, what technology

will be used or what knowledge and skills will be valued in our fast-changing

work place. What we can be certain of, however, is that students must be creative

in order to deal with our ever-changing educational and job landscape. In today's

world, Robinson (2006) insists "creativity is as important as literacy.

http://www.ted.com/talks/ken_robinson_says_schools_kill_creativity.html

Students must be able to think divergently.

Zhao (2008) states more specifically about the creative kinds of thinking students

need to develop. She writes that in order to give our students a competitive edge against

their foreign counterparts, we must encourage right-brain skills: "simultaneous,

metaphorical, aesthetic, contextual, and synthetic" thinking (p. 49). This is because left-

brain skills are being outsourced to other countries and machines. With too much

standardization in our school system we risk losing the development of these right brain

skills and creativity. "Creativity cannot be taught but it can be killed" (Zhao, p. 51).

Although more students are going to college than in previous years, the college

graduation rate is declining (Childress, 2012). Orfield and Wald (2000) also indicate that

increased standardized testing has led to increased dropout rates for minority students,

exacerbating the achievement gap already present between our highest and lowest

achieving students. Orfield and Wald state, "High-stakes tests narrow the curriculum by

encouraging a "teach to the test" approach in the classroom. Most curriculum experts

recommend that students approach topics from a variety of perspectives, using all of their

senses, over extended periods of time" (p. 39). Harada, Kirio, and Yamamoto (2008) also

describe the increased pressure on high schools to increase graduation rates and the need

to change our approaches from a "teach to the test" model. Wagner (2002) interviewed

high-school student drop-outs and found that students become disconnected when the learning feels impersonal and irrelevant to other real-world experiences. What's more, our education is increasingly spending more money per student with little if any progress in student achievement (Childress, 2012).

Given this information, PBL is a teaching pedagogy that provides promise because it is collaborative and student-driven, based on real-world problems, and it fosters divergent and creative thinking. Markham (2011) echoes these ideas when writing of the need for education to reflect the changes of our world. He even suggests that lecture and direct-instruction methods will soon be outdated as we find more efficient and effective ways of providing our students with meaningful educational experiences.

PBL in the K-12 setting forces students to draw on prior experiences, learn through reflection, collaboration, trial and error, and creativity—all skills that are highly valued today in our increasingly technological and global economy. Scarbrough et al. (2004) conducted a study in the UK in a water works company, WaterCo, to assess the effectiveness of their project teams. In order to accomplish a project, WaterCo needed to assemble teams to research, collaborate, and find a solution to a problem. There was no protocol or algorithm to follow. The project teams were required to create their own processes. The business found that the teams that were the most creative in their processes were the most successful. These teams did not rely on the expertise or product knowledge of individuals or past models. They collaborated with outside engineering and architecture firms and worked together to find a common solution that was in everyone's best interest. The result was an innovative, cohesive, and effective solution.

Businesses around the world are seeking to find the most effective ways to accomplish their goals, and as in the Scarbrough et al. (2004) study, project teams that embrace creative and divergent thinking are proving to be the most effective method. If K-12 schools are to prepare students for success after high school, simulating collaborative projects that encourage divergent thinking and creative skills aligns more closely with the demands of our changing economy today.

Another finding in learning theory shows student investment is essential for academic success (Murray, Shea, & Shea, 2004). Murray et al. (2004) write that students have a great ownership over their learning and sense of responsibility when engaging in inquiry based models such as PBL. Helle et al. (2006) also praise PBL: "As students define problems and generate questions they may develop a sense of ownership of the learning process" (p. 294). Bell (2010) echoes these ideas and lists responsibility, independence, and discipline as important benefits students gain from PBL. This sense of ownership is an important step in students' knowledge construction and learning from the process. This aligns with constructivist learning theories proposed by education leaders as early as Dewey (1938). Learners' self-esteem is also increased by having successful academic experiences in PBL. Cruickshank, Bainer, and Metcalf (1999) stress the close relationship of student self-esteem and improvement in learning (as cited in Murray et al., 2004).

Additionally, Harada, Kirio, and Yamamoto (2008) contrast the holistic qualities of the PBL instructional strategy versus other traditional curricular models:

With our increasingly diverse student population, PBL takes on greater importance because it builds on students' individual strengths and allows them to

explore their interests in the structure of a defined curriculum. It emphasizes real-world skills including problem solving, communication, and self-management. It integrates disciplines by focusing on themes, issues, and deeper investigations of topics. It capitalizes on concerns and skills valued in the community. It acknowledges and meets the needs of learners with a range of learning styles and needs. (p. 15)

PBL offers a variety of authentic and diverse learning experiences for students of all ages and ability levels.

PBL can also be a positive experience for teachers. "Each time the topic is studied with a different class it is fresh and new" (Shea et al., 2004, p. 33). Lundeberg (1997) also found positive collaborative experiences between teachers, parents, and students engaged with PBL. Incorporating PBL is a great method for educators feeling frustrated within our current high-stakes testing era to make learning experiences meaningful for students. Harada et al. (2008) write how PBL is an "approach to teaching and learning that brings curriculum in line with the way the world really works" (p. 19). Helle et al. (2006) also discuss the various reasons educators may want to employ PBL in their classrooms:

professional motives (related to practice orientation and work-based learning), democratic or humanitarian motives (eminent in service learning and in international projects incorporating humanistic studies), the motive to foster critical thinking (related to science orientation) and pedagogic motives (to foster understanding of subject matter). (p. 290)

In light of the perceived inefficacy of our current education system, PBL is one pedagogical approach to change the way students experience learning and better align it to their experiences outside of school. When students feel successful, teachers feel successful, and subsequently schools can become more successful.

Implementation of Project-based Learning

Project-based Learning offers a diverse experience for the students and teachers involved. It is not limited to a specific subject, grade, or demographic group. It does, require dedication and extra work from the teachers and students (Prince & Felder, 2007). This section discusses the role and necessary knowledge of teachers using PBL and the necessity of structure for PBL to be effective. It also discusses the importance of learning objectives and reflection in the PBL process.

It is important to identify the most significant factors needed to set up an effective and efficient PBL experience for students. According to Krajcik et al. (1994), "Successful implementation of PBL requires (1) extended PD for teachers, (2) sustained classroom support (e.g. with technology and curriculum development), and (3) collaboration and commitment from school personnel" (p. 485). A common thread found in most studies is alignment of teachers' philosophies, knowledge, and skills related to PBL and their specific content area. Teachers using the PBL curricular approach, as is often misunderstood, must continue to teach the specified content (Lundeberg, 1997, p. 75). Their role is to be an active participant in the learning process--teaching and learning from the student.

Lundeberg states that "for project-based learning to succeed, teachers may need to assume active roles, provide choices within limits, and state clear expectations without

restricting student creativity" (p. 78). PBL is not an unstructured project in which students have complete freedom to research and create. There must be agreed-upon objectives, learning goals, desired skills, and research methods that must be clear to teachers and the students (Prince & Felder, 2007). PBL can and does help students prepare for success on standardized tests so long as clear learning objectives are defined before students begin working on a project. Harada, Kirio, and Yamamoto (2008) state, "These standards provide an anchor to foundational concepts and processes in the curriculum" (p. 14). Learning objectives are perhaps most effective when they are cross-curricular in scope. A study in Hawaii conducted by Harada, Kirio, and Yamamoto (2008) described a few different cross-curricular projects that a school district implemented in detail. Pairings occurred between social studies and foreign languages, language arts and physical education, science and American history, biology and economics. Within all of these models, students were required to combine skills, knowledge, and questions between the contents, never focusing completely in one area. If the learning objective was science related, there was also a language-arts portion that required attention to spelling and conventions.

In order to make the learning objectives extremely clear to students and teachers, Trauth-Nare and Buck (2011) suggest breaking the project into smaller units based on the stated learning objectives. They encourage teachers to use a rubric with the learning goals clearly stated. The rubric helps guide the project. If students are struggling in certain areas of the rubric, it is important for teachers to re-assess and spend more time teaching those areas. Reflection, then, is key to the success of PBL (Bell, 2010; Harada et

al., 2008; Scarbrough et al., 2004). Students and teachers must engage in ongoing

reflection, not just at the end of the project. Bell (2010) asserts:

> With PBL, assessment is authentic. We measure a child's performance via
>
> rubrics, but a critical aspect of this model includes self-evaluation and reflection.
>
> Children learn from their processes. They reflect on how well they worked in a
>
> collaborative group and how well they contributed, negotiated, listened, and
>
> welcomed other group members. (p. 43)

Reflection helps students and teachers involved to participate actively in the learning

process. For PBL to be effective, it is not a *one-size fits all* method. Common curriculum

and effective models can and should be shared, but must take the individual teachers' and

students' knowledge, background, and competencies into account.

