A Qualitative Study on the Pedagogical Changes Teachers Experience When They

Embrace Project Based Learning and Develop a Transformational Learning Pedagogy

by

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For Brady, Skyler, Paxton, Channing and Trevor.

May you always know it's never too late to pursue your dreams.

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ABSTRACT

Change is difficult, but sometimes for those in the teaching profession who have been tasked with changing their teaching style it is more difficult. This case study reflects the process that seven elementary school teachers experience when their district declares a change in pedagogical practice to Project Based Learning (PBL) practices. The teachers emerge from various backgrounds and collaborate as they journey through the change. The researcher's goal was to determine the driving factor that would encourage a teacher to make the requested change. Not only are the pedagogical practices changed, but the transformation of learning of the teachers themselves.

The researcher studied each teacher to determine how the change is affecting their classroom practices and their students. The results deem to be more of a progression than a list of characteristics. Each teacher proved to be on a timeline of the process depending on the experience each one had with the changes. All teams shared characteristics such as a close team relationship and an enthusiasm for PBL. They all agree that time is a factor that makes a difference in the quality of teaching and they all had a passion for student learning. What sets them apart is their background knowledge they bring to the group and their experiences since the process started.

The information and knowledge the researcher gained during this study will be the basis for future professional development that will guide other teachers more smoothly through the process of pedagogical change.

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CHAPTER I

INTRODUCTION

Overview

When a student-centered teacher resides in a teacher centered world of education

the mentors are few and the struggles are many. Without proper training, many strategies

are left to trial and error. According to DuFour, DuFour, Eaker, Many & Mattos (2016)

better student results are a direct product of a Professional Learning Community (PLC).

This would be a team of teachers who center their work around improving student

outcomes on all levels, using data, reflection, and redirection to guide instruction

(DuFour & Marzano, 2011). These individuals would be solely dedicated to teamwork

and collaboration and the students would be the central focus (Eaker & Keating, 2012).

With no team in which to collaborate, personal learning pace is much too slow. Many

teachers become convinced that this view of education is obviously the view with flaws

since there aren't many others who share the vision; at least not in every building.

The drive to see student success, along with the need to be different, keeps some

teachers motivated (Stronge, 2018). There are those who have never blended into the

crowd and if a purpose can be justified then those teachers will proceed full speed ahead

(Sinek, 2009). The spark and passion that lights child's eye when he meets an enormous

challenge placed before him is more than enough to keep some teachers motivated.

Without fully understanding the concept, high levels of student achievement are the goals

and student- centered learning is the method in which to deliver the goods.

DuFour & Marzano (2011) note that quality of teaching is one of the most

important factors in student learning, but without collaboration and teamwork a teacher

will teach in isolation and isolation will not lead to overall school improvement. There are walls in front of some teachers that cannot be removed without supportive collaboration. These teachers are experiencing what Cranton (2016) refers to as transformative learning. They call on their own and observed experiences to create a new learning environment for themselves and their students, but without someone to share those experiences and resources, they cannot create an appropriate amount of new knowledge. Students may bloom nicely, but the teacher is suffering because the learning cycle is not turning full circle.

To grow in the profession, one must experiment with new approaches to teaching. The Buck Institute for Education provides some new ideas that aligned well with this style of teaching. When they implement these ideas and use a more student-centered approach, some teachers will be met with much ridicule, both from co-workers and administration. There may be a genuine concern that students are not learning the appropriate material for the state administered test.

My own teaching philosophy is what lead me to the topic of this research. Knowing that there are more teachers who share my beliefs has led me on a path to find teachers who need support in a changing world of education. Teachers who will become leaders that make a difference in the lives of children will be sought after as education takes a more modern approach (Eaker & Keating, 2012; Reeves, 2016; & Lezotte & Snyder 2011). This research will be a catalyst in creating useful methods that ease the transition between traditional teaching and PBL pedagogy (Wagner, 2008).

Context

Vilorio, (2014) encourages students to develop essential skills such as critical thinking and communication to prepare for future jobs in science, technology, engineering, and mathematics (STEM). These jobs are projected to grow by one million between the years of 2012 and 2022; that is at a rate of about 13% compared to a rate of about 11% for all other occupations. STEM jobs encompass a wide variety of occupations and knowledge levels, but most require a set of skills latently found in PBL such as critical thinking and problem solving (Larmer, Mergendoller & Boss, 2015). The ability to solve problems that no one else could solve is critical to workers in STEM related jobs. Communication is essential, as the need to explain complicated concepts could be the key point in retaining a job (Vilorio, 2014).

The driving force for any kind of change throughout history has rested in the hands of the risk-takers and those who think creatively. "Children don't *get* ideas, they *make* ideas" (Resnik, 2017, p. 36). If future jobs depend on these skills, then these habits should be formed early in childhood and not later in life by an employer (Vilorio, 2014).

Rather than focus on the end result, which is to have skills that society seeks, education has primarily been the means to harness self-control and compliance. In most countries a successful teacher is one who can keep a controlled classroom as he or she lectures on the content put forth (Resnik, 2017). Horace Mann (circa 1848) explains that the job of the teacher is to know precisely the correct amount of work to assign to keep the students busy, but not too much that the student cannot do the job without mistakes. It is also important that only one student at a time be out of their seat, and only when told to do so by the teacher. Schools should be saved from chaos.

There is a dramatically different setting is which twenty-first century workers are expected to perform. Once their formal schooling is finished, and they emerge into the work world they no longer sit in rows but participate in a multi-faceted career setting. If education were to mimic real life then schools should resemble the world of adulthood (Resnik, 2017; Couros, 2015). According to Pearlman (2010) our schools should be restructured to eliminate classroom settings to accommodate for the new learning styles. He uses the California model of high-tech schools as an example of how a school should be organized using large work areas in lieu of boxed-in, walled classrooms. Students should have the open space to design projects and work as teams to accomplish goals.

On a daily basis, teachers have the means to present their class with teaching methods that shape their learning. Some choose traditional methods such as direct instruction. Direct instruction occurs when a teacher presents a carefully thought out plan and executes the lesson as new material for the student to absorb (Stockard, Wood, Coughlin & Khoury, 2018, Pearlman, 2010). Project Based Learning, on the other hand, is a method that educators use to conduct the practice of constructivism. Constructivism is an education philosophy which insists that most of what people will accomplish in a day will be constructed themselves and they will not depend heavily on a manager or teacher planning each step of the process prior to the job or lesson (Schunk, 2016 & Black & Ammon, 1992, Pearlman, 2010). A more scientific meaning for constructivism is that it is the belief that learning cannot be transferred unless it is transferred in one's own mind using experiences to build upon (Kretchmar, 2019; Mezirow, 1991). According to Vygotsky's theory, culture also plays a leading role in determining how experiences are established and transferred. Every human is born with an innate set of

skills and the environment in which the child is raised will determine how those skills are used. A higher mental function is achievable when children are groomed according to the cultures and habits of the adults who raise them (McLeod, 2018).

To complement constructivism, in some cases, experiential learning will be blended into the process. Experiential learning utilizes the prior experience that the learner brings to the lesson. Prior learning meshed with new knowledge is the foundation upon which learning will occur. According to Kolb, (as cited in Miettinen, 2003) Lewin, Dewey, and Piaget all agree that new learning cannot be accomplished without the aid of prior knowledge. Learning will not be the same for each individual, as each person brings a unique perspective to the learning situation.

The meaning of constructivism is not easily defined and open to interpretation on many levels. There are researchers who do not even consider this a theory at all, but more of an explanation about learning (Schunk, 2016). As new policies for education surface and the urgency to produce workers that can collaborate and think critically, the education world is seeing a new trend. This trend revolves around the idea of constructivism and some aspects of it are labeled as Problem-Based Learning and Project-Based Learning (PBL). Both use the acronym PBL but are somewhat different in the approach. Problem-Based Learning differs from Project-Based Learning in that there is a problem to be solved. Project Based Learning has problems along the way in order to create something new. They are similar in the ideas that they both create a solution to a need and include the community or real world in some form (Larmer, Mergendoller, & Boss, 2015).

Experiential learning also falls into the category with constructivism and Problem/Project Based Learning. According to Lewis and Williams (1994, p.5) "In its simplest form, experiential learning means learning from experience and then encourages reflection about the experience to develop new skills, new attitudes, or new ways of thinking." Kolb (Miettinen, 2000) built a theory around the idea of experiential learning. Kolb explains that learning revolves in a cycle usually beginning with the concrete stage, then the reflective observation stage, the abstract conceptualization stage and finally the active experimentation stage. Learners can typically enter this cycle at any stage but must go through all four for experiential learning to occur (University of Florida, 2018). See Figure 1.

Figure 1
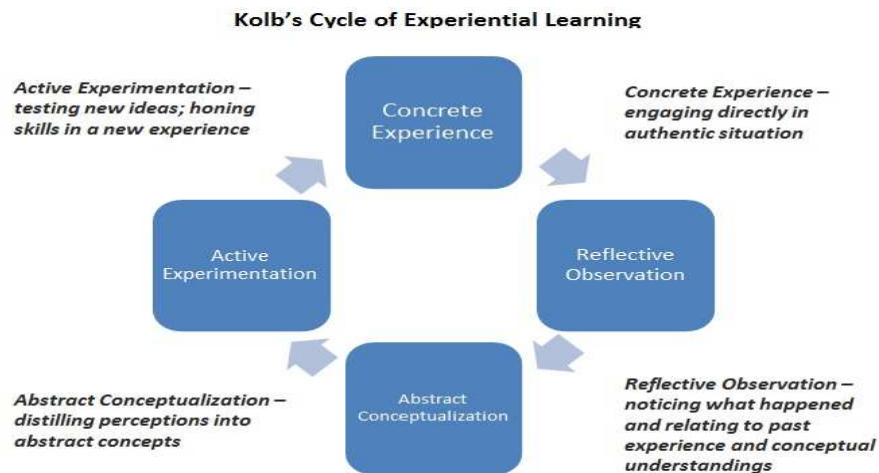
PBL is designed to carry a learner through all the stages of Kolb's experiential learning theory using experiences and reflection to create abstract ideas and experiment

with those ideas (Fisher, Frey, Quaglia, Smithe & Land, 2018). When lessons are structured, and schools are physically arranged in learning pods rather than individual classrooms students are more able to solve problems and create projects that lead to deeper learning and not just memorization of facts. Students can experience the complete cycle of learning, especially the concrete experience phase which can be missing from typical classroom lessons (Pearlman, 2010, Black & Ammon, 1992, Mezirow, 1991).

The Difference Between Problem Based and Project Based Learning.

Although Problem Based Learning and Project-Based Learning use the same acronym, they have some distinctive differences. Problem Based Learning usually begins with a problem that needs to be solved. This problem can be solved with or without the creation of a project. In many cases this will be a problem that students will be able to relate to or some type of scenario (Barell, 2010). Problem Based Learning has origins in the medical field as a teaching method to help aspiring practitioners have authentic experiences solving medical problems (Hmelo-Silver, Duncan, & Chinn, (2007). Project Based Learning focuses more on a project or idea to be designed. Buck Institute for Education has identified four phases that determine high quality of a project (Boss, 2015):

1. **Project launch:** This typically starts with an entry event to ignite curiosity and introduces a driving question to frame the inquiry experience.

2. **Knowledge building:** Students build background understanding and learn new skills to help them answer the driving question.

3. **Product development and critique:** Students apply what they have learned to create something new (such as a product, solution, or recommendation).

4. **Final presentation and reflection:** Student share their polished work with an authentic audience.

Typically, any Problem-Based or Project-Based lesson or project- based lesson will include appropriate technology usage. But using technology is not the primary goal of any project, just a tool in which to achieve the final goal (Boss, 2015; Lenz, 2015, Pearlman, 2010). The research for this paper is retrieved from a school system that is partnering with Buck Institute for Education and is changing pedagogical practices to a PBL environment.

How PBL and Learning Are Connected. Dewey (1938) describes experience as a force that moves and can only be judged as relative to the situation or the ends to which it moves. Learning is a social experience and is best left to the discretion of the learner. According to Vygotsky (McLeod, 2018), it is the role of the teacher to present conditions to the learner which will simulate a process that resembles experiences that will build upon necessary connections for learning. Adding to the experience and relevance to become an innovator, the learning experience must also involve play, passion, and purpose. When these three elements are not present innovative learning is stifled (Wagner, 2012; Resnick 2017). A teacher who is seeking to inspire young people to change the world in which we live, should also be willing to be an innovator too (Robinson, 2015).

But not all teachers choose to make changes. Sometimes teachers choose the ideas they learned as students and genuinely believe this is the best learning style for students as well. Traditionally, states have reinforced this idea by the standards they set for teacher

preparation programs. State tests for teachers are often limited to testing prospective teachers for their content knowledge and are merely a set of standardized tests much like the ones administered to younger students (Stronge, 2018).

In a classroom where PBL is being used you would typically see students actively engaged, using previous taught skills to create a project that fixes a problem. They could be creating something for the school or the community. They would be encouraged to work with professionals outside of school and field trips might be included (Neathery, 1998). Opponents to this pedagogy argue that students are not able to learn as effectively in these situations as compared to more traditional learning strategies (Kirschner, Sweller, & Clark, 2006). Some say that procedural knowledge is sufficient for everyday life and serves our needs rather well (Karpov, 2014).

The quest for finding teachers who will be the inspiring force for these young people is a challenge. Not only does this teacher have to possess a growth mindset (Dweck, 2016), they should have the frame of mind they wish to infuse into their students. Teachers must form relationships with their students (Stronge, 2018) and be armed with teaching strategies that prepare student for the twenty-first century (Wagner, 2012). They need to work with colleagues in professional learning communities (DuFour, DuFour, Eaker, Many, Many, & Mattos, 2016), and create optimal classroom culture (Muhammad, 2009) to produce students who are ready for today's world. In other words, education is the medium, and the student is the tool they use to change their own portion of the world (Dweck, 2016).

Teachers have a plethora of options to choose when they plan lessons. Their choices tend to depend on their view of learning. In some classrooms you could see students who are involved in the process of choosing the topic, active discussion, and varied outcomes on a lesson (Brock & Hundley, 2016 & Robinson, 2015).

How Do Teachers Know if PBL Has Been Successful? Once teachers accept the PBL process they are faced with accountability. Deciding on how assessment takes place is as daunting as what to assess (Howard, Eliot, Rasua, Nouwens & Lawson, 2016). Assessment will most likely link back to Kolb's model (figure 1) and include reflection pieces that drive the process. These pieces are usually simple in nature and consist of strategies such as exit tickets, quick writes, and Socratic seminars, or group talks, that encourage students to think about their experiences and relate them to the goals (Boss, 2015). Teachers can encourage peer feedback as well as self-assessment combined with teacher feedback. But feedback in only useful if the student or teacher is willing to change what isn't working in the project (Wiliam, 2011, Popham, 2011). It is important for teachers to anticipate the types of difficulties the student will encounter and have a plan to redirect the learning path, allowing a student to continue on a project they don't understand will nullify the learning process (Popham, 2011). When considering a public presentation on the project, feedback can even be derived from community experts (Boss, 2018).

Problem Statement

A shift in pedagogy is difficult for teachers at any experience level. New demands and new thought processes are necessary for a teacher to transition from one idea of

teaching into a new concept entirely (Walton, 2014). "We take the facts and fit them into the frames we already have. If the facts don't fit, we're likely to challenge whether they're really facts or dismiss the information and persist somehow in believing what we want to believe" (Deutschman, 2007, pg. 28). The typical reaction to something unexpected that doesn't flow with experiences is to reject or question the new encounter (Cranton, 2016). "Changing our perspectives once is no guarantee that we will change our perspectives again." (Cronin & Loewenstein, 2018, p.116). One of the main reasons a person rejects change is denial. The facts are more than one can handle and even though one knows what needs to be done the changes simply cannot be made. The denial is so strong that just the presentation of facts or infusion of fear will not result in changed behaviors (Deutschman, 2007; Hooper & Bernhardt, 2016). Another reason a teacher might not conform to the PBL teaching style is the difficulty of the implementation. If success is not evident early in the process, the teacher might revert back to a more comfortable method of teaching (Ertmer & Simmons, 2006).

For change to take place and behaviors to take a different turn, the new process must be repeated several times. Repetition will reframe the mind to get comfortable with the changes which in turn causes the instincts to kick in that promotes the new behavior. One cannot simply change the behavior by being told the best way to do something or by being "scared" into changing. The new practiced behavior will enable a new way of thinking, which in turn will trigger acceptance (Deutschman, 2007; Hooper & Bernhardt, 2016.

When considering the process of how habits form, we understand that the many years of practicing education and by being educated by this process produced habits that cannot simply "go away" just because someone else said they need to. "One of the reasons we resist change, unconsciously at least, is that it invalidates years of earlier behavior" (Deutschman, 2007, pg.84).

Another factor that determines whether change will be accepted depends on where the information originated. Should a trusted colleague be the one who forwards information it will be taken on a more serious level than coming from an unknown source. Teachers will tend to be more open to trying the "next new thing" if they like the person who is persuading them. They are even more apt to immerse when the training supports their own biases (Willingham, 2012).

This researcher would like to know why these teachers chose or didn't choose to make the changes necessary to successfully adopt PBL practices in their classroom. What emotions were attached to the changes and what inspired them or convinced them to leave their comfort zone to pursue a different form of teaching? Who are the most influential people that promoted the changes and who are the people who hindered the changes?

The teachers in this study are going through the beginning phases of changing the structure of their classroom. This study is designed to identify the changes and shed light on how the teachers are accepting the new roles or not adjusting. With this research, patterns will be analyzed to determine what supports are needed to help teachers like

these, transition into new thought processes as they learn to facilitate the new demands of the 21st century, classroom.

According to Mezirow (1991), the path to future learning relies on where the learner has traveled in the past. What changes took place that prompted a change in pedagogy for these teachers?

Statement of Purpose

Learning new knowledge comes from careful observation and reading of patterns. Experts in the medical field were amongst the first to realize this phenomenon and created ways to help students in this field learn information rather than merely memorize facts. Students must understand what they are learning by using prior knowledge and adding new knowledge to force a reformulation of what they knew to create something they haven't known before (Black & Ammon, 1992). In the education field, knowledge can be acquired in the same manner. The learning progression, regardless of the field of study, is the result of open-ended questions that were investigated in a basic manner (Bush, 1945). Vygotsky (McLeod, 2018) states that influence of cultural units as well as idiosyncratic parents or surrogates for those parents rewarding particular behaviors and punishing others is what determines the direction new learning will take. Mezirow's (1991) Transformational Theory of Learning is based on the idea that learning involves a prior interpretation of the situation to construct a new meaning and guide future responses. The researcher will use this lens to observe the teachers involved in this study.

Research Question

What drives a teacher to shift from traditional teaching methods to a Project

Based mindset?

What challenges could hinder a teacher from making the shift to a Project Based

mindset?

Significance of Study

Merriam (2001) explains that qualitative research, unlike quantitative research,

focuses on the experiences and meanings that have been constructed by the subjects.

Quantitative measures the study and deconstructs the parts of the study whereas

qualitative research seeks to find the ways the parts can work together to construct the

whole. During a phenomenological qualitative research study, the researcher's role is to

capture the essence of the experience of the subjects and combine the data to connect the

relationships within the story written.

The phenomenon of interest in this research revolves around the changes that a

teacher experiences as she foregoes a teacher centered classroom and morphs into a

teacher who centers her classroom on her students using Project Based Learning.

Adult Learning

Adult learning differs from child learning in that it encompasses culture into the

recipe. Adult human nature gravitates toward social culture systems. Adults tend to

rationalize that if they question the social system they will be isolated from the

mainstream of their social group. Thus the belief system of the group is the belief system

adopted by the individual. There is significant peer pressure associated with adult behavior in social circles. The politics of the group has a tendency to direct individual behaviors within the group to maintain the status quo and health of the political organization (Geertz, 1973).

Teachers have been groomed from their days as students on how a classroom should look, feel, and perform. In the past classrooms have been expected to be serious settings in which learning takes place. There was little room for fun or experimental learning. When teachers or students introduced non-traditional learning techniques they were immediately directed back to the path the culture had established to be the norm. Negative feelings were embedded into teachers and students alike who attempted to deviate from the group (Cranton, 2016).

To conclude that school reform should point to the direction of success, certain cultural changes must take place (Muhammad, 2009; Gruenert & Whitaker, 2015). Adults need a safe place and affirmation from others in their group that they will not be rejected when they change course. Social leadership's role is to create the safe harbor and training imperative to abandoning old habits and forming new ones. Teacher learning is highly influenced by the leadership of the principal in the building (Reeves, 2016). Even though teachers guide the culture the direction has to be determined and support must be given for the changes to take place, otherwise status quo will be maintained within the group. Individuals see their comfort zone and usually are not willing to risk rejection by the group (Eaker & Keating, 2012).

Project Based Learning

Options in the classroom for lesson delivery is a controversial subject in this era of technology change our world is experiencing. Researchers are reaching into the past to resurrect, confirm, or validate learning theories that have been phased out as society struggles to keep up with the ever-changing landscape of learning. A half century ago researchers such as Ausubel (1964) were attempting research that disproves the success of particular learning methods that are being revisited today, such as constructivism. Constructivism has deep roots in the education system and can be traced as far back as the 16th century. Italian architects, sculptors and painters believed their work had a more scientific nature than the trades such as carpentry or masonry. It was their belief that more intricate and tailored education should be employed to ensure that the craft was continued in a more dignified manner than usual trades (Larmer, Mergendoller, & Boss, 2015).

Today teachers are experimenting with the same discarded theories. Learning hasn't really changed much since research began, but the struggle lies in researchers attempts to identify and zero in on the best methods to use to create the most efficient results. The fast pace world that this technology era is creating calls for a fast pace learning unparalleled to any that education has experienced in the past. Schunk (2016) identifies several different learning theories that stem from researchers as retro as Plato and as early as 347 B.C. There seem to be as many learning theories as there are learners. What we struggle to understand is, how important the learning theory is to the actual learning. Quite possibly, finding the best fit for the situation could be the most

challenging proposition for education today. Some teachers are accepting the open-minded challenge to merge the past with the future to promote success for students, some teachers are not as willing to give up the way they were taught and learned to teach themselves.

Research Plan

    Approach. For the research to be as unbiased as possible the researcher has chosen Basic research and a case study method. This type of research will give the researcher the means to look for patterns that will help lead to conclusions (Bush 1945). Though conclusions might not render solid answers, they can create a path that could change the mindsets of those pursuing educational changes in the future (Dweck, 2016).

    Theoretical and Conceptual Framework. With this data the researcher would compile strategies to enhance the learning process for teachers in the future who are being asked to change pedagogy from traditional methods to methods that encompass PBL type practices. The researcher follows the structure of Haberma's Theory of Communicative Action (1984, 1987) being that "critical theory is normative and realistic, it argues that it is possible to logically provide reasonably grounded arguments about what a good society is, how the good society relates to conditions that all humans require to survive (the essence of humans and society), and how we can judge existing societies according to which extent they provide humane conditions or not." (Fuchs, 2016, pg. 9). An explicit dialogue that grounds the statements of the research subjects so that the content of the information will be established and grounded in truth. The interpreted word will be the coherent and complete reflection of the experience of the subject.

Assumptions

      What challenges could hinder change? In some cases, a teacher simply refuses any change that might be introduced into their existing presence. The key to successful adult education hinges on the phenomena of emancipatory knowledge. This is knowledge rests in the philosophy that growth is determined by what we accept to be truth. Quite possibly if one isn't seeking to improve upon learning or teaching, he or she has determined that the current reality is what they perceive to be truth. This thought determines that nothing else should be done. In this situation no learning has taken place and no changes will be made (Cranton, 2016). With this thought in mind the researcher realizes the possibility of an encounter with such a belief system. Future implications of the study will explore how programs can be established to help teachers navigate the process of changing from a classroom where students sit and absorb information to classrooms filled with inquiry and experience.