Teacher Mindsets and Skills

Lundberg (1997) and Rogers et al. (2011) found teacher mindsets to be of the

utmost importance in implementing successful PBL in schools today. This section

discusses the mindsets and skills needed for educators using PBL in their classrooms.

Rogers et al. (2011) interviewed teachers using PBL methods and found commonalities

among their experiences. All the teachers acknowledged a mindset shift in their role

from a teacher to a facilitator or coach (p. 903). This aligns with ideas presented in by

Zemelman, Daniels, and Hyde (2005). They posit teachers need to be more diverse in

their roles, which include coaching, modeling, and demonstrating, and not necessarily

being the expert. Harada et al. (2008) discuss the roles of teachers as facilitators and

coaches, but without relinquishing control of the learning situation. As Trauth-Nare and

Buck (2011) stated, teachers must in fact set up clear objectives, assessments, and guidelines for the learning students will engage in. Lundeberg (1997) states that:

As teachers become more immersed in using technology effectively to promote thinking, they become less didactic and more constructivist; they lecture less and coach more; and, rather than expecting students to learn all the same information, they expect individual differences. (p. 61)

While teachers are not to take a back-seat role, they also must stay clear of being the expert. Students must have room to create, synthesize, and engage freely with concepts within the set structure of the project. The teachers are no longer the lecturers; ideally they too become learners alongside the students. Lundeberg states, "For project-based learning to succeed, teachers may need to assume active roles, provide choices within limits, and state clear expectations without restricting student creativity" (p. 60). This is a different role than many educators are used to, but as Markham (2011) suggests, this may be the future of accepted teaching pedagogy.

Concerns with Project-based Learning

Are our students learning what they need to? How can I make sure this project aligns to state standards? Will one group member do the work for the rest of her group? Many teachers and schools are reluctant to implement PBL because of questions similar to these and the extra time, work, and effort it takes to create a quality program (Prince & Felder, 2007). This section examines the challenges of implementing PBL in light of high-stakes standardized testing, few documented PBL models, and difficulty for teachers not trained in PBL methods.

A main concern of PBL is assessment. Lundeberg (1997) found that,

Although the teachers knew that traditional forms of assessment did not fit their goals and could not measure the creative, somewhat unpredictable products these students produced, they were unsure of how to assess students' learning using projects their students created. (p. 73)

Similarly, Scarbrough et al. (2004) found there to be a lack of consistency and "formal structures and incentives that would enable learning to be institutionalized" (p. 492). Today teachers face heightened performance measures related to standardized testing that make it more difficult to implement PBL in their classrooms.

Another difficulty in implementing PBL is that there are few documented effective PBL models to follow. Ertmer and Simons (2005) stated, "Given the general lack of experience most teachers have with open-ended teaching strategies (Land, 2000), novice PBL instructors are likely to encounter difficulties in all aspects of PBL instruction: planning, implementing, and assessing" (p. 3). Prince and Felder (2007) also found many teachers who did incorporate PBL in their classrooms feel overwhelmed. They found that, "instructors who lack the subject knowledge and self-confidence that normally come only with extensive experience and training could easily find themselves overwhelmed by the negative responses of their students" (p. 38). How can schools address these valid concerns? PBL is not yet widely used to be a staple in our nation's pedagogical practices or teacher-preparation courses. While it is gaining ground in schools and classrooms across the nation, there is still a great deal of skepticism about its effectiveness and efficiency (Geier, et al., 2008). If educators continue to define students' intelligence by their ability to perform well on standardized tests or other

prescriptive measures, they are not fully preparing students for their future jobs that will require adaptive, creative, and divergent thinking.

Summary

PBL is one method that attempts to align schools' curriculum and pedagogy to the way the world works. Harada et al., (2008), Dewey (1938), Beyer (1997), Zhao (2008) among others have called for our schools' to shift their teaching practices to engage students in more meaningful, effective, and relevant ways. I n addition, constructivist learning theory suggests students learn best while constructing ideas, working collaboratively, and with increased investment (Helle et al., 2006, Lundeberg, 1997; Murray, Shea, & Shea, 2004). Recent shifts towards high-stakes testing have not resulted in higher student achievement. In fact, U.S. students continue to fall behind other countries' and are experiencing lower high-school graduation rates, especially for minority students (Childress, 2012: Orfield & Wald, 2000; Rose, 2012; Zhao, 2008).

For the purpose of this study, I used Helle, Tynjala and Olkinuora (2006), Harada, Kirio, and Yamamoto (2008), and Bell's (2010) research to define PBL as a holistic pedagogical approach in which students' work is driven by a problem. Through guided, collaborative work, students then produce a project or answer to the problem. As Geier et al. (2008), Lundeberg (1997), Prince and Felder (2007), Krajcik et al. (1994), and Scarbrough et al. (2004) discuss, PBL is often more difficult to implement than traditional teaching approaches where the teacher is the expert.

Interestingly, ongoing teacher reflection was found to be a major key to success in PBL (Bell, 2010; Harada et al., 2008; Scarbrough et al., 2004). Similarly, educators of our nation's youth, no matter the pedagogy they employ, must continually reflect upon

teaching practices and whether they are preparing students for success in the 21st century.

It is evident that as our world changes, our schools, pedagogies, and curriculum must too.

This leads to chapter three, which outlines the specific research that took place at Future

Academy (pseudonym).

CHAPTER THREE

Method

The previous chapters explored the relevance and appropriateness of PBL by reflecting on the current state of our education system and constructivist learning theories. The literature reviewed highlighted best practices and concerns about PBL in today's schools. In this study I aimed to add to this body of research by investigating one alternative high school's efforts to implement a meaningful and rigorous PBL curriculum. This chapter outlines the specific research, including the research setting and participants at Future Academy and a more in-depth description of its pedagogical approaches. Next, the rationale for this methodology is discussed, followed by a description of the participants and method for this study. Guiding my research are two questions:

- What are teachers' and administrators' experiences with implementing a project-based learning curriculum approach in their high school?

- What are students' experiences of participating in a project-based learning curriculum approach in their high school?

Research Setting and Subjects

Future Academy

Future Academy (pseudonym) is a public, alternative high school located in a rural area in the western United States. The school's city has a population around 12,000. The main public high school in the district serves approximately 840 students; of those students, around half receive free and reduced lunch. White students make up the majority of the students attending both district high schools: Future Academy and the main public high school. Latino students are the next largest ethnicity, approximately

one-third of the student body; other ethnicities are less than 5% of the population. The school district has a lower on-time graduation rate than the state average of 73%.

Future Academy opened in the 2014-15 school year to serve students falling behind in earning their high school diploma. The majority of its students receive free and reduced lunch. Students attend school year round, Monday to Thursday, from 8:00 am to 2:30 pm. Students work with student partners and community members on cross-curricular and community-based projects ranging from maintaining the school farm, designing and creating solar energy panels, organizing clothing drives for young mothers, and other various projects. For each project, students must address at least three distinct curricular areas. Students are expected to plan, develop, research, and complete at least one project every month. Successful project completion also requires students to find relevant research articles, analyze these articles, and write a five-paragraph written reflection of their specific project.

There are currently two teachers at Future Academy: one full-time instructor, and one part-time director/part-time instructor. They continually work with the other two staff members, the office manager and teaching assistant, to collaborate and reflect on their effectiveness in creating a rigorous, relevant, and student-driven learning culture.

Methodology Rationale

A concurrent mixed methods approach is one in which, "the researcher converges or merges quantitative and qualitative data in order to provide a comprehensive analysis of the research problem" (Creswell, 2009, p. 14). I first asked school staff members and parents of students to assist in getting as many students as possible to complete a written survey about students' learning experiences with PBL. While attempting to draw from a

diverse group of participants, this study was inherently biased because of the school

chosen and participation based on student availability and willingness. In addition, the

five staff members interviewed were aware that the findings of this study would be

shared with the district, which could affect their responses to specific questions. All

participants were clearly informed of the methodology and goals of the research. All

results will be shared with participants, if so desired, in order to further the collective

conversation of PBL in secondary classrooms.

Data Collection Method

The study began with the available and willing students completing a survey

about their learning experiences. This was a quantitative and qualitative survey

consisting of 12 questions that stemmed from the elements and best practices of PBL.