      Another implication could be the culture of the school. Even if the teacher has the motivation to make pedagogical changes and the rest of the team isn't in agreement the cultural friction could make taking risks difficult (Gruenert & Whitaker, (2015). Quite possibly if the teachers are on board and leadership isn't, then changes might not be pursued and a teacher might not feel the need to question the status quo (Reeves, 2016).

      If teachers don't know their students very well and don't realize how to set the bar, they might come up short. Teachers might not have the kind of relationships with their students that builds necessary trust for the student to take chances with learning. If teachers don't have high expectations of their students and will settle with inadequate

work, then the teacher might regress back into more comfortable teaching methods and abandon a new pedagogy (Boss & Larmer, 2018).

Role of Researcher. The researcher for this study will be a careful observer who will make meaning of the observations and the data. As qualitative investigator the researcher will approach the subjects with ambiguity to seek information putting her own personal biases aside to find answers that will help others navigate the process of change. The researcher will also adopt a reflexive journal to use during the observations and during the data analysis stage as to remove herself from subjects who are very similar in background and circumstances. This will allow for a less biased assessment of the data (Patton, 2015)

The constructed interview questions, carefully thought out, provide an opportunity for the subjects to express their own thoughts for the process. The researcher will then code and bracket the information to remove the data from the context and examine meanings, then put it back in context. She will then then interpret their answers and find patterns that will lead to common factors they each share (Patton, 2015).

The researcher will then take the data and create a case record that will tie in the aspects of the culture, the ideas, and the experiences of the educators to examine their similarities and their differences and how they approach the new teaching style. The ultimate goal for the researcher is to tell the story of the seven educators in this school system that have established this pedagogy change system wide (Merriam, 2001).

Overview of Dissertation

In addition to the introductory chapter, Chapter II is a culmination of literature that collects the necessary ingredients for a teacher who is experiencing the transformational changes needed to convert a classroom from a traditional teaching style to one that meets the needs of today's learner and the demands of the workforce (Wagner, 2012). Chapter III will describe the methods used to determine the changes that each teacher is experiencing during the transformation stage of traditional methods to Project Based methods of teaching. It will also explain the rationale for using Mezirow's transformative learning theory as a guide for the research. Chapter four will distill findings from the various research components and phases of experimentation. Chapter five will frame the findings in a plan of action and pathways to move forward, noting implications for teachers and leaders in K-12 schools

CHAPTER II

REVIEW OF LITERATURE

Introduction

In most cultures the majority of the people establish the status quo, and due to the human need that we are born with, most people will conform to the culture of their group without ever questioning or even asking why they are doing the things they are doing. However; there will typically be outliers in some groups that resist the group norms, either consciously or unconsciously. They are constantly asking "why?" They contradict and question the customs and norms of the majority. They live their lives in Sinek's (2009) golden circle, which is displayed in Figure 2.

Figure 2

Sinek's Golden Circle
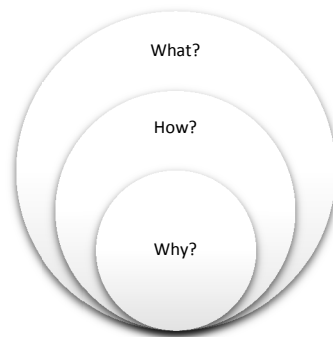
According to Sinek (2009), there have always been people who cannot conform to written or unwritten rules established by their influential groups. To the majority of the group, these people can be threats to the societal, cultural foundation. But upon closer

examination, the people who insist upon knowing the reason behind decisions grow to be the people who create the changes that make a difference. These "golden circle" people often evolve to be the leaders who question the past and establish the new set of rules (Lencioni, 2012). After they determine their "why" they proceed to find ways to change what they are doing to establish new rules for behavior. These are the people who see the big picture and final product as betterment for the community. They rarely have self-interest at the center of their goals. Soon they establish solid goals and create a plan. With their solid values and headstrong dispositions, these particular people have the capacity to change the culture in which they exist. (Muhammad, 2012). They typically are not taught how to play this role, but merge into in quite comfortably in their own time (Lencioni, 2012).

This chapter discusses the literature that frames the phenomenon of teachers who transform their own pedagogy and practice from a traditional classroom to a student-centered classroom using PBL as the catalyst. Open for discussion are the cultural changes that happen when teachers begin to make the changes in their teaching they could be rejected for, how their mindset changes from one in which they are the center of the learning process to one in which the students are the center, how they change the mindset of the students so they believe in the power of their own learning, how they shape the culture of the school, how they transform the culture in their own classroom to one that is student lead, how they define their new role in the classroom, and how they transition into the new pedagogy as they implement PBL in their classrooms.

School Culture

When thinking of school culture, it should be noted that it (the culture) cannot be bought in a package (Ritchhart, 2015). Dewey (1938) suggests that we step aside from the school and focus on the social aspects of the institution. He even suggests that we focus on the "controlling features of situations" from which to draw our conclusions and that even the most careful planning is not in the best interest of a healthy school culture. Muhammad (2009) insists that culture change must come before technical change and that once a healthy culture is established the necessary structural changes will occur in a natural way. When we focus on school culture as opposed to classroom culture, we must consider who has influence and in what areas that influence falls.

Culture promotes what should and should not be done in a group. It sets the tone for what gets celebrated, what gets ignored, and what potential outcomes should look like (Gruenert &Whitaker, 2015). When new leadership takes the reign the first thing on the agenda is to adjust the culture. The success of creating culture reverts to how well established the leadership team is. When leaders establish teams and the expectation is for each group to function as a team with no exceptions, the teams will be the lifeline for the organization. Strong leaders will guide teams toward expected behaviors by modeling and discussing best team practice tactics. They won't necessarily provide a checklist, but rather push teams toward sharing and exploring and relying on each other to find workable solutions (Eaker & Keating, 2012). When the leadership of a school or any other organization works as a team, rather than a group, all have the same common goals, assume collective responsibility, and achieve a common objective for the organization a

rich culture forms (Lencioni, 2012; Dufour & Marzano, 2011). But try as they might the leadership team still has to possess a certain quality to make them successful. They not only need the capacity to lead but must be capable of building leadership capacity within the group they lead (Cansoy & Parlar, 2017; & Lezotte & Snyder, 2011).

A successful leadership team begins with a competent and trustworthy leader. Teachers expect a leader who can help plan, provide feedback, and be knowledgeable of the classroom functions (Cansoy and Parlar, 2017). Trust in leadership is important because when you ask someone to change their behavior, many times they will convert from performing their usual behavior at a comfortable level to performing the new behavior at a sub-par comfort level. For the change to morph into a successful behavior the teacher must take risks, and for a teacher to take risks, he or she must trust the leader to support the efforts (Hanford and Leithwood, 2013). Authentic leaders who create an environment of trust will enhance the likelihood that teachers will be comfortable taking the necessary chances to promote change and in turn create an environment in which more reluctant teachers will also embrace the idea of change (Alavi & Gill, 2017).

Classroom Culture

Culture is a group of people who influence the lives of each other by means of regular contact. It gives people a chance to bond, grow, and care for others in the group. Cultures do not typically live isolated in their own group but interact with other cultures to extend to various subcultures. Ideally, merging subcultures enhances humanity, but many times, especially amongst some major groups, hostility and hatred becomes the norm (Robinson, 2015). Children are taught at home what to value and deem worthwhile

and they take these values into the classroom when they enter schools. It is the teacher's job to promote a culture in the classroom that extends a healthy culture and can be successfully blended with the community and homes of the students (Ritchhart, 2015).

With education being the vehicle in which culture is transported from one generation to the next, creating a conducive learning culture in schools is important for the success of future societies (Robinson, 2015). As teachers assume the responsibilities of extending the human race, they must also be aware of cultural expectation changes beyond their control. Social roles for male and female children are changing, as is the responsibility of the schools to support the new rules of society (Garcia, 2011). As policy dictates better test scores, teachers are sometimes forced to choose between lessons that promote the changing culture or the drill and skill methods that were used to teach in the past. Moving toward a more collaborative classroom, one that fosters the culture changes, can be stifled when state accountability is a factor (Ritchhart, 2015).

School culture can be stifled with many other obstacles as well. As new challenges present themselves due to twenty-first century changes and demands, the playing field is leveled between more experienced teachers and new teachers, and each are left with little guidance from more experienced colleagues to determine their next strategies. Job skills are changing and so are the demands on education. (Muhammad, 2009; Wagner, 2008).

Culture is shaped through words and actions and the teachers who lead children to success most likely have said and done things to help them believe in themselves and promote a notion of growth (Lenz, 2015, Boss & Larmer, 2018). For a teacher to create a

culture in the classroom, she must model the behaviors she wishes to see, a cultural transformation is contingent upon the belief system she incorporates. Classroom cultures are certainly important since the formed habits of young children will continue into their adult lives (Ritchhart, 2015).

Dewey (1938) sums up the culture of a classroom to the teacher creating democratic experiences upon which the student draws a higher quality experience. Schmidt (2018) implies that teachers can "create" cultures in their classroom by giving students a list of specific assignments and activities that put them in situations in which they share information and by doing "getting to know you" activities. On the contrary Ritchhart (2015) explains that our belief system shapes our behaviors, and as a result our expectations and goals in turn creates our culture. He also notes that a combination of our expectations of ourselves and others and the behaviors of those in the group determine the type of culture that emerges. Teachers can deem that they are creating a specific culture when in fact they are creating exactly the opposite without actually being aware of what they are doing.

Teacher Mindset

According to Dweck (2016), humans have two rationales when mindsets are considered. They can either have a fixed mindset, which means they feel that people have limits on how much their intelligence can develop or they believe that intelligence can progress to the limits adopted by the individual. Dweck's (2016) in depth research into this topic has led her to believe that everyone can cultivate their own intelligence, talents, and aptitudes to accomplish a higher level of success than those with a fixed mindset. The

accomplishments of most are determined by their ability to construct meaning about themselves (Seaton, 2018).

Often, teachers with a fixed mindset have a difficult time allowing mistakes in their classroom. When mistakes aren't allowed the culture becomes one of fear of failure. According to Deutschman (2007) we are equipped with a set of "ego defenses" that automatically launch when our self-esteem is threatened. One ego defense revolves around denial. The possibility of finding a better way than what we have determined is a good way can threaten the human ego and block the capability of making any changes to formed habits. A growth mindset allows for failures that build learning experiences and leads to a culture that promotes student exploration and growth, this in turn fosters more creativity. For teachers to instill this mindset in their students they must fully believe that every student is capable of learning. This belief will lead to the relationships necessary for students to have the confidence they need to explore learning (Brock & Hundley, 2016, Boss & Larmer, 2018).

Strong school leaders will arrange teams and meetings to promote growth mindset within their area of influence. They understand that there isn't a checklist or a plan that can be appointed, but that changing the mindset of the staff takes time. Experiences must be shared, and trust established, teachers on staff must learn the build and learn the language of the team in order to work as a unit, they must learn who to ask for certain kinds of help. Nurturing the network is a step that cannot be skipped for the team to thrive (Bryk, Gomez, Brunow, & LeMahieu, 2015, Boss & Larmer, 2018).

Student Mindset

Student mindset is also a crucial component of success in school. Studies show that students are more successful when they possess a mindset that they can succeed than if they don't (Claro, Paunesku, & Dweck, 2016). For a student to cultivate a growth mindset it is essential that they know why they need one. Students who have mindset intervention and are taught that more can be achieved when they have a growth mindset achieve at greater rates than those who don't (Brock & Hundley, 2016). For so many years, students have been focused on the work of school and have worked diligently to acquire knowledge. Changing times are calling for student to switch to a more productive growth mindset and develop learning strategies and understanding about their world. When beliefs are transferred, and mindsets altered the learning switches from acquiring knowledge to sharpening skills. With knowledge literally at our fingertips, students can focus on skills. Skills are more of a learned concept and can be practiced they are not as dependent on sole knowledge. With a growth mindset, students can accept that hard work and skill acquisition is more achievable than simply having knowledge (Ritchhart, 2015).