These questions supported the capstone question: What are students' experiences of

participating in a project-based learning curriculum approach in their high school? In

order to participate in the study, students under 18 submitted a consent form signed by a

parent or guardian. Students over 18 could sign their own consent forms. The students

also had the option to complete the survey orally with the researcher using a recording

device.

The first set of questions asked students about their experience with specific

elements of PBL regarding constructivist learning theory based on the findings of Helle

et al. (2006), Lundeberg (1997), and Murray, Shea, and Shea (2004). The next set of

questions focused on the specific focus of students' trying to seek an answer to a larger

problem. (Bell, 2010; Harada, Kirio, & Yamamoto, 2008; Helle, Tynjala & Olkinuora,

2006). The last set of questions focused on students' experience of the relevancy and

efficacy of their PBL education based on research from Harada et al., (2008), John

Dewey (1938), Beyer (1997), and Zhao (2008). The student survey appears in Appendix

A. Upon receiving these surveys back, I analyzed the data using Microsoft Excel to find

trends. Next, I conducted and recorded one-on-one interviews with the staff at Future

Academy. Pseudonyms were assigned to all participants. First I interviewed a recently

added staff member, an education assistant, Randy. After that, I interviewed Rachel,

another education assistant. Third, I conducted an interview with the school office

manager, Gabriela. That followed with an interview with one of the teachers, Marcus.

The last interview conducted was with Ivan, the school principal and teacher. I recorded

these interviews using an iPhone. The purpose of each interview focused on the

following question: What are teachers' and administrators' experiences with

implementing a project-based learning curriculum approach in their high school?

I used three categories of questions to help guide our conversations. First, I asked

teachers to reflect on their experience implementing PBL regarding teacher mindset and

preparation (Land, 2000; Lundberg, 1997; Prince & Felder, 2007l; Rogers et al., 2011;

Zemelman, Daniels, & Hyde, 2005). Second, teachers reflected on the application of

PBL at the alternative high school using research from Bell (2010), Harada et al. (2008),

Lundeberg (1997), Scarbrough et al. (2004), and Trauth-Nare and Buck (2011) to guide

the discussion. Finally, I asked teachers to reflect on the perceived effectiveness and

efficiency of PBL at their alternative high school (Geier et al, 2008). Interviews were

guided, not limited, by the questions found in Appendix B. After transcribing the

interviews, I recorded the data, looked for trends and themes, and drew conclusions about

teachers' and students' experiences with PBL at Future Academy, and whether they deem

PBL an appropriate pedagogical method for preparing students to best prepare students for post-secondary success.

Approval to Conduct Research

I received permission from the Future Academy administrator and district superintendent to collect data from employee interviews and surveys and from student surveys.   Employee participants signed letters of consent. Parents or guardians signed consent letter for students unless the students were 18 or older. These students signed their own consent letters. This research project was also approved by the Hamline University School of Education Human Subject Committee.

Summary

This study's intent was to question how teachers, administrators, and students felt about the early stages of PBL implementation at Future Academy, an alternative high school in its first year of existence. The guiding research questions are:

- What are teachers' and administrators' experiences with implementing a project-based learning curriculum approach in their high school?

- What are students' experiences of participating in a project-based learning curriculum approach in their high school?

By taking a close look at one alternative high school that is grappling with best practices of implementing a PBL curricular approach, and serving underperforming students, educators can in turn question the effectiveness and appropriateness of their curricular and pedagogical practices. Ideally, this research may help secondary educators and schools reflect on their own practices, and question whether PBL is a pedagogical approach that will benefit their students. The future of education will continue to change.

Educational professionals need to continue to reflect, adapt, and engage in dialogue that will help best meet the needs of our students. Chapter Four will contain the data from the student and surveys as well as major themes from the teacher interviews.

CHAPTER FOUR

Results

In order to better understand the experience of staff and students involved with early stage implementation of PBL, I followed the concurrent mixed methods research approach stated in chapter three. First, I surveyed students at Future Academy. Twenty-five percent of students voluntarily and anonymously participated in the written survey. After receiving permission from minors' parents, or the students themselves if 18 or older, I gave students a written survey composed of twelve questions reflecting on their individual experiences with PBL at Future Academy. (See survey in Appendix A). Each question had a Likert scale of four possible answers. Neutral was intentionally not an answer choice so that students would have to take a positive or negative stance on each question. One student, Felix (pseudonym), elected to complete the survey orally with the researcher because he had so much to express about his experience at Future Academy. This student was 18. This interview was conducted and then transcribed in an identical manner to the staff interviews. Because of lower attendance and difficulty receiving signed consent forms, only 25 percent of enrolled students at Future Academy participated in the research. After the 14 student surveys were collected, I inserted the students' numerical Likert survey answers into an Excel spreadsheet to analyze trends in the data. All information was also kept anonymous as pseudonyms were assigned to all students and staff.

Using the prescribed concurrent mixed method approach outlined by Creswell (2009), I next interviewed teachers and administrators about their personal experiences working at Future Academy (pseudonym) during its initial year. After staff members

signed the Staff Consent Forms to participate in research, I conducted and recorded five interviews with staff members. The interviews followed the questions in Appendix B and ranged in duration from 18 minutes to 46 minutes. The interviewees included one administrator/teacher, one administrator, one teacher, and two teaching assistants. After conducting and recording the interviews, I later transcribed these interviews into a Word document. All identities of staff members were kept anonymous through assigned pseudonyms.

All interviews and surveys were aimed at answering the following research questions about teachers' and administrators' experiences with implementing a project-based learning curriculum approach in their high school and students' experiences of participating in a project-based learning curriculum approach in their high school.

Student Findings – Future Academy

Community and engagement. These two words surfaced as I analyzed and reflected upon the students' responses about their experiences with PBL at Future Academy. In reading, thinking, and analyzing their overwhelmingly positive responses about their experiences with staff, the specific method of learning, PBL, and the relevance of their learning, it is clear that these students feel they are part of a meaningful community and they are engaged in their learning experiences. This is noteworthy because, according to Marcus, most of the students attending Future Academy had become disillusioned with the local public high school, dropped out, or had fallen drastically behind on their graduation credit requirements. These circumstances are especially important to consider while looking at the overwhelmingly positive responses regarding students' experiences at Future Academy. The results of the student survey are

shown in Figure 1 (Appendix C). The questions receiving the highest number of *Strongly Agree* student responses appears first and continues to the lowest. The same information is displayed visually in Figure 2 (Appendix D) with the survey questions appearing in numerical order.

Looking at the student data in Figures 1 and 2, located in Appendices C and D, I am astounded at the number of students who marked *Somewhat Agree* and *Strongly Agree* to a majority of the survey questions. While this is not a comparative analysis between students at a traditional public school and a PBL school, I would predict that the satisfaction levels of students at Future Academy are much higher than those at more traditional public schools.

Student Community

Question 10's response is the most striking in which 93% of students surveyed responded *Strongly Agree* to the prompt: *I like this school better than a more traditional high school that does not use project-based learning.* In her written response to this question, Ashley (assigned pseudonym), wrote, "This school is more social, doing projects is better than sitting in a desk all day." Reyna wrote, "Ever since I started here, I've done really well. And now I'm going to graduate early." Felix also reflected on why he likes Future Academy so much. "I would say that the opportunities [are why I'm happier here]: I think the main component about this school is, like meeting new people and discovering what you can do with the people out in the community." This is a school leader's, or even a CEO's dream: over 90 percent client satisfaction. These are students who had dropped out of or had become disillusioned with high school and are now

having extremely positive experiences in an alternative public high school that embraces PBL and service-based learning whole heartedly.

The theme of community continued to emerge from multiple students' responses to other survey questions. In response to Question 2, *I enjoy working with other students on projects*, Felix reflected:

> The other high school bothered me so much, when I am in the hallway there are so many people that my anxiety kicks in. And it's like, no. But here, I feel like I almost know everyone in the school, so it's like I have a connection with acquaintances and a connection with almost everyone, and so I can have conversations with them.

Maria echoed Felix's feeling of comfort and even support from the other students at the alternative high school. She wrote, "It is nice to have someone supporting and helping you get work done." She also felt great respect for her classmates and other community members who are involved with her projects. Responding to question 4, she wrote, "I learn things from other people around me to help with ideas for projects, also because people know more things on topics I might not."