Change

As daunting as it may seem at times change is not always a negative experience. Humans have the choice to let change happen to them or for them. Previously, science believed that our brains were "hardwired" at an early age, and resistant to change, but with recent findings, using functional Magnetic Resonance Imagery (fMRI) they have discovered that the brain is actually plastic and has the ability to change. This means that we can learn new things throughout our lives (Deutschman, 2007). Although brains are plastic and can change, other factors interfere with changes. These factors include

systems such as values and beliefs. Much of our culture contributes to our belief system and restricts our desire to change. At times, our need for security will supersede any unknown benefits from changing the way we operate. And more often than not, a strict value system will ignite an emotional reaction to any change that we can't mentally comprehend (Willingham, 2012).

As comforting as security can be, the world is not stagnated. The very qualities that some admire in teachers could possibly be the qualities that will stifle the next generation of learners. Many older adults were not accustomed to the rapid communication that technology brings into the classroom and are stigmatized as they struggle to "control" their classroom. They dangle in the past and unsuccessfully tug at students to be the model students that Horace Mann (1848) depicted almost two centuries ago (Sheninger, 2014). Many may deny that students in their classroom are learning far more outside of their classroom on their own. And the information they are trying to teach them is readily available and being carried in their pockets with the swipe of their fingers (Wagner, 2012).

Quite possibly these teachers are willing to change but are at a loss as to how to make change happen. Possibly they are in denial that they even need to change. Either way, they need a source of inspiration and a new sense of hope (Deutschman, 2007). These teachers need someone they trust that can help them navigate change, even then getting over the hurdle of confirmation bias holds them back. The need to interpret any new information as something we already believe will skew any new knowledge and only

confirm the biases already in place (Willingham, 2012). The challenge is in convincing

the teachers of the next generation of innovators that they must innovate their strategies.

Roles of Twenty-First Century Teachers

In a system that demands results in student learning we must truly understand the

role a teacher plays in the learning process. It is obvious that the teacher is a necessary

component of the learning process, and the success of the student is directly related to the

strategies and techniques the teacher chooses to incorporate into learning experiences.

For student learning to be generated, teachers must focus on the strategies that trigger the

mental state and processes that students engage in to enhance their learning experience

(Marzano, 2017).

Bobbitt (1934) insists that to have a successful classroom, a large amount of

information is necessary. One way to get that information is through school. Teachers

should be laying that information out in sequential form throughout the twelve grades of

school. He also states that drill exercise will produce these skills and refers to a previous

time when drill and memorization was the preferred method of teaching. However, Buck

Institute for Education (2012) paints a different picture of what the structure of a

classroom should be. Skill and drill practices are frowned upon and replaced with real

world experiences. Bobbitt (1934) does include that possibly classrooms could offer

abstract settings with energized lessons such as home economics and yearbook classes.

He even adds that music could be an alternate way to learn. He groups music with other

activities that he calls "extra-curricular" activities and insists they are not part of formal

education. Couros (2015) explains that teachers should move away from a culture of

compliance in favor of creativity and community and give students experiences that prepare them for future endeavors. Teachers must create environments and cultures which allow students to learn to think. Dewey (1938) states that teachers should be able to extract learning experiences from the environment. He or she should deviate from school desks sitting in rows and blackboards. He insists that teachers should be involved in the communities in which they teach and use the local resources as a basis for experiences in the classroom. Teachers who choose "traditional" methods are simply offering pupils a "diet of predigested materials" and then blaming students when they lose interest and do not adapt to the material taught. He advocates strongly that teachers prepare students for circumstances of the future, and states that college readiness could possibly be necessary.

As businesses, governments, and school systems press for better results, teachers must redefine what is expected in the classroom. Teachers are no longer the keepers of knowledge, but skill developers, designers, and facilitators. During the 1980's a stronger emphasis was placed on what teachers were expected to do as they exited their college preparation classes, thus rendering the Education Teacher Performance Assessment (edTPA). This was an assessment that was meant to hold teacher education students accountable for learning all that is necessary to become a classroom teacher requiring an in-depth portfolio containing things such as lesson plans and videos as proof of learning (Donovan & Cannon, 2018). In an age when worksheets just won't get the job done, teachers are called upon to facilitate learning experiences that engage the minds of young learners. Not only will they ensure learning, but they will create cultures conducive to

continuous learning (Martin, 2015). Teachers are expected to know the progress level of each student and have a plan in place that targets the learning skills necessary for each student to learn. This is changed from the day that teachers gave a test and assigned a grade and then moved on to the next topic. Assessments must be in place that not only tell the teacher what the student knows and can do, but what the student needs to fill the gap (Popham, 2011; Wiliam, 2011; Reeves, 2016). Generally, teachers don't grasp the concept of the topic being the focus until learning has occurred. They don't presume that second, or third, or more chances to learn the material is permissible. The typical traditional unit would consist of teachers assigning specific work and at the end issue a cumulative test to report if learning had occurred. Once the test was over the teacher would move onto the next topic. Popham (2011) states that learning happens as a progression and that each progression must be monitored along the way to determine the next step in the lesson. The model being that formative informal assessment will result in more knowledge actually being retained and not just information memorized for a test. PBL is structured with formative assessment built in. Not only is the content learning measured, but also transferrable skills that will be useful for future projects and life in general (Wiliam, 2011, Reeves, 2016).

In the past, students were divided into the ones who get it and the ones who don't. As we move away from this mindset, teachers are expected to have more of an understanding as to why students weren't successful. Then they are expected to find ways for them to succeed (Cooper, 2011). The purpose for education is for the graduating student to be well rounded enough to find success independent from those who raised

him and to pursue goals that benefit the student as well as society (Garcia, 2011). The job

of the teacher is to purposefully make this happen.

Along with the curriculum and heavy standards, a 21st century teacher is expected

to teach students a set of skills that will ensure their success in future careers. These skills

do not necessarily coincide with the infusion of knowledge alone being the key to job

related success. The skills that have been deemed necessary for the 21st century are

simply referred to as the 4C's and they include critical thinking, communication,

collaboration, and creativity. The argument for these skills is that by the time a

kindergarten student starting school today graduates there is no way to predict the

particular set of job skills he or she will need for the workforce, with the idea that his or

her job hasn't even been invented yet. Teaching these particular skills will give the

student the tools for success in whatever job they choose. With information at our

fingertips, and the shelf life of that information limited, gone are the days that general

knowledge will provide an advantage in the workforce (Kay & Greenhill, 2013).

Another expectation for classroom teachers is eliminating bias. When the

expectation is for each student to learn on a level playing field, teachers must look at each

student as successful. Many teachers who are seasoned, and often times new teachers to

the profession as well, will hold biases that alter the learning culture in their classroom.

When low expectations are in place for students due to race, color, or economic status a

barrier exists that is difficult to break through for the students (Carter & Gutwein, 2017 &

Garcia, 2011). Most often, new teachers in a school will assume the culture practices of

the school. If the overall general state of the culture is a biased one, the teacher will

assume that thought process as well. When the school uses a negative approach or idea that they have grown accustomed to, there is a culture created that makes it difficult for teachers to obtain equality in their classroom for all students regardless of their own beliefs or what they have learned from specialized training (Cooper, 2011).

New teachers are experiencing the same difficulties in their classrooms with integrating concepts that they have been experiencing for the past 35 years (Shayshon & Popper-Giveon, 2017). It stands to reason that if a teacher is properly trained, he or she would be able to work through the culture and implement strategies that they have been taught, or at least try to learn about current trends. A teacher who has read the research of those such as Couros, (2015), Marzano (2017), and Garcia (2011) will be capable of reasoning that students should have an equal opportunity to a fair education and that it is the teacher's responsibility to guarantee that right. All the elements of an exemplar education can lie within the pages of research, but Shayson & Popper-Giveon (2017) found that training and education is not enough for most new teachers to excel at providing proper experiences. They found that school culture and mentor experiences have a major impact on the way a teacher runs his or her classroom, interacts with students, and creates the learning culture in which lessons are presented. When teachers are faced with the reality of the classroom and the difficulties that lie within they become isolated and lonely. Both technical and social aspects are altered and the new teacher transitions into a survival mode. When thrust into this position the teacher will possess the qualities of the teachers in mentor roles and the quality of teaching may be compromised if those mentors are contributing to the negative culture practices. Teachers

are expected to rise above negative culture and create a learning space where students can thrive (Wagner, 2014).

Student-Centered Learning

When a teacher opts for a PBL classroom there are a few considerations she must address. Successful PBL is heavily dependent upon a student-centered classroom culture. Creating this culture takes some time as it isn't likely to feel familiar to either the teacher nor the student, if they have been in traditional classrooms (Boss & Larmer, 2018). First of all, many teachers adopt routines for every moment of the day, Ritchhart (2015) suggests that this might not be an effective way to run the day and does not work well in a student-centered classroom. He suggests that a more effective way to end a lesson would be to come together and have a summarizing discussion. This would be a way to determine what went well and what didn't. He offers that if a teacher has a routine that is so automatic that it doesn't require thinking, students might not be utilizing the skills they need to foster critical thinking with simple tasks. Students need to have more control over when they learn as well as determining what they learn.

Giving so much control to the class is not instilled into teacher thinking. For many teachers, giving control to the students is difficult at best. According to Hattie (2009) student/teacher relationships rank in the top as far as strategies to enhance student learning. When teachers trust their students to do what is necessary, it gives the student a new sense of responsibility and drive (Ritchhart, 2015). When a teacher switches from being the keeper of the knowledge to being the facilitator of innovators student input becomes a priority (Couros, 2015). The job of the teacher is to create the conditions for

learning to take place, and not to merely deliver the curriculum (Robinson, 2015).

Project Based Learning

Options in the classroom for lesson delivery is a controversial subject in this era of technology shift our world is experiencing. Researchers are reaching into the past to resurrect, confirm, or validate learning theories that have been phased out as society struggles to keep up with the ever-changing landscape of learning. A half century ago researchers such as Ausubel (1964) were attempting research that disproves the success of particular learning methods that are being revisited today, such as constructivism. Constructivism has been identified as early as the 16th century in Italy. Architects, sculptors, and painters were not satisfied with being grouped in the same circles as masons and carpenters. They instead wanted their work to recognized as a skill that was more related to science and required a specific amount of training. They rallied for an art school to be established in 1577. But they were disappointed with the results when the school used a lecture-based form of lesson delivery. Therefore, the idea of teaching with projects was introduced (Marconi, Cipriani, & Valeriani, 1974).

Today teachers are experimenting with the same controversial theories. Learning hasn't really changed much since research began (Larmer, Mergendoller, & Boss, 2015), but the struggle lies in researchers attempts to identify and zero in on the best methods to use to create the most efficient results (Boss & Larmer, 2018). The fast pace world that this technology era is creating calls for a fast pace learning unparalleled to any that education has experienced in the past. Schunk (2016) identifies several different learning theories that stem from researchers as retro as Plato and as early as 347 B.C. There seem

to be as many learning theories as there are learners. What we struggle to understand is, how important the learning theory is to the actual learning. Quite possibly, finding the best fit for the situation could be the most challenging proposition for education today (Boss & Larmer, 2018). Some teachers are accepting the open-minded challenge to merge the past with the future to promote success for students, but some teachers are not as willing to give up the way they were taught and learned to teach themselves (Brock & Hundley, 2016).

Using Constructivism in Project Based Learning

One learning approach that seems to be gaining momentum revolves around the epistemology of constructivism. Constructivism is based in the belief that the learner is actually responsible for creating the learning conditions of his or her own situation (Schunk, 2016). In these learning situations students have several different strategies in which to learn content. PBL is one vehicle in which constructivism travels. PBL has many definitions which makes the term extremely broad and sometimes difficult to pinpoint. Although broad, most definitions stem from a constructivist approach in teaching, such as learners deciding on the problems and exploring options to find answers (Jerzembek and Murphy, 2013). PBL's main purpose is to not only teach the skill or standard, but to imbed the development of effective problem-solving skills and the ability to incorporate metacognitive reasoning strategies for future life-long learning (Hmelo-Silver, 2004). When coupled with a growth mindset, students are capable of taking the learning from the PBL and integrate it with other topics and ideas to be motivated to stretch their cognitive abilities (Dweck, 2016; Brock & Hundley, 2016).