PBL encourages students to learn from their own discoveries, their classmates, their teachers, and other community members which is aligned to the constructivist learning theory (Helle et al., 2006). Eighty-five percent of students at Future Academy responded positively to Question 4*: I learn new things from my classmates, community members, staff, and my own discoveries in this class*. Reyna put it simply, "Very true :)." What I did not anticipate in this research was how the PBL pedagogical method helps students have a positive academic experience and a positive social experience through

intentional community with their peers. The nature of PBL forces students to

communicate with one another, the staff, and often community members and other

professionals. Felix reflected upon his own growth in this area: "At first it was really

hard to interact with people, but I feel that I am a lot more social now that I have come to

this school." Joe, whose survey reflects his extremely positive experience at Future

Academy simply wrote, "Social Capital," in response to Question 4. High school, as

Felix reflected earlier, can cause often be a great cause of anxiety for students like

himself. Future Academy has found a way to make a majority of its students feel at home

and part of the learning and social community.

Student Engagement

The second theme in addition to community that emerged from the student data

was engagement. What makes a student engaged with school? John Dewey (1938)

asserted the necessity for experiential learning in our schools; learning that has meaning

and purpose for students. In secondary schools today, meaningful learning should help

students feel prepared for their futures. Of the 14 students who took the survey, eighty-

six percent responded *Strongly Agree* to question 12: *I know this school will help me be*

successful in my future plans after high school. Andrea responded to this question,

"Since we choose what we learn, this can help with future plans A LOT." Jesus echoed

Andrea's response, "It prepares me for the real world more than a normal high school."

Rachel wrote, "It gives us practical experience." Ashley, Reyna, and Maria all wrote

about their plans to graduate, possibly early, and to attend college. Survey respondents

clearly felt this school is helping drive them towards a successful future, particularly by

catching up on credits, having real-world experiences, and having a great deal of choice in what they study on a daily basis.

All 14 survey participants responded positively to Question 9: *I think the work I do in this school is important and meaningful.* Nine students responded *Strongly Agree*, while three responded *Somewhat Agree*. Ashely wrote, "It [the work at Future Academy] can help us with jobs and college." Reyna responded positively because she finds the community aspect very important. "It helps people get closer to one another." Maria appreciates the service aspect of the projects, "It helps the community in a way that can help our town." Felix simply said, "Here, it feels like your work is, like, meaning something." Although he does not name exactly why he feels this way, he attributes it to the specific style of learning. He said, "I think it's also the process that they have laid out for us. Like the fact that we have to look up articles and we are typing up articles of actual things based on the things we want to achieve in our project." Students feel engaged in the learning process at Future Academy for a variety of reasons, from the service aspect, to the relevancy of the material learned, to having a great deal of choice in their learning.

If implemented correctly, PBL is student-driven learning pedagogical approach that is guided by student choice, but also has specific learning goals (Beyer, 1997; Lundeberg, 1997; Prince & Felder, 2007; Trauth-Nare & Buck, 2011). In the structure used at Future Academy that Felix referenced in the previous paragraph, students have specific learning criteria that they must meet for every single project. There is a great deal of student choice; however, it is highly structured within a system the teaching staff

implemented to guide students to work on, create, and eventually share projects that meet

specific learning goals that also meet mandatory state standards.

The service and project-based pedagogical approach Future Academy employs is

an effective method of learning, according to students. In response to Question 8: *I feel*

working on projects, like we do at this school, is an effective method of learning new

information, 86 percent responded Strongly Agree. Andrea wrote, "We learn what we

want to learn so it stays in our head better." Jesus similarly responded, "It is just like my

type of learning." John responded *Strongly Agree* to this question writing, "It [working

on projects] sparks passion in students." Felix compared the amount of student choice at

Future Academy to the freedom college students enjoy. "They [the teachers and staff]

focus on what you like and what you are. It's kind of like college where you go and do

subjects that you actually want to do, and that's why a lot of college students actually go

through college because it's what they want to do and they are actually enjoying it."

Felix and the other students like what they are doing and they are "actually enjoying" it,

as Felix said. Enjoyment may not be the number-one goal for our high school students

today, but if enjoyment can lead to higher investment and engagement in the learning

process and student outcomes, then Future Academy is onto something with its early-

stage implementation of the a service-based PBL model.

Staff Findings – Future Academy

Interviewing the five staff members at Future Academy provided enough material

to write a book about why PBL is a necessary and effective model, how to implement it

in a smaller secondary setting, and what mindsets are necessary for teachers and staff

members to employ this method of instruction successfully. Interviews with five staff

members followed the questions outlined in Appendix B, guided by the three umbrella

categories: Teacher mindset and preparation, the application of PBL, and the perceived

effectiveness of PBL. I narrowed the hours of interviews down into two main takeaways

under each of the categories. See *Figure 3* in Appendix E for a visual representation of

this data.

Category 1: Teacher Mindset and Preparation

Belief in Students

William Heard Kilpatrick asserted the necessity for educators to believe that

students are capable of making new discoveries and learning on their own. PBL is

grounded in the same belief (Beyer, 1997). PBL teachers must abandon the, "teacher

knows all" model and allow for student driven learning. Staff members at Future

Academy are on board with this philosophy and have the utmost belief that their students

are capable of great accomplishments, as evidenced in their comments below. These

staff members do not think less of the students because they had become disillusioned in

the traditional high school. In fact, they see it as even more important to value and honor

their students' experiences. The school founder, principal, teacher, and advocate of

PBL, Ivan (pseudonym) recognizes the value that each student brings to the school:

> I think it [PBL] allows for the greatest honoring of the human being. … you have
>
> a person [the students], a person that is full of knowledge imparting upon you
>
> stuff that they want to learn…We [many public schools in the U.S.] are starting
>
> from a mass produced text book and curriculum, that is mass produced on a
>
> national scale, and basically the federal government is telling us, 'kids must learn
>
> these things.'…And I think, do we not trust people, teachers, or kids, to the

degree that we need to prescribe to them exactly the things that they need to learn.

I don't buy that. I think that's philosophically and logically, it has holes in it.

Marcus echoes Ivan's thoughts on honoring the knowledge students bring to their school.

> If you look at our clientele here, we brought about 50 of these kids back in the district, so a lot of these kids who are here right now, going to school in the summer, are kids that had dropped out or were complete disenfranchised… If only every person had a shot like this to make it happen. These minds are so brilliant, and they were not in the district… They may never have had an opportunity to reach or push for something greater or more. And now we see them developing into these amazing young people. We graduated seven this year…one is already a business owner, one is on her way to establishing a business. They're coming out of here ambitious and ready to take on the world! And I think that that's something unique that comes from this school and from any school that implements similar practices. These are not kids who are walking out the door not knowing, they are doers.

Every parent who sends a child to school wants the educators to feel as Marcus does, that "these minds are brilliant." Marcus went on to speak about how impressed he has been with student accomplishments over the year:

> I think that in most facets the students have far exceeded our expectations on what they've managed to accomplish. The gizmo, have you seen the gizmo lab? Amazing. You know, and that was led by students. We had a great partner that came in to help also, but I mean that was really student-driven.

The other staff members shared similar strong beliefs in their students' abilities. Randy, a special education teaching assistant who just started working at Future Academy two weeks before the interview, responded to the question, *What has been the greatest success so far?,* with praise for the specific student he works with. Randy said,

> The biggest success is letting Etna (pseudonym) do her own work. I have a tendency to micromanage, because at the middle school that's what'cha do, and I'm in Special Ed., so I'm used to doing a lot of the work for my students, and allowing her to do most of it with maybe her asking me a few questions, it's been cool.

The PBL model gave Randy the permission to step back, and he was amazed at what his student accomplished.

Rachel, one of the teaching assistants said, "Our main focus here is, you know, to get our kids ahead and let them know that they can succeed." Rachel believes these students will not only catch up in their studies, but they will get ahead. When another staff member, Gabriela, was asked to reflect on the greatest success from the year, she responded,

> The biggest success was graduating seven seniors in June. These kids, and there were a few of them that almost quit a few times through the year. You could see them kind of lose their steam and lose their momentum… and their faces as they walked across the stage, they were so proud and so happy to have finally done this. And that was just you know absolutely the best.

Gabriela feels especially called to this work because of her own experience in high school. She dropped out of high school and later received her GED, but she regrets not

getting her high school diploma. Reflecting on her experience, she said, "It took me so long to realize that I was smart and valuable and I enjoyed being smart and giving back and doing things that I care about. And I'm really hoping to instill this in the kids now. That, you know, you are smart."