PBL as defined by Buck Institute for Education (2012) is a method that presents a problem to students in which they solve over time. In the process of solving the problem they will explore and gain knowledge that is authentic. This learning gained from solving the problem will transfer into real world skills that can be used in all aspects of life. PBL comes with a set of criteria that includes an authentic problem, student choice, reflection, and a public product. These elements have been present in the practice since the 16th century when they were first introduced in Europe in both formal education and vocational preparation and they mesh into the workforce as necessary skills for careers today (Larmer, Mergendoller, & Boss, 2015). Lenz (2015) suggests that an effort to incorporate common core standards can be served as a justification to merge the idea of such authentic learning that constructivism presents with basic skills that students need for a productive career. For an educator who is capable of incorporating this type of curriculum, the new standards blended with the old methods, there is an education euphoria parallel to winning the teacher lottery (Larmer, Mergendoller, & Boss, 2015).

Perhaps PBL could be explored in the context of the teacher presenting the material. The account of how much teacher guidance is necessary is a murky question in the minds of most educators. When PBL is used in a classroom where teacher guidance is at a minimum and students are allowed to only explore with loose boundaries, learning follows suit of instruction and remains at a minimum (Kirschner, Sweller, and Clark, 2006). But in many studies, such as the one conducted by Drake and Long (2009), students were able to develop problem solving strategies along with obtaining knowledge and skills that are relevant to the context of the problem solved. Along with the obvious learning, the students had a heightened respect for the role a scientist assumes in many

professions. Although learning to follow instructions is a skill necessary for many things in life it is noted that if it is the only method used to learn, then creativity will be bare minimum. Using PBL as a vehicle for teaching all subjects in the classroom has many possibilities of addressing the creativity and learning necessary for the future of the next generation (Resnick, 2017).

In many circles PBL has been criticized for not focusing on content knowledge, and Kirschner, Sweller, and Clark (2006) argue that novice students lack the schema to effectively learn only through PBL. They claim that more detailed instruction and the use of process worksheets are necessary for students to organize the information. But finding a balance in the learning environment seems to be key. Learning environments in the real-world include more areas than the classroom. These such environments provide balance between the freedom to explore and the structure to complete the process (Resnick, 2017). While Hmelo-Silver, Duncan, and Chinn (2007) explain that PBL is not designed to leave a student high and drybut should be closely monitored and learning experience should be scaffolded by the teacher. Succumbing to memorization skills only, is not necessarily the best solution, when so many other options for teacher involvement are available. Scaffolding is one of the options. Scaffolding can decrease the cognitive overload a student can experience when just thrown into a scenario without guidance and keep the student on the intended path of the lesson. Scaffolding strategies can include questioning and redirecting and even participating and learning along with the student. However; in a study by Choo, Rotgans, Yew, and Schmidt (2011), evidence was found that suggests that scaffolding may not play a significant role in student learning with PBL. Teachers should be incorporating "mini" projects into the main project in order to

organize and retrieve notes essential to the final outcome (Hmelo-Silver, Duncan, and Chinn, 2007). Mini projects are smaller projects that take place over shorter periods of time, such as two to three days. They are projects that do not have a "recipe" and give students the freedom to find the answers as opposed to being told what to expect. These have been successfully used in science classes in Dublin, Ireland (McDonnell, O'Connor, and Seery, 2007). Prompts for discussions may also be used so students can experience a jumping off point for their inquiry. Teachers should be actively involved as role models, so that students are reminded to construct deeper thinking as they work. (Neathery 1998).

Problem-Based Learning (PBL) has been credited for helping students retain information for much longer than traditional lecture-based methods. A study conducted by Zumbach, Kumpf, & Koch (2004) in Germany in a fourth grade classroom, found that even though it appeared that the PBL group seemed to not have as wide of a scope of knowledge as a lecture based group, later on they proved to have more understanding of the basis of the problem. They were able to retain the information and enhance it far more effectively than the students who learned by lecture. This same study also revealed that students who did not have the pre-requisite skills necessary for PBL such as self-regulation and problem solving also retained less information and showed more signs of stress.

If PBL could possibly be an effective method for classroom use, then teachers will need to know when the best time would be to introduce this to their students. Zumbach, Kumpg, and Koch (2004) found that students who had previously been introduced to the method were able to reason better with less stress than their peers who

had received lectures, but there was nothing stating the ages that the learners began to

learn in a PBL classroom, or if the classroom is actually where the skills were learned.

The current generation of learners is entering classroom with an entirely different skill set

than the last generation possessed. With so much information at their fingertips, the need

for feeding information is falling by the wayside and the new need for learning to process

information is becoming necessary as we move forward. It seems that in that future

generations will have a need to learn by creating and not simply by discovery (Wagner,

2014).

Summary

Change is difficult but may seem to be more difficult when beliefs that drive the

classroom took roots from a century ago. As our students evolve into adults, they are

depending on their teachers to point them in the direction that leads them to success.

Students need 21st century skills, taught by 21st century teachers, in 21st century

classrooms and even then, at the rate technology is evolving they are still in danger of

being behind by the time they reach their education landmark (Wagner, 2008; Robinson,

2016; & Sheninger, 2014). Gone are the days that student should sit in desks and fill in

worksheets, test prep won't get the job done, and teachers who aren't willing to learn new

things are fading fast. Many things go into teaching a 21st century student and teacher

pedagogy cannot be stuck in a time warp (Resnick, 2017). With quality teachers being the

driving force behind successful students, leaders must focus on finding the best teachers

available to fill the classrooms (Robinson, 2016). Identifying teachers who are willing to

take a leap of faith and change direction and learning the process could prove to be the

key to creating classrooms where students learn necessary skills to catapult them into the

jobs of tomorrow.

CHAPTER III

METHODOLOGY

Research Setting/Context

The research took place in a small school system in southern Wisconsin with a population of about 2600 students and 180 classroom teachers. The ratio for minorities is about 17% with the Asian group being the highest minority population. They have one charter pre-school that serves about 104 students. The system consists of three elementary schools, one middle school, and one high school. The focus grade for the research was fourth grade with about 189 students, about 14% of which are free and reduced lunch status. Three teachers from each fourth grade in each of the three schools were the subjects of the research. This system joined Buck Institute for Education to begin a PBL implementation district wide beginning with the start of the school year. The teachers are in the beginning phases of PBL implementation and are prime subjects for this study. Permission for the study and assistance with securing participants was granted by the Superintendent of the participating school system. Research began immediately post Internal Review Board approval.

Methodology

This study employs a qualitative case study method since all research subjects are teams of teachers experiencing the same basic phenomena bound to the same context. Yin (1994) defines a case study as "an empirical inquiry that investigates a contemporary phenomenon within its real-life context, especially when the boundaries between phenomenon and context are not clearly evident" (p. 13). There are three basic features

concerning case studies that include particularistic, descriptive, and heuristic. This study was particularistic in nature due to this particular group of teachers who are experiencing the same changes. The researcher was searching for patterns and similarities in the participants. The descriptive nature of a case study allows the researcher to examine the details of the change process. Using a bracketing technique that will break down the data, remove it from the context, analyze it and place it back, gives the researcher a rich description of the story each participant has to tell. The researcher was searching for the deep richness and experience that each teacher brings to the classroom and the unique stories that each has to share. The possibility that patterns evolve that can link these teachers to future research projects can render new meaning to the phenomena of changing pedagogy. The researcher was looking for trends of the past and experiences of the present to tie these teachers together. This declares the data heuristic in nature as the researcher pieced the quilt of new learning and determined the effects of the changes these teachers are experiencing (Merriam, 2001).

> "The most significant transformations in learning are transformations of meaning perspectives." (Mezirow, 1991, location 488 e-book).

As the researcher observed the participants, she recorded notes in the reflexivity journal and viewed the participant's behavior through the lens of Mezirow's Transformational Theory. Mezirow (1991) states that one's interpretation of what happens has a stronger effect on their actions than the actual event itself. The researcher was particularly interested in how each participant processes the new information and training that they are each receiving together and what past experiences they are using to create a new learning path. Each teacher in this study has experiences in the past that

have contributed to their learning and teaching style in some way. How they have interpreted those experiences has a bearing on how they choose to articulate lessons to their students. How are they using the current learning to create learning situations for their students? The possibility that two teachers have experienced the same event but have two entirely different meanings of the event is what the researcher intended to reveal. Can new influences possibly change the interpretation of events and determine a new path for one or more of these teachers?

According to Mezirow (1991, e-book location 231) there are 5 primary interacting contexts in the process of learning:

1. The frame of reference or meaning perspective in which the learning is embedded.
2. The conditions of communication: language mastery; the codes that delimit categories, constructs, and labels; and the ways in which problematic assertions are validated.
3. The line of action in which learning occurs.
4. The self-image of the learner.
5. The situation encountered, that is, the external circumstances within which an interpretation is made and remembered.

The researcher used these five contexts as she recorded data in a reflexivity journal.

Their constructivists approach to PBL was analyzed to determine the process in which the teachers undergo to make learning meaningful for both themselves and their students. The researcher surveyed each teacher to determine their depth of knowledge

about PBL prior to traveling to their school. She adjusted interview questions as needed to accommodate the data gathered from the survey. She then interviewed each team of teachers at their own school, in their own natural setting of the classroom, to determine their basic attitude toward the work they are doing, and how their mindsets and classroom culture are evolving or not evolving as a result of the change in pedagogy (Mizirow, (1991); Merriam, (2001); & Dweck (2006).

Rationale

Learning new knowledge comes from careful observation and reading of patterns. Students must understand what they are learning by using prior knowledge and adding new knowledge to force a reformulation of what they knew to create something they haven't known before (Black & Ammon, 1992). In the education field, knowledge can be acquired in the same manner. The learning progression regardless of the field of study is the result of open-ended questions that were investigated in a basic manner (Bush, 1945). Transformational theory is based on the idea that learning involves a prior interpretation of the situation to construct a new meaning and guide future responses (Mezirow, 1991).

Teachers are faced with a multitude of obstacles each day ranging from the number of children in the class to the large range of topics within the many subjects required by the state. The general expectation for a student's education is to produce an adult that functions in society and accepts future responsibilities using the skills acquired during instruction (Dewey, 1938). Teachers must analyze each student and construct a plan that encompasses all learning abilities and skill levels so that each student can process the new information into a successful learning experience. Since learning new information begins with already acquired information a constructivist approach to

education would be the logical approach to teach young children new skills. A constructivist approach considers social and cultural contexts as primary factors in learning and relying less on abstract principles often used in traditional classrooms (Black & Ammon, 1992).

Participants & Data Sources

The data sources were the seven teachers chosen by the district superintendent for the study. The data was collected using a reflexivity journal, a preliminary survey, and team interviews.

Data Collection Procedures

Prior to the initial meeting a short survey was conducted to understand the depth of knowledge each teacher possessed about the implementation. The intention of this survey (appendix A) was to alter any interview questions to gain as much useful information as possible. The researcher met with the participants in early spring after the implementation of PBL began at the start of the school year in September. During the three-day observation and interview process the researcher spent time in each of the seven classrooms, these seven classrooms are the entire fourth grade team in the school district. The researcher observed and gathered data relevant to the study about the teacher, teaching practices, student participation, and the culture of the classroom. The researcher took field notes for the purpose of adding to the interviews to build a more solid data base. During the three-day observation period the researcher met with each team of teachers at their perspective schools to do the interview (see appendix B). The researcher scanned the data each evening after the interviews and observations to check

for any patterns and to alter any questions that did not gather sufficient data. After the initial three days the researcher returned home to code and sort the data. The transcript was then sent to each teacher for an accuracy check and approval.