These messages, "a person that is full of knowledge," "these minds are brilliant," "the biggest success was graduating seven seniors," and "you are smart," show the undivided belief of staff at Future Academy that their students are incredibly intelligent and capable of driving their own learning.

Willingness to Fail

Another theme that emerged in the data is the importance of embracing failure. Staff must embrace change, uncertainty, and failure with a smile and a problem-solving attitude in order for PBL to be effective, especially in its early phases of implementation. Ivan, the school founder, administrator, and teacher described this necessary mindset:

> We call it spaghetti noodles, you test them against the wall, see if they stick. We threw hundreds and hundreds and thousands of noodles. We made so many changes. And that's the nice thing about a small school. We tried so many math approaches, we tried so many approaches to everything, and 80% of the time it works for a day and then it falls flat.

Ivan also describes how the nature of PBL makes it difficult to plan for everything:

> I mean there's 20 different variables; every project, every day and every change that you have to consider, and it ripples. And so, you become a master of navigating stormy seas. And you never master it, so it's a challenge. So for people that like that [who like stability], this is a great place to work. But if you

like stability and continuity, I mean, you're going to hit the fetal position really

fast.

Marcus, the other full-time teacher at the school, echoed this sentiment: "Ivan and I have

had a lot of ideas that we thought were going to just sail, and when they didn't, we dusted

ourselves off and went right back at it."

Randy talked about also needing to let the students fail at times. In reflecting on

his experience with teaching Etna, he said, "I pulled back to let her fail, and you've gotta

let them do that, sometimes it's hard. But I think that's a big victory." Gabriela echoed

this sentiment:

I will advise them to the best of my abilities… what I think won't or will work,

but ultimately it's their decision. Unless they're going to do something dangerous,

like the boy that wanted to make a volcano … and then put a firework inside, and

I suggested that maybe we should try a different method for doing the volcano.

I help them get what they need, if they have questions, they can always come to

me and ask me, but I always leave it entirely up to them, it's their project.

It is clear that staff members at Future Academy openly accept failure for themselves, the

school, and their students. They understand that this is how PBL works, and a person who

whose anxiety levels raise in this type of learning environment is not well-suited to this

methodology of teaching and learning.

Category 2: Application of PBL

The Necessity of a Strong Leader

It became very clear to me during my interviews that staff members at Future Academy feel Ivan, the school founder, administrator, and teacher, is hugely responsible for their success as a school. Rachel praised Ivan profusely:

> If you have a strong leader, of course, you can get anywhere…Having someone positive, a role model, and a person that is willing to giving his everything just so that they [the students] can have a good career and, goes out of his way to make that come out to be true.

Gabriela continued the praise for Ivan. "You know my boss [Ivan], and our teacher [Marcus] just had this brilliant idea to do this school, and I'm amazed; the ideas that they have and turning them into concrete things, it's been really cool."

Marcus, a co-teacher with Ivan added, "I hear Ivan say to kids all the time when they're like "Ah, I've never done this before, I don't know how to do it." And he smiles and he shakes his head, he says, "Figure it out." … He's confident in their ability, they're just nervous."

Ivan is not only confident in the ability of his students, he is confident that PBL will better the students and community. He is willing to work extremely hard to ensure this happens:

> It's been 20 years, literally, 21 years in the dreaming and the catching lessons and learning things about how to structure the school for the greatest benefit to kids, but also it's an organism and how to let it grow and thrive. I had to make the right petri dish, the right stuff, and then we've got to protect the petri dish.

In reflecting on why he started Future Academy, Ivan said,

> I thought, what keeps us, in this town? Or in America, what is our social fabric,
> the warp and the weft that keep us together?... If there's a huge crisis, like we
> have a giant earthquake, people will help each other out, but shy of a huge crisis,
> do we really know each other? Do we really help each other? And I thought,
> how can I make that better? …And I thought, I'm going to use these kids to be the
> warp and the weft to weave in a stronger and a healthier community. And by
> teaching them to do that, by teaching them part of that process, if I can infect
> them with that way of thinking, and they can go out in the world, and do that
> wherever they might end up, they're going to be happier and healthier, and the
> communities where they reside, are going to be enriched. And improve, you
> know, the human condition.

He leads not only with a strong vision for the school, but also by working extremely hard to ensure everything runs as smoothly and effectively as possible. He stated,

> As far as setting up projects [larger community partnership projects like the
> garden], for the most part, that's my job. And the reason I'm doing that is… I
> don't want to burn him [Marcus, the other teacher] out… So I've tried to protect
> them as best as I can. Because it's a lot of time spent outside of school… I love
> that stuff, it feeds me, and so I try to take on just about all of it and release my
> staff from some of it.

While Ivan does a lot of the work behind the scenes, he then allows staff members to choose what projects they want to help manage. "It works pretty well to say, "Who wants this?" And if it meets their interests, then I want them to do it because then they're

happy." His incredibly strong leadership skills have helped ensure his staff are happy, productive, and effective in implementing PBL at Future Academy.

Structure

One criticism of PBL is that it does not give students real-world experience because of its focus on student choice during the learning process. However, as Belle (2010) explains, there needs to be a great deal of structure to ensure that rigorous and meaningful learning occurs. Before the school opened, Ivan and Marcus developed a detailed system to ensure that students' projects would be student-driven, service-based, meet state learning standards, and be cross-curricular in scope. Marcus explained the creation of Future Academy's system in more detail:

> I kind of came to him [Ivan] with the idea that we'd have…like 7 quests or 10 quests per content area. We settled on seven. T hen we went through all the standards and we placed all the state standards into different quests…and then we, based on what the project is, Ivan and I usually select the quests based on their [the students'] projects. So they'll come up and say, "I want to do a project that is this." And then we say, "Ok, so how are you going to get your 12 or 14, 16 service hours?" …And we'll say, "Ok, that's great. So, based on who you're going to be working with, I want you to read this article.

While students have complete control over the projects they complete with a partner, they must complete at least one project a month that addresses three to four separate quests. Language Arts objectives are infused into every project through the required research and five-paragraph written reflection.

Translating this non-traditional style of teaching and learning to a gradebook also poses a unique challenge. Gabriela addressed how Future Academy solved this particular challenge:

> I'm really proud of the grading system that we have developed, and the fact that we were able to create a spreadsheet and get all the data into the school systems to make it quantifiable… We developed the grade tracking system by working with our IT specialist to be able to input everything into eschool, which is the program that we use.

The year-round schedule also helps give structure to the school. Gabriela said, "I think that being year-round is very important for our kids. It provides stability." With the structure of the student projects, the seven quests, the predictable schedule, and the ability to translate student work into quantifiable grades, Future Academy is able to assert itself as a legitimate public high school that is addressing learning standards in an unconventional method.

Category 3: Effectiveness of PBL

Community

Similar to their students, staff members referenced the importance the small, tight-knit community between both the staff members and the students at Future Academy. Gabriela described their particular community's goals:

> It's about learning to get along, it's about learning to be respectful, and just having a good place to go where you know the people care about you and are looking out for you. That's part of why it's so important that we run year-round because then we offer that safe place, you know with good role models…We treat

them with respect, they treat us with respect. If they don't, we'll have a talk about it.

Rachel talked about how important this constant, accepting community was for her younger brother, a student at Future Academy. "Having this opportunity to be here, he [her brother] explored a lot more learning because…he had the kind of attention that he wasn't given [before]. You know that he would go and he could be himself."

Ivan beamed as he told another success story of an autistic student who recently joined their learning community:

He [the student] went from every day when he first arrived would walk the halls and the room, every room, with his hand along it and touch it. And would talk to nobody and that's all he would do. Between that and having light saber battles with himself in his head. That's all he would do…and in one year, now he has friends, he talks to people, he knows and gives and receives appropriate human touch, affection, hugs. He plays games, he interacts, he shows emotion. This is a severely autistic kid… his mom cries on the phone when she talks about what a change he's made. In circle two weeks ago, we asked everyone to say something about themselves. He said, my name is so and so. And I'm autistic.

When asked how he helped to foster this incredibly accepting, vulnerable, and collaborative community, Ivan replied, "All the staff are hand-picked. Every one of them because I like to work with great people." Gabriela, one of the hand-picked staff members, explained why she is passionate about Future Academy.

I was really excited about it [Future Academy] because I didn't do well in traditional high school and it took me a long time to kind of realize that I am

smart and recognize my potential and that I wanted to be part of it and encourage

the kids to learn those lessons earlier in life and move on. So, I work at this

school because I'm really passionate about this and I love the kids,

Marcus, another one hand-picked staff added:

We really feel a key to our success or key to making this work is knowing each

student, knowing where they're at, knowing their ability, their strengths and

weaknesses, their frustrations, so we sit down and we talk about each kid and

where they're at. How we feel about how they're doing…I think that's one of the

most significant benefits of this program because we're so small that we can get

to have that relationship with each of the students.

Ivan also talked about how their weekly staff meetings are student-driven. "We go

maybe for an hour and we just talk about kids of concern mostly and then processes at

this school."

With a hand-picked staff, time, and space to focus on individual student needs, a

small student body (55 students), and intentional collaborative practices, Future Academy

has been successful in creating a rich, welcoming, and collaborative community.

Real-World Learning

Future Academy recognizes that teacher-led classes do not represent the

experiences most students will encounter in their professional lives. The school uses this

philosophy to incorporate community partners and projects into their curricular model.

Marcus explained this:

I think that conventional, pencil-paper, sit, listen to a lecture, read out of my book,

answer questions, I think that suits about 20% of the population, and I think about

the other 80% of the population needs something like this or close to this. You

know, ours is service learning, so this is place-based, project learning based on

service projects.

He also advised:

I think we need to break up big schools and break them down into schools of 55,

maybe 100 and let them have these strong project-based opportunities and give

them a central theme, like service learning…performance arts or engineering… so

they have their own flavor, but still offering something authentic.

Ivan explained how this model of learning does not always look "pretty," but it requires

students to struggle and to think:

So it's sloppy. You've got to set projects up which usually requires community

partners. You have the logistics…right now we're putting raised beds over at

another school. We had 8 units of lumber delivered yesterday. They got here 2

days late. That set back kids building their projects. We're trying to get

aluminum to line the beds. 8 phone calls, we still haven't gotten a word back…

Then you've got, "Are the tools working? Did the saw break down?"…Rarely, do

you start a project and it turns out 100% as I envisioned it. It just doesn't

happen… as long as the student struggled and learned, they get credit.

This is a bold statement that many educators may find problematic because it calls into

question the age-old debate about what constitutes learning. Staff at Future Academy

want their students to be able to communicate with community members, create and

produce their own ideas, hone their research skills, collaborate with their classmates, and

persevere despite challenges thrown their way. Based on current state-standardized

measures of student and school success, the staff was impressed with students' performance on the mandated tests in language arts and mathematics. Marcus said, "We have to take our state tests and everything, and they did well." Future Academy may not look anything like one would expect to see in a high school classroom, but something is evidently working as students and staff are incredibly satisfied with student learning.

Is Anything Not Working at Future Academy?

It is extremely difficult to eliminate a researcher's bias while conducting qualitative research. The researcher designs the research questions, decides what data to share, and how to present it. As much as I attempted to use the interviewees' words to describe their experiences with PBL at Future Academy, the majority of student and staff remarks I shared were the positive comments and anecdotes. However, Future Academy has faced many challenges in its first year of implementing a holistic, service-focused, PBL curricular model. When asked, "What has been your greatest challenge as a teaching staff and school," the staff responded as follows.

Rachel said, "The hardest thing as a staff is sometimes when I don't understand what's going on, but then at the same time, you want to do so much." Similarly, Randy, a newer employee, said:

> I don't know where I can help the kids yet. I'm struggling with that. In fact I do
> that every night when I go home, I think, "Am I helping these kids?"… I'm trying
> to find my place and also afford them their flexibility. So, that's my challenge. I
> don't want to butt in, but I can offer a lot, but I just don't know where that is yet.

It is also difficult to find the right combination of staff members who both believe in the instructional model and are willing to collaborate to ensure student learning happens.

Ivan described a staff member who challenged the school's ability to best serve Future

Academy's students:

> She was our instructional assistant… friction, huge, started between her and the
> other staff. And the more I looked at it, it wasn't sustainable. It was turning into
> a toxic work place, and I couldn't have it, and so just had to make a change. And
> then we brought a new person and board and ever since it's been wonderful.

The right combination of staff is still not enough. Gabriela, Marcus, and Ivan all talked

about the major challenge in not having enough staff members to assist students in their

projects. Marcus elaborated,

> Keeping them motivated and helping them [the students] day in day out…which
> is why we're in desperate need of another teacher, you just can't hit every kid you
> want to. You know this guy [student], he needs some one-on-one help with his
> chunk paragraphs, or so and so really just needs someone to sit down and help
> him with that five-paragraph essay, or whatever…you don't quite get to everyone.

Despite its apparent success, Future Academy has experienced challenges: instructional

assistants' lack of understanding their roles as facilitators, staff members being at odds

over what is best for student learning, and having enough teachers to provide the

necessary instructional support for students.

Summary

This research has shed light upon one high school's experience in its early-stage

implementation of PBL. Student and staff data showed an overwhelmingly positive

experience with PBL. Students showed a strong feeling of community and engagement

in the learning process at Future Academy. The high level of student choice in a

structured environment allowed for students to work with one another, create, experiment, research, and reflect on their learning goals and projects within a supportive community.

Staff overwhelmingly feel that PBL is an effective method of educating and challenging students to learn, collaborate, and prepare for the future. Six themes emerged from staff interviews as necessary components for implementing PBL in a secondary setting: belief in students, willingness to fail, the necessity for a strong school leader, structure, community support, and real-world learning. Yet students and staff reflected upon the lack of resources and its limitation on their learning capabilities. Future Academy continues to persevere, innovate, and serve its students and community using PBL as a method to empower students to think, learn, and create.

CHAPTER FIVE

Conclusion

Conducting this research has been an eye-opening experience for me as an educator and graduate student. I attended a traditional, public high school that offered a variety of creative classes before NCLB was implemented in schools across the nation. I was at the top of my class academically and took a variety of math, language, literature, science, music, art, cooking, and physical education classes. My favorite classes, besides literature, were the non-core courses because I was allowed to create, experience, and collaborate with other students.

Once I became a high school teacher, I was astonished by the lack of choices my students had in their course options. My first five years teaching were spent at two charter high schools that focused on closing the achievement gap by preparing their students for college. Both schools served populations of 95% + free-and-reduced lunch. These schools aimed to close the racial and socioeconomic achievement gap by holding high expectations for students, holding students to strict behavioral and uniform standards, and providing extra instruction in core curriculum areas. My students were required to take two English and math courses most semesters. Music, science, and social studies instructors were required to ground their instruction in the literacy standards. All teachers' bonus pay was dependent on student growth in reading and math. With the push for low-achieving schools to improve their standardized scores, this is often the approach: increase the amount of seat-time students have in core subjects and increase instruction that is directly aligned to standardized tests.

Something did not feel right to me as an educator. After every unit I asked my students to fill out course evaluations, and a few students continued to mark ones and twos when asked if they enjoyed the class and if they felt it was preparing them for college/the future. I often took personal offense at these low ratings. It took one student to help me put things in perspective. After almost every unit, Iman (pseudonym) shared in his written reflection that, although he felt I cared about him as a student and treated all students with respect, he did not learn well because he needed hands-on learning activities. The first few times I talked with him and explained how I continually tried to mix the learning up. Some days we read together. Some days students have to walk around the room and participate in Chalk Talks. Some days students create videos or other projects to demonstrate their understanding of the literature. He said, "I just know that I want to work with my hands. I'm happiest when I'm working on a car, building, or fixing something." And it clicked for me that our test-prep model, no matter how much I tried to tweak it, just would not reach some students. Students like Iman. I am a firm believer that an education should be joy-filled. I wonder what would have been different if I had been able to send Iman down the hall to a shop class. Would he have enjoyed my literature class more? I wonder what would have been different if Iman was allowed to design and create his own learning experience like students do at Future Academy.

This research process has been an incredible experience for me because it has opened my eyes to the possibility for change in our school systems, one educator, one principal, one school, one student at a time. I felt stifled in my classroom. I watched my students become disillusioned with yet another multiple-choice test to tell them how "smart" they are. Future Academy is taking bold, actionable steps to changing the school

system so that it is not simply a factory model in which some students learn and others do not. Those at Future Academy understand what it means for students to learn: they must be doing the work, not the teachers. Teachers and staff are facilitators, cheer-leaders, editors, and investors in the students' projects. They don't tell, they listen. They don't lecture, they teach. And students love it.