Three weeks after the initial data collection began the researcher sent a copy of the transcribed interview to each teacher to determine if there was any information they would like to include in the data or possibly any changes the teachers might have considered. No changes were requested. The researcher then re-examined the initial data and compared it to current data to determine if any patterns had changed since the initial interview.

Data Analysis Procedures

First cycle. The researcher started the data analysis process as soon as the initial surveys were returned. They were analyzed for patterns and possible interventions that might be necessary for more thorough data collection. Once this was done, and necessary changes in the interview questions were made and the interviews were planned. Three days were spent in the field with 45 -minute case study interviews conducted with the teams each day. A reflexivity journal was used to record and reflect on the thoughts of the researcher during the process. The coding process was started in the field during the observation period. In Vivo Coding is a system that allows the researcher to lump data into categories to detect patterns in the data (Saldana, 2016). Since she is searching for similarities in the backgrounds and experiences of the teachers, she has chosen this as the first line of data analysis. This coding system was used to lump common themes and help to find areas that the teachers shared. A checklist (see appendix C) was used for specific

topics for the researcher to seek out that looped back into the research questions. This list was also bracketed, taken out of context and analyzed then returned to the context, to ensure removal of researcher bias. This list was inspected each evening for any possible alterations that needed to be made for more efficient data. The afternoons after the interviews were conducted the researcher started this design. See Table 1 for details.

Table 1

Data Timeline
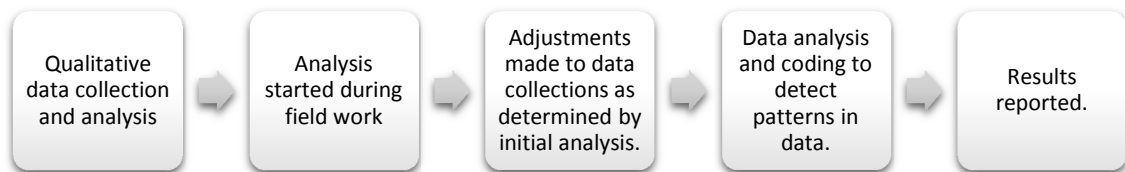
After the preliminary field coding the researcher then reexamined the In Vivo codes for anything that could have been missed and then used a method called simultaneous coding. This coding examines data for any activity that might be occurring at the same time. See Table 2.

Table 2

Data Occurring Simultaneously.
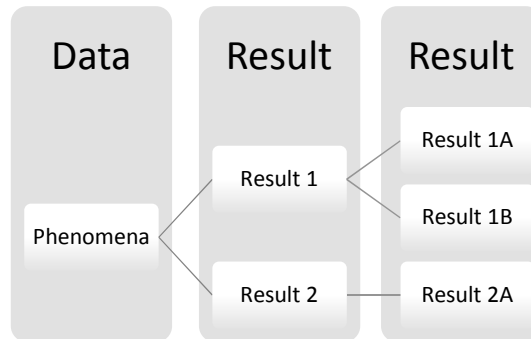
Due to the nature of the research and the data relying on the essence of the experience the researcher chose to examine processes that might be occurring at the same time such as cultural changes that result from professional development or student mindset changes that could be occurring in the classroom due to changes in pedagogy. This coding method is best used when social elements are involved in the data collection process. Finally, the researcher used narrative coding. This coding is also used when the data role is to tell the story of the participant. It allows for experiences and actions to be revealed through the use of story to gain insight into social and cultural meaning. The structure is somewhat of a checklist that identifies parts of the story as explained by Saldana (2016, p 156):

1. Abstract – What is the story about?

2. Orientation – Who, When, Where?

3. Complicating Action – Then what happened?

4. Evaluation – So what?

5. Result – What finally Happened?

6. Coda – A "sign off" of the narrative.

Between the first and second cycle:

During the second cycle of coding the researcher charted the codes to determine what each of the seven participants have in common. A summary of their original codes was split, and they were lumped with others who fell into similar categories. This chart in Table 3 resembles the process with the categories for all nine participants included (Guthrie, 2010).

Table 3

Participant Coding Schedule

Participant #1	Participant #2	Participant #3
• Observation Summary • Primary Codes	• Observation Summary • Primary Codes	• Observation Summary • Primary Codes

Once the primary codes were cross referenced axial coding was implemented to relate any subcategories with main ideas that resulted from both observation summaries and primary codes. See Table 4.

Table 4

Axial Coding
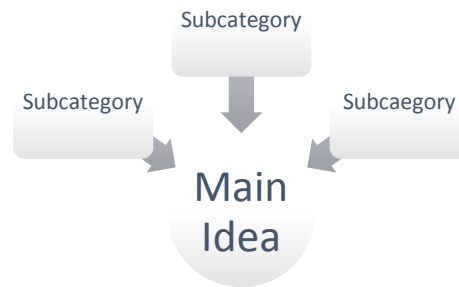
Second Cycle. The coding was analyzed, and themes were then established. This became the basis for the researcher's interpretive summary. The researcher removed this data from the context and coded it separately using only categories not related to previous coding. Then the data was analyzed to find similarities to the original data and put back into the context after analyzation. This data was formatted according to Saldana (2016) and categorized to fit the topics of the research. See Table 5.

Table 5

Research Data Topic Coding

CODE OR THEME	DATUM SUPPORTING THE CODE OR THEME	RESEARCHER'S INTERPRETIVE SUMMARY
SCHOOL CULTURE		
CLASSROOM CULTURE		
TEACHER MINDSET		
STUDENT MINDSET		
INNOVATOR MINDSET		
ROLE OF THE 21ST CENTURY TEACHER		
PROJECT BASED LEARNING		
CONSTRUCTIVISM AS PROJECT BASED LEARNING		

Limitations & Delimitations

The limitations for this research include the essence of time. Since systematic change takes five to seven years (Reeves, 2016), the researcher would ideally follow a group of teachers for five to seven years to determine long term progress towards learning a new pedagogy. Due to lack of resources and the researcher being employed, the practicality of the research continuing over a long period of time is not feasible.

However; the researcher would be open to check-in mini sessions to add notes to the reflexivity journal to either confirm or dispute current findings. In that capacity more quantitative research would be incorporated to track student learning as well as teacher transformation.

Summary

Problem Based Learning is a concept that is typically not the first choice of most educators and when people are faced with a change of pedagogy, they will resist. One reason for resisting is that many years have been dedicated to the belief system we each have adopted. When they belief system is threatened it can invalidate the system that took many years to cultivate (Deutschman, 2006). Mindsets and the ability to adapt to new roles play an integral part in the success of new pedagogy implementation (Dweck, 2016). In an attempt to discover what makes a teacher choose to change or resist changing pedagogy this research was launched.

CHAPTER IV

PRESENTATION AND ANALYSIS OF DATA

Introduction

This chapter presents the case study interview findings of teachers who are transitioning from a traditional teacher centered classroom to a student-centered classroom by means of Project Based Learning (PBL) through a recently adopted district initiative.

The purpose of this study is to explore the transition a teacher will experience when asked to abandon a traditional way of teaching for a district mandated method that requires a change in pedagogical practice for some and to determine the support those teachers need to be successful with the change. The researcher studied a group of 7 teachers in three different schools within a small system who just recently adopted the practices provided by the Buck Institute for Education now known as PBL Works. The system had been entering the PBL realm gradually over the last two years and this past beginning of school year has mandated that all classroom teachers in the system implement at least one PBL unit into their curriculum. However; they were not limited to implementing only one for the duration of the school year. The system has a total of 3 elementary schools, one of which is Title I funded. Team C works at the Title I funded school. The schools are all neighborhood schools and have deep roots with community involvement. The buildings are older and will start major renovation projects this year.

New classrooms will be added as well as air conditioning, which is not in the building at the present time.

The researcher's mission was to find patterns in the domains of classroom culture, teacher mindset, and the role they play in a 21st century learning environment. The researcher was also interested in the process of transition that occurred when the teachers embraced PBL practices and how that affected the three domains.

The posed research questions to be explored through this study are:

Research Questions

What drives a teacher to shift from traditional teaching methods to a Project Based mindset?

What challenges could hinder a teacher from making the shift to a Project Based mindset?

Findings

To begin the research, the researcher administered a four- question survey to gauge the depth of knowledge the teachers had on the topic of Project Based Learning. This survey was primarily to determine if the interview questions needed to be adjusted (see appendix A). The results are presented in Table 6. Only five of the seven teachers invited responded to the survey. The survey indicates that they were not comfortable with PBL implementation prior to the district-based implementation. From the responses, none of the teachers scored their comfort level with PBL at a 4 which was the highest score. They were a mix evenly between 1 and 3, being between not comfortable and somewhat

comfortable with their knowledge for the process. The researcher did not adjust the interview questions based on this response.

Table 6

Survey Results

Prior to implementing Project Based Learning on a scale of 1 to 4 with 1 being not satisfactory and 4 being very satisfactory how would you rate……

	1	2	3	4
Your knowledge of Project Based Learning?	2	1	2	
Your application of Project Based Learning?	3		2	
Your passion for Project Based Learning?	2	2	1	
How active in class were your students prior to Project Based Learning?	2	1	2	

Analysis of Classroom Observations. Prior to meeting with the teachers for the interview the researcher was taken on a tour of each of the schools by the district superintendent. He explained the building and classroom structures and gave some insight into the community. He explained how the pending renovations will affect the current classroom situations. The researcher did meet with the principals of schools A and C and talked further about the lesson structure and details of the school day. Principal

B had a prior meeting as was not available to meet. This will be explained further in the following sections.

Physical Layout of the Buildings. School A is very traditional in the daily structure with individual classrooms and hallways one would see in a typical school. The two classrooms were on opposite sides of the hallway with a bit of a distance between them. Collaboration is not easy during the day due to the distance between the rooms and not being able to leave students unattended.

School B has more of a flow with the classroom due to the building structure. The classrooms are situated in a wheel shape and there is a large common area available to all rooms. The teachers can easily meet in the common area to collaborate during teaching without leaving students unattended. During the visit, intervention was taking place in this area. In another area of the school there was a grade level that did not have walls between two of the classrooms. One classroom in that grade level did have walls and was separated from the rest of the group. The reason for no walls was an earlier renovation that had turned the office area into classrooms.

The physical structure of school C was an open area with few physical walls. There were bookshelves and cubbies that provided some separation areas, but the classrooms flowed into each other and the teacher's tables were side by side. The teachers are able to collaborate and co-teach without leaving their classrooms. Most of the grade levels in this school had similar structural set ups to allow teachers and student to collaborate more freely.

Structure of the Interview. The teachers were 4th grade teachers from three different schools. School A had a representation of two teachers, school B had 3 teachers, two regular education classroom teachers and an inclusion special education teacher and school C had two teachers, one of which was finishing her maternity leave on the day of the interview. She came in specifically for the interview. School B had a third classroom teacher who was out on paternity leave and did not join the interview. The seven teachers were enthusiastic and happy to share their stories. They had a wide range of experience and all seemed to contribute greatly to their perspective teams.

Due to time restraints and the difficulty in finding substitute teachers, the principals set up the interviews as group interviews. Interview with team A lasted about 30 minutes and was conducted over lunch and recess for the teachers. Interview B lasted about 40 minutes and was conducted during the special class period with an assistant stepping into help with the classrooms, and interview C lasted 52 minutes. There was an assistant there to help with students as well.

Background for the PBL Practice. The district had adopted PBL practices as a mandated method of teaching nine months prior to the interviews. PBLworks (formerly Buck Institute) provided training during the summer months prior to the beginning of the school year. This training was open to all teachers, but not mandated for all. Teachers in the district had the choice of attending or not. According to one of the teachers a few years ago there had been another teacher in the district who traveled to California to learn at the Buck Institute by her own choice and brought learning back to a teacher at one of the other schools. This teacher then traveled to California for training and somewhat

started the revolution. The district then joined the plight and formed a team that chose

formal training for the district. The district is very supportive of implementing PBL

practices in all classrooms and has formed district teams that meet to share ideas and

create plans. Three of the teachers interviewed participate in district planning.