Literature Review Revisited

There is ample research to support Future Academy's project and service-based curricular model (Beyer, 1997; Dewey, 1938; Harada et al., 2008; Zhao, 2008). It begins with the way our brains learn. Constructivist learning theory suggests we learn best while constructing ideas collaboratively (Helle et al., 2006, Lundeberg, 1997; Murray, Shea, & Shea, 2004). Other research points to the necessity for a change in our schools' approach. In the aftermath of the NCLB era of high-stakes testing, U.S. students have fallen behind other countries' and are experiencing lower high school graduation rates, especially minority students (Childress, 2012: Orfield & Wald, 2000; Rose, 2012; Zhao, 2008).

In this study, I used Helle, Tynjala and Olkinuora's (2006), Harada, Kirio, and Yamamoto's (2008), and Bell's (2010) research to define the project-based learning (PBL) pedagogical method. In PBL's holistic teaching model, students' base their learning around solving a problem. They then work collaboratively to produce tangible products that help address this problem. Implementing PBL pedagogy at a classroom or school level or both presents difficulties because it challenges the way we have always done things in our public schools: teachers and staff no longer are the sole possessors of all knowledge. In order to be effective, PBL educators must understand the model and

continually reflect and work towards guiding students to greater ownership and learning (Bell, 2010; Geier et al, 2008; Harada et. al., 2008; Krajcik et al., 1994; Lundeberg, 1997; Prince & Felder, 2007; Scarbrough et al., 2004).

Limitations of the Study

It was difficult to remove my own bias from this research. I chose scholarly articles that explained the benefits of PBL as a pedagogical method. I sought out information on a learning theory that supports my belief in PBL. I asked students and staff limited questions in seeking answers to the following research questions:

- What are teachers' and administrators' experiences with implementing a project-based learning curriculum approach in their high school?

- What are students' experiences of participating in a project-based learning curriculum approach in their high school?

While I was ready for students and staff at Future Academy to say negative things about their learning experiences with PBL, I knew the majority of staff had chosen to work there. In addition, Future Academy is an alternative high school. Students were already feeling unsuccessful or disillusioned with the traditional public high school. With more time, money, and researchers, a broader study could be conducted in order to hear from a variety of educators and students across the nation.

Implications of the Study

One major result of this study for me and other educators is a PBL model to follow. Future Academy is a small school, within a public school district, that has chosen to do things differently. Their exceptional leader saw the need for change and took it in his own hands to build a school with student-driven, service-based PBL as its pedagogy.

Educators across the nation can learn from this school's successes and failures. It is evident that a high school can operate without traditional bells, core classes, and teacher-led lectures. High-school students can be successful when given the freedom to choose their own learning within a structured PBL environment. It is my hope that this research gives educators hope. Hope that often is squashed by the era of high-stakes standardized tests and school accountability. Hope that creativity, collaboration, and curiosity can drive student learning.

Recommendation for Future Research

While this research and literature review point to the benefits and perhaps even necessity of implementing PBL in secondary schools across the nation, it does not provide a how-to guide for schools and teachers that wish to make changes in their teaching or the structuring PBL schools or both. Future research must continue to look at successful and unsuccessful implementations of PBL around the nation to help educators learn how to incorporate this model effectively into their schools.

Furthermore, it would be helpful to assess quantitative standardized test data for students in PBL versus traditional classroom learning. Whose scores are higher? Why? While test scores are not the only marker of successful learning, this potential research would help give all educators, not just those who believe in the importance of PBL, data to discuss the effects of alternative pedagogical methods such as PBL on student learning.

Growth of the Author

Conducting this research has helped me reflect on my own experience as a classroom teacher. The school I work at matters. If I do not believe in what my school is doing, not only am I going to be unhappy, but I will most likely be a worse educator. As

Ivan found at Future Academy, it just does not work to have a staff member who does not believe in the mission, or more importantly, the methodology. While I may not be fortunate enough to work at a school like Future Academy, because they are few and far between, I can ask important questions of my school leaders: *How much do you value standardized testing? Do you believe that teachers are the only possessors of knowledge in the classroom? How do you believe students learn best?* In order to be happy and effective, I need to be at a school that recognizes students as agents of change and capable of incredible learning. If I ever find myself in a position of management, I also need to be clear with my colleagues about this belief. This learning may look messy, it may be noisy, but as long as students are working collaboratively and passionately to solve problems and issues, then I believe it is effective learning. I recognize that there are successful schools using different pedagogies and models, but if I am true to myself, my beliefs, and the way I understand student learning, I must work at a school that recognizes teachers are not the sole possessors of knowledge in the classroom. I must work at a school that empowers students to be creatively involved in their own learning processes.

Future Research Agenda

After conducting this research, I am excited to continue reading about schools like Future Academy and to be more present in my own classroom and increase my awareness of students' experiences. I now work with students in kindergarten through fifth grade, which is a major shift from high-school students. I wonder how many of my beliefs about learning theory and best pedagogical approaches will change with my new experiences. I am convinced that PBL is an effective pedagogical approach to teach and

empower secondary students, but I wonder if elementary students will be successful with the ideology. Is there a requirement for certain base knowledge before PBL can be an effective model? One thing is certain to me. We live in a changing world. Our school systems have increased their per-student spending (Childress, 2012) with little progress. The shift towards standardizing testing and instruction since the Reagan administration is not working (Orfeld & Wall, 2000).

Summary

All students interviewed at Future Academy agree that PBL is an effective method of learning new information. The school founder believes his students are "going to be happier and healthier, and the communities where they reside, are going to be enriched. And improve the human condition." I believe educators must continually reflect on our pedagogy, as Future Academy has done, and whether it is meeting our students' needs in light of our diverse and ever-changing economy and society. Students today must graduate high school ready to be creative, work collaboratively, and use their resources to be successful in our fast-paced economy. Are our schools equipped to prepare students for this reality?   Project-based learning is one solution to this question. "They're coming out of here ambitious and ready to take on the world! These are not kids who are walking out the door not knowing, they are doers" (Marcus).

APPENDIX A

Student Survey

Please answer the following questions using a scale of 1 to 4, 1 being you strongly disagree, 4 you strongly agree.

 Experience with PBL and constructivist learning theory

1. I enjoy making choices about my learning in this school.

Strongly Disagree	Somewhat Disagree	Somewhat Agree	Strongly Agree
1	2	3	4

   Explain:

2. I enjoy working with other students on projects.

Strongly Disagree	Somewhat Disagree	Somewhat Agree	Strongly Agree
1	2	3	4

   Explain:

3. I enjoy working with community members on projects.

Strongly Disagree	Somewhat Disagree	Somewhat Agree	Strongly Agree
1	2	3	4

   Explain:

4. I learn new things from my classmates, community members, staff, and my own

   discoveries in this class.

Strongly Disagree	Somewhat Disagree	Somewhat Agree	Strongly Agree
1	2	3	4

   Explain:

Experience with PBL methodology

5. I spend a lot of time in this school trying to answer big questions to societal

   problems.

Strongly Disagree	Somewhat Disagree	Somewhat Agree	Strongly Agree
1	2	3	4

   Explain:

6. I am satisfied with the amount of time I get to be creative.

Strongly Disagree	Somewhat Disagree	Somewhat Agree	Strongly Agree
1	2	3	4

   Explain:

7. I like the method (the way) my teachers teach at this school.

Strongly Disagree	Somewhat Disagree	Somewhat Agree	Strongly Agree
1	2	3	4

   Explain:

8. I feel working on projects, like we do at this school, is an effective method of

   learning new information.

Strongly Disagree	Somewhat Disagree	Somewhat Agree	Strongly Agree
1	2	3	4

   Explain:

<u>Student Experience of Relevancy and Efficacy of PBL</u>

9. I think the work I do in this school is important and meaningful.

Strongly Disagree	Somewhat Disagree	Somewhat Agree	Strongly Agree
1	2	3	4

Explain:

10. I like this school better than a more traditional high school that doesn't use

project-based learning.

Strongly Disagree	Somewhat Disagree	Somewhat Agree	Strongly Agree
1	2	3	4

Explain:

11. We students spend time reflecting on how we are learning. We reflect on what is

going well and what isn't.

Strongly Disagree	Somewhat Disagree	Somewhat Agree	Strongly Agree
1	2	3	4

Explain:

12. I know this school will help me be successful in my future plans after high school.

Strongly Disagree	Somewhat Disagree	Somewhat Agree	Strongly Agree
1	2	3	4

Explain:

APPENDIX B

Teacher Questions

Teacher Mindset and Preparation

- What is your experience with PBL? Why do you work at this school?

- How important is it that you and other staff members are **familiar** with PBL as a curricular approach?

- How important is it that you and other staff members **believe** in PBL as a curricular approach?