  Researcher Notes During Interviews. In meeting with the three groups of

teachers and conducting interviews the researcher determined that the three groups were

at very different stages of implementation. All teachers seemed to share enthusiasm and

willingness to try the new method, but the experience level with PBL varied amongst the

teams. PBL experience and years of teaching experience did not seem to have correlation

to each other in these groups. One reoccurring note the researcher noticed was that in all

the teams there was an urgent sense of teamwork. All interviewees made reference to

working as a team on projects made it possible. They each commented that doing the

daunting task of implementing PBL would not be easy for an individual teacher. Another

trait that was evident is this team of teachers is, they are strong planners. Teacher K in

team A even stated, "WE PLANNED A LOT of different activities and one of the things

we were like ah, that we had to tweak and change was, we couldn't get to all of those."

  Team A consisted of Teacher A and Teacher K. Both teachers seem to have a

very organized classroom and are very knowledgeable in curriculum practice. It was

apparent that classroom management ranked high on the priority list of both teachers.

Teacher K was enthusiastic about the project the team had done at the beginning of the

school year. The fact that they chose to implement early in the year rather than later gave

the impression that they were eager to get started. Teacher A is eager to learn more and

had ideas on how professional development could help in the implementation process and also the reflection and revision process.

In School B, the three teachers were very helpful in explaining what was happening in their classrooms. They actually were in the midst of a PBL that involved a social studies unit and in Teacher SH's room they were doing their research on their classroom Chromebooks. They were finding information about their community and were making plans to contact the community leaders to talk about changes they wanted to make. Teacher SH was very involved in the process and was asking questions that would help the students think more deeply about what they were researching. Teacher KM was finishing a reading lesson and had students working in groups to complete and assignment. She had several areas of comfortable seating for the students to use to work. She explained that she had been trying to figure out how to tear down the wall that separated her classroom and teacher SH's so they could teach as a team.

At School C, Teacher L was taking time out of her last day on maternity leave to join the interview. She didn't seem to mind coming in on her day off at all. Teacher S had some research about Native Americans in the works. There were intervention teachers and assistants working with small groups of students during their reading time in the early morning. The students were calmly doing their work as we left for the interview in the art room.

Prior to meeting with the teachers, the district superintendent explained that the district is taking a step by step approach for implementation. After a brief introduction to the method, all teachers are expected to implement one unit for the school year. More

training is planned for the up-coming summer break. Teachers are not being asked to abandon the units and lessons they are presently using, but to find a way to mesh PBL with units they already have created. The primary changes from traditional units must include a primary driving question, group work, a partnership with a local business or community leaders and a product. Mastery of standards is to be a primary focus and goal. PBL works has many resources available to participants which include planners and rubrics as well as sample units. The teachers have access to these tools, and were asked to create their own individual unit unique to their students and community needs.

The planner is organized with specific details to the driving questions and public product. There are built in sections for daily check ins and formative assessments as well as a calendar to track the time a project may take. The document states that it is a supporting resource and may be used as guidance for a project. All of the teachers interviewed referenced the planning of their project and referred to the elements in the project planner.

Although all teachers seem to possess extensive planning skills the researcher noted that the teachers in schools B and C mostly planned for the outcomes and left "pockets" in their planning to accommodate student's questions. There was an emphasis on the process more so than the end product. At the same time the team in school A place more emphasis on the role the teacher played in the preparation for the unit and had a heavy focus on the product. When asked about school and classroom culture there was agreement across all teachers that it was unclear that PBL has an effect on the culture of

the school or the classroom. Everyone agreed that a strong positive and team oriented culture was present in their school prior to PBL implementation.

The one major difference in the three teams of teachers is the experience with PBL implementation. School A, did not report having had prior PBL experience before the mandated implementation and had implemented one PBL project, which happened to be the first project either of the two teachers had been involved in. They had been very thorough in planning the activities for their classrooms and noted that the students made progress in areas they didn't realize they would make progress in. The project was in social studies and included making bracelets that they sold. They partnered with a local non-profit and donated the proceeds from the sale of their product to a local charity. The unit revolved around character traits, the teachers were impressed that a few of the students did extend the project after the school project was finished to make a variation of the bracelet to sell and donate even more money to the cause.

The teachers expressed concerns that at times they were overwhelmed with some of the activities included in the project and felt pressed for time to do things such as reflect while in the process. Teacher A expressed her concerns by stating "I don't think we did a well enough job reflecting with the students." They were concerned that some of the students lacked fine motor skills necessary to complete the bracelets and they were also overwhelmed by the community and school support and ended up with more orders than anticipated. But with all the drawbacks, the students enjoyed the project and the teachers felt skills such as problem solving and team work were fine tuned. They also

noticed an increase in the vocabulary used by the class after the project, noting some of the words such as "eccentric" that originated from the project.

At the end of the project the teachers are critiquing their plans and making revisions. It was clear from the interview that each teacher believes that PBL is a good method for learning, but still has concerns that they don't have time to fit the scheduled curriculum into the day when implementing projects. Teacher A expressed her concern by saying, "Our unit became so long and we gotta figure out how you tweak that to fit it better into the unit restraint with all those pieces." Teacher K also "talked about how we could change the big project, but still keep that charity piece." She felt that the charity piece was a strong focus in the character building and was a primary focus of the unit.

Teacher team B had some more experience with PBL prior to implementation and did a total of five projects throughout the school year and had the last one in the works at the time of the interview. A former team member had been to Buck Institute training and had worked with Teacher KM to introduce the method. They noted that their third teammate who was not in the interview due to being on leave also had previous knowledge of PBL implementation as well. Teacher SH is the newest team member and she had only been with them for two years and she made the choice to implement the PBL methods. These teachers were a part of the movement to bring this teaching style and the professional development needed for implementation to the district.

The classrooms in team B's school were arranged in a circular form with a common area right outside the doors. This made blending of the classes possible when necessary. The extension also gave students more choice for a work area. The doors were

close enough together to allow for teachers to briefly meet without leaving students unattended. There were tables arranged in this are to accommodate work. Teacher SH also joked about tearing the walls down that separated the classrooms so they would have one large classroom.

In search of strategies to improve their teaching these teachers engage in book studies in topics such as growth mindset to further understand the reasons behind changing teaching methods. They have read several books that include authors such as John Gordon and Joe Boaler so they can relate to the realm of teaching in their classroom. They particularly like Joe Boaler who wrote a book about the mindsets of math teachers.

Teacher KR is a special education teacher who teams with them. She is also a strong member of the team who came with PBL experience. The school she had taught in a few years ago implemented PBL, and she had to make adjustments when she started in this district prior to the implementation. Her support and contribution strengthen the team's experience. She describes the process as beneficial for her students because the projects allow for various entry points in the lesson. Her students can work at their own pace on their own tasks and learn skills that they might not have learned on a traditional schedule. She points out that they can be successful at the end of each lesson.

Team C has an overwhelming sense of team unity. During the interview they were finishing each other's statements. They talked about their trust with each other and how they are both willing to try new strategies and take risks as a team. Their school does not have walls between the classroom and their two classrooms have the ability to blend into

one as the situation is necessary. Their individual small group tables (desks) actually sit side by side. They comment that they enjoy this kind of teamwork and it makes the process of PBL easier. This team has been practicing PBL the longest starting the process about 3 years ago. Teach L serves on the district teams and was included in the team that chose PBLworks for the professional development.

Both team members have a strong sense of duty to the students and to find what is best for them. They feel that being comfortable with the curriculum and having a good feel for how to blend the mandated curriculum and standards with the project is what has led to the success of PBL implementation. Teacher S refers to Teacher L and being very curriculum oriented and has a unique ability to blend curriculum with practice.

One area they are strong in is feedback. They look to each other and the other teachers in their building for support. They also build feedback for the students into their units. They have even reached out to high school students to provide feedback for their own students and their students have ventured into first grade classes to offer feedback to them. Teacher L deemed that communication is a strong skill for project success and has been a key factor in the success of their program.

Like team B, they contribute a mindset change to their switch from traditional classroom theory to project based theory. They noted that in talking with more experienced teachers that these were the type lessons taught before the testing revolution took place.

They instill a strong sense of teamwork into their students using the nature of the project to teach teamwork as the project progresses. Teacher L talked about how they

teamed up with high school students as well as first grade students to experience getting

and giving feedback for projects. They use the natural development to promote teachable

moments rather than teaching teamwork and collaboration in isolation. They invite

various members of the community to contribute to the student learning. Rather than have

the community members present to the class they have them sit down and discuss the

projects with the students individually. Leaders who work for their community partner,

sat in on presentations and provided feedback for the student projects.

The feedback piece has been an important building block in the success of what

they have been doing. Teacher S said that in the beginning, some of the suggestions they

received could have brought the students to tears, but with the conditioning and coaching

they have provided, now the students actually look forward to getting helpful suggestions

from others. Teacher L believes that this is an important life skill for their students.

Analysis of the Interview Questions. The researcher created twenty-three

interview questions for the interview to include aspects of their teaching such as how

their classroom looked prior and during using PBL practices. The researcher is looking

for patterns in classroom culture, teacher mindset, and what they consider to be their role

in the classroom. The questions were adjusted in some cases due to time constraints. For

example, the interview with team A was conducted during lunch and the teachers were

hitting highlights of several of the questions with their answers, so the interviewer moved

on to be sure to get have all domains represented.

The researcher noticed that the three teams were on different timelines in their

transition into PBL. Each team seems to have a tiered set of commonalities with the

teams growing their characteristics according to their experiences. Included are the interview questions that contribute to the patterns found that lead to the tier theory.

Interview Question – Teaching Prior to PBL

Describe what your classroom looked like before implementing Project Based Learning and after.

Team A. Prior to PBL, the team had very structured classrooms used various techniques with their students to promote teamwork. Teacher K was mindful of keeping her students moving throughout the day and not just sitting in their desks. They were very aware of student engagement and classroom management and made sure the students were engaged and working. Teacher A commented that they both ran very similar classrooms in terms of structure and organization. Post PBL implementation they kept the same strategies and practices. They can see teamwork and student respect as they continue the year.

Team B. Prior to the team implementing PBL Teacher KM described her classroom as "teacher directed" and "dependent on the teachers…to tell them what to do". Teacher KR previously taught for twelve years at a school where PBL was used for instruction, so she was knowledgeable of the practice, but when she joined this school seven years ago she had switched back to a more traditional teaching style due to the practice of the school. She comfortably adopted the practices of the shift to PBL. Teacher SH is still new with only a couple of years at this school, but very much on board with PBL. Since implementing PBL they practice "guiding them" and asking them what they think. They are leaving questions unanswered for their students to find the answers.

Team C. Prior to PBL, Teacher L stated that there were "specific things for each curricular area," and "isolated lessons on a concept……and topics were never integrated." There was no end product. See Table 7.

Table 7

Teaching Prior to PBL

	Teaching Prior to PBL
Team A	Structure and organization are key elements
Team B	Teacher directed. Students waited for instructions from teacher.
Team C	Isolated subjects. Projects and things on the computer, but not PBL.

Interview question – Culture

What cultural shifts are you seeing?

Team A. They described the culture as good prior to PBL. Their classes have bonds and work together well so they didn't feel an obvious culture shift. Teacher K stated when asked about positive changes, "I would like to hope that its moving them in that direction but I think it's hard to tell for sure just because of our limited amount of time that we've been doing this."

Team B. This team also had a good, strong culture prior to PBL, as stated, "I don't think it changed anything culturally."

Team C. They described their team as really open minded and always willing to try new things. "I don't think it changed anything culturally," stated Teacher KM. All teachers agree that they had a strong positive culture prior to the practice. See Table 8.

Table 8

Researcher's Analysis of Culture

	Culture
Team A	Cultural shifts are not noticed in the classroom due to the culture being at a good level prior to PBL. Teachers note that more team work has been emphasized due to the nature of BL and possible positive character traits could be detected, but due to PBL only being implemented for one project. They cannot determine if implementation of the PBL project is the reason.
Team B	Teachers' response: There's no apparent culture change that can be pinpointed to be PBL. Good culture existed prior to implementation.
Team C	Teachers' response: Culture at the school has always been strong prior to PBL. One possible reason could be that there are no walls.

Interview Question – Transformation/Teacher Mindset

Describe the transformation that took place with your teaching practice during the implementation process of PBL.

Team A. Team A felt that in the beginning they were focused on producing a public product and were a bit overwhelmed by all the options they could choose from and all the activities they could implement. By mid-project they were beginning to see that

they should integrate some assessments and quality reflection time for both teachers and students. They began to identify the areas in which they would like to have more professional development and maybe just some helpful hints from others.

Teacher A's transformation is, "I thought, going into PBL it was a bunch of kids doing whatever projects came to their mind about whatever topic they wanted to do and it was going to be a hot, hot mess. My vision of it is completely different now. It is very teacher driven with students being able to have voice and choice in the project, but, the voice and choice doesn't have to be 10,000 different things going on." She continues to speak about her mind changing by adding her thoughts prior, "I'm gonna have 15 kids doing all different things, because that was my fear." Now her opinion is "I liked the whole idea and I like the whole process."

One major concern for this pair was how to fit the projects into the curriculum to make better use of their time in the school day. Their concern was that the project would totally pull them away from the curriculum. The one transformation the researcher did notice about this almost seemed to come to light during the interview when teacher A said, "And I think that the other thing, and I've had this discussion with a bunch of people was, you can take this project and make it your curriculum. So like we are so set on Lucy Caukins, 'This is today I'm going to teach you…' It's ok to put your project in place of that, and I don't think that came across, but I think that would have saved us on some of our project, because we were trying to mesh two of them. They were already meshing, but we were so stuck on, no, we have to do this lesson." This seemed to be an epiphany during the interview that maybe wasn't considered prior.

Team B. This team credits their transformation to their growth mindset. Working as a team and doing book studies on the authors Jo Boaler and Jon Gordon. Teacher S described Boaler's book as an inspiration because even though it actually was written for math the ideas could be used in any subject. The knowledge they have gained from their professional studies has inspired them to set goals for themselves and help students set goals for their own work. Sharing their projects with the district team was also helpful during their process.

Team C. Prior to PBL the teachers report that they taught the subjects in isolation. While they were delivering lessons, they began to question their methods, teacher A's response was, "I kept thinking to myself, there's gotta be a better way to teach this." It was at this point that she sought training from The Buck Institute and revamped a unit that was already in place. Once the idea was in place, both teachers "just ran with it."

> "It's not one more thing it's not something you do, it's a teaching style so it's looking at what we already have and how can we approach that differently, how can we teach that differently? So having that mindset, it's not an additional thing, we're not teaching an additional unit, we're looking at our current units, how can we teach this differently? How can we make it more authentic? How can we make it where the kids are that driving force?"

Table 9

Researcher's Analysis of Transformation/Mindset

	Transformation/Mindset
Team A	The researcher did not prompt a response in regards to mindset and the teachers did not refer to it during the interview. Teachers established that PBL is not just the students doing their own thing. It can be student centered and offer choices without being out of control. A project can mesh the curriculum.
Team B	Growth mindset and the desire to improve practice. Without prompting the teachers referred to authors who promote a growth mindset. They mentioned that they did a voluntary book study using a book authored by Jon Gordon. The teachers responded that the book study helped instill a growth mindset in them and they are in turn creating lessons to implement that growth mindset in students.
Team C	Without prompting: The teachers refer to the staff at their school as being open minded and willing to try new things. Both teachers express that a mindset change did occur when they embraced PBL and realized the benefits.

Interview Question: Support

Did you get the support necessary for a smooth transition from…

    a. District leaders?
    b. Administration?
    c. Team members?
    d. Parents?

Team A. This team felt that the support to get their project going was complete, but the time they needed to really plan, reflect, and adjust was not adequate. Teacher K stated that the missing piece was, "A good quality chunk of time to really revise and edit."

Team B. Teacher SH talks about the discussion she had with her principal prior to joining the team two year ago. She tells that the principal talked with her about the expectations of learning PBL as a teaching method and is very supportive in her efforts. Teacher KM was one of the pillars that brought the method to the district, so the support she needed didn't start until after her initial encounter when the district adopted the practice. Teacher KR is pleased with the support the district has contributed since the idea was adopted.

Team C. Teacher L was a member of the district team who contracted with Buck Institute, and was part of the decision making process. She talked about the different options they had to choose from and how they were looking to find the one with the best support system. They chose Buck Institute because they were willing to offer training to all teachers who chose to take it. Teacher S agreed that offering training to all teachers kept the bias out of the training she states, "I like that everybody is hearing the same message, getting the same training, the same language, I thought that was really a smart choice."

Teacher L also expressed that her principal was very supportive and offered many suggestions that contributed to the PBL movement in a positive manner. She states:

> "I think that with project-based learning that principal support is huge, because it does get a little messy sometimes. You do try things out and they don't work. That reflection process of the teacher is such a strong component. So I think if you don't have the support of the principal to try

out something new, it's difficult to feel that comfort level truly jumping

in."

Table 10 represents the team's thoughts on support.

Table 10

Researcher's Analysis of Support

	Support
Team A	Support was adequate but lack of time was a factor.
Team B	Support from the principal and school are adequate.
Team C	District and principal supports teachers as well as Buck Institute supporting the PBL effort.

Teacher's Role in the Classroom. The teacher's role is the classroom was taken

from the reflexivity journal of the researcher. Team A has a strong sense of knowing the

curriculum and understanding what the students should take with them from the lessons.

They understand the need for teamwork but still feel the responsibility for keeping order

and delivering the lessons. Teacher K struggled with some students lacking fine motor

skills to do the bracelets. She didn't mention the possibility of changing the project in

mid-course to accommodate those students. Team B has loosened the control reigns in

that they are beginning to see the benefit of students learning content on their own

without as much teacher control. They are comfortable with blended curriculum and with

finding the "starting points" for individual students. See Table 11.

Table 11

Researcher's Analysis of Teacher's Role in the Classroom

	Teacher's Role in the Classroom
Team A	To promote teamwork and help students learn to work together. To instill a sense of community and empathy in the classroom. To promote extensions of the lessons into projects beyond the classroom. To grow and learn as teachers.
Team B	To blend curriculum with projects and offer students choice. To give students experiences for growth. To grow and learn as teachers.
Team C	To provide experiences that allow students to explore ideas and concepts and direct their own learning. To build a senses of teamwork and community involvement. To teach students to reflect and accept feedback from others. To grow and learn as teachers.

Researcher's Overall Analysis of the Interviews

The researcher's job was to find patterns and themes in the answers from the interviews that would link all participants and determine the commonalities of each individual teacher as they embark on a new teaching method. During the course of the interview process the research began noticing that answers to the interview questions almost took on a life of their own. The interpretation of the question seemed to have a different meaning to each team. The coding process consisted of individual In Vivo codes, but not all teams were represented in all categories. For example: There was evidence of mind-set recognition with the first team, but neither teammate referred to that term specifically nor did they seem to be aware of its presence.

The two aspects that all three teams were in unison with is, that they are all members of a strong dedicated team and all have a strong sense of classroom culture that

was there before they started implementing PBL. The other aspects of the data formed a progression that developed with PBL experience. The researcher did not mention the number of years teaching as a data point as it tends to not have relevance in this case. The years of experience varied with these teams and the number of years that PBL method has been implemented was the hinge point of the transition. The researcher noted in a casual conversation with Teacher A that teachers with more teaching experience seemed to be more accepting of the new idea due to it resembling how they taught before the testing era came along. She commented that in conversations with veteran teachers that these methods were what was used earlier in their careers and they were happy to revert back to this type of teaching.

Table 8 examines the themes which emerged after the data was coded. According to the teams, the culture was already in place in both the classrooms and the schools. The researcher agrees with this in that the teams seemed very cohesive with their interview answers. It was evident that they work well in their respective teams.

Teams B and C have an awareness of teacher mindset and the role it plays in fostering PBL in the classroom. Although team A didn't use the word "mindset" they cannot be referred to as not having a growth mindset. Being in the early stages of implementation and being willing to make the changes asked of them demonstrates the mindset of one who chooses to grow (Dweck, 2016). Teams B and C have a sense of urgency to pursue outside learning and create their own professional development. Team A has not yet started to seek outside sources to supplement their district learning but are noticing that other teams have progressed farther and are beginning to wonder how.

All three teams are very goal oriented and structured toward doing best for their students. They also have a growth mindset and are willing to try new things to ensure that their students have a variety of learning experiences. See Table 12.

Table 12

Research Data Topic Coding Completed

THEMEs.	SUPPORTING DATA	RESEARCHER'S INTERPRETATION
School Culture	Good prior to implementation Continues to be good Staff support	The strong school culture found in all the schools did seem to be the basis for support that the teachers needed to try a new teaching style.
Teacher Mindset	• Reflect and change • Student voice and choice • Student centered • Changed lessons with student needs • Lessons meshed • Had the vision • Authentic • Growth mindset training	All the teachers have a growth mindset. They appear to be a different stage of that mindset. Team A is beginning to explore, team B has a firmer grasp, and team C is running with the idea.
Student Mindset	• All students included • Teamwork • Partners • Growth as people	All three teams are dedicated to instilling a growth mindset into the students. They all note enjoying seeing the students extend their own learning.
Innovator Mindset	• Critical thinking /Problem Solving • No ceiling • Process • Student involvement • Voice and choice • Student ownership of learning • Integrated topics • Authentic	This was prevalent in all three teams as students from each group continued a project on their own time without direction from the teacher to do so.

Table 12

Research Data Topic Coding Completed

Role of the 21st Century Teacher	• Mesh curriculum with projects • Share and think • Reflect and change • Feedback • Entry points • Meaningful and Life-long skills • Student centered and Rigor • Learning alongside kids • Critical thinking and Big Picture	This is a concept that teams B and C have grasped. Team A is not quite as comfortable with the idea, but with the growth mindset as a foundation they seem to be starting to lean more toward student centered and less toward teacher centered.

Themes for Individual Teachers

The researcher then sorted themes taken from responses of each individual

teacher to further isolate and identify any recurring themes. See Table 13.

Table 13

Themes for Individual Teachers

TEACHER	THEME	DATA SUPPORTING THEME
TEACHER K	**Student teamwork:** Important **Transformation:** **Empathy:** The project raised money for a charity.	How to work through those when kids like their idea the best Their community Their classroom Their school Connection Charity piece/Helping others Importance of time

Table 13

Themes for Individual Teachers

Teacher KM

TEACHER	THEME	DATA SUPPORTING THEME
TEACHER KM	**Student centered**	What they think
		What they want to find out
		How they want to do it
		Guiding them
		more meaningful
		Coming up with their products
		reaches their community
		Everybody is included
		Everybody has a role
		changed immediately depending on what we saw in the classroom
	Reflection	
	Transformation	Blend of our subjects for example
		Meshed our writing unit with reading unit
		Social Studies blended with reading
TEACHER SH	Team oriented	New teacher
		Team work
	Student independence	Ask their own questions and then go
		Research to find those answers
		Not wait for us to tell them what to do
	Transformation	Engagement most obvious change
	Innovative	Change of pace
		Different structure
		Just ran with it
	Sees the big picture	See the benefits
		Authentic learning situations
		They're out seeing it, when
		They're experiencing
		Educational roots

Table 13

Themes for Individual Teachers

Teacher KR

TEACHER	THEME	DATA SUPPORTING THEME
TEACHER KR	Student accessible	Entry points so all kids can participate, it's not the same expectation, the not the same summative assessment work that they can do meaningful to them
	Reflective	made that change made something happen finding the time
TEACHER S	Mindset	Mindset switch and really grasping and embracing PBL Necessary step
	Student centered	Liked the choice
	Focused on learning	different ways they were able to show their learning Learn more about the way they are able to do things Feel successful
	Reflective	Factors impact performance Teachers that push each other Teachers that challenge each other Teachers that support each other
	Feedback	Accept