- Do you feel PBL requires extra work from teachers? Explain.

Application of PBL

- How is your experience implementing PBL on a day to day basis?

- How is your experience providing student choice and allowing for creativity but still driving towards agreed upon learning goals?

- How is your experience relating to teacher and staff collaboration?

- How is your experience ensuring all projects are cross-curricular in scope?

Perceived Effectiveness and Efficiency of PBL

- How satisfied are you with student learning this year?

- Given your experience, what would you recommend other schools trying to employ PBL?

- What has been your greatest challenge as a teaching staff and school?

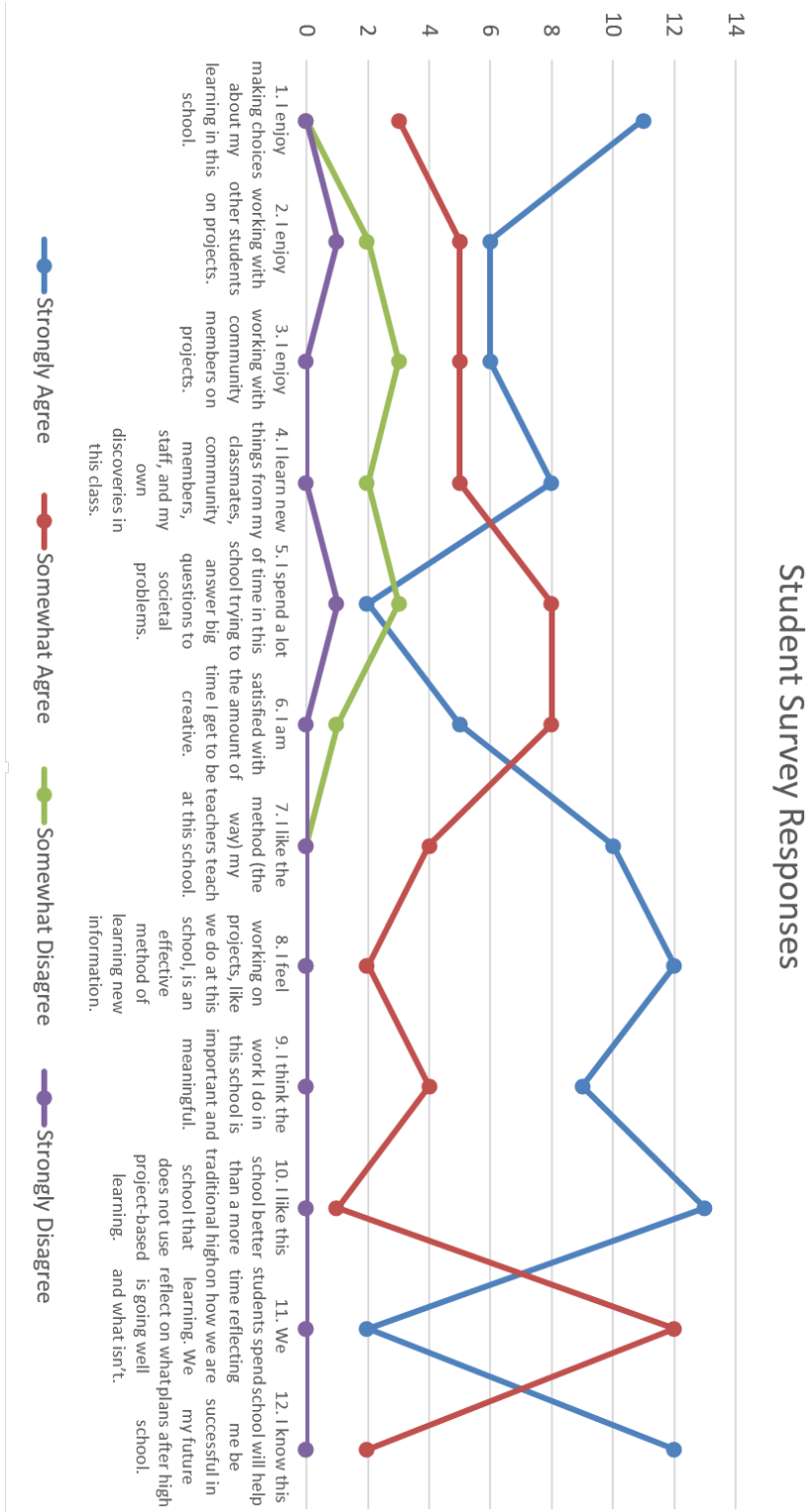- Would you recommend that other schools follow your model of PBL?

APPENDIX C

Figure 1: Student Survey Results

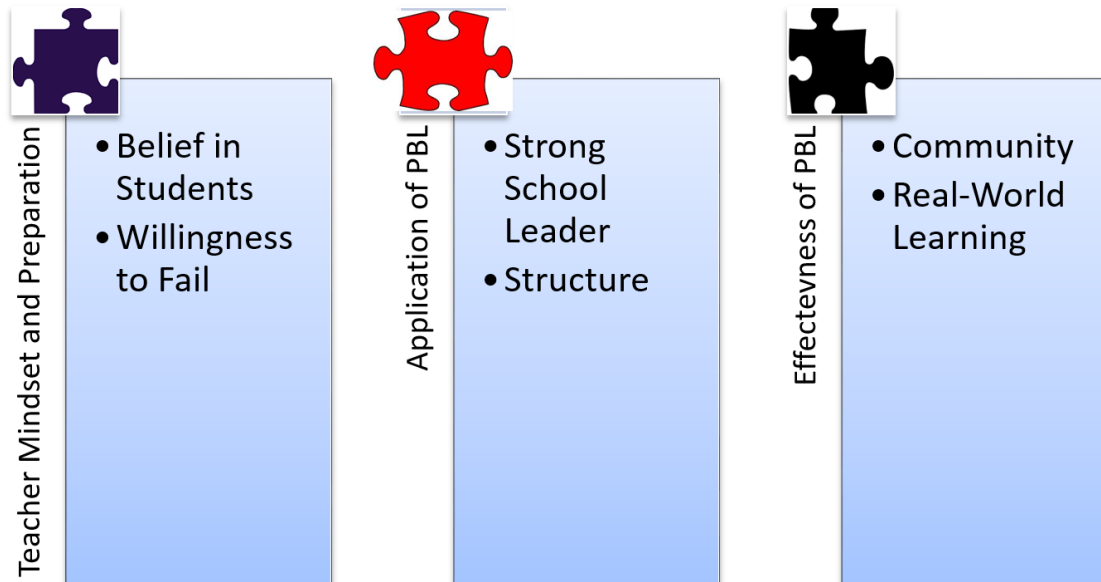| Student Survey Questions	Strongly Disagree	Somewhat Disagree	Somewhat Agree	Strongly Agree	No Answer
10. I like this school better than a more traditional high school that does not use project-based learning.	0	0	1	13	
	0%	0%	7%	**93%**	
8. I feel working on projects, like we do at this school, is an effective method of learning new information.	0	0	2	12	
	0%	0%	14%	**86%**	
12. I know this school will help me be successful in my future plans after high school.	0	0	2	12	
	0%	0%	14%	**86%**	
1. I enjoy making choices about my learning in this school.	0	0	3	11	
	0%	0%	21%	**79%**	
7. I like the method (the way) my teachers teach at this school.	0	0	4	10	
	0%	0%	29%	**71%**	
9. I think the work I do in this school is important and meaningful.	0	0	4	9	1
	0%	0%	29%	**64%**	
4. I learn new things from my classmates, community members, staff, and my own discoveries in this class.	0	2	4	8	
	0%	14%	28%	**57%**	
2. I enjoy working with other students on projects.	1	2	5	6	
	7%	14%	36%	**43%**	
3. I enjoy working with community members on projects.	0	3	5	6	
	0%	21%	36%	**43%**	
6. I am satisfied with the amount of time I get to be creative.	0	1	8	5	
	0%	7%	57%	**36%**	
5. I spend a lot of time in this school trying to answer big questions to societal problems.	1	3	8	2	
	7%	21%	57%	**14%**	
11. We students spend time reflecting on how we are learning. We reflect on what is going well and what isn't.	0	0	12	2	
	0%	0%	86%	**14%**	

APPENDIX D

Figure 2: Student Survey Responses

APPENDIX E

Figure 3 – Major Themes

Teacher Mindset and Preparation
- Belief in Students
- Willingness to Fail

Application of PBL
- Strong School Leader
- Structure

Effectevness of PBL
- Community
- Real-World Learning

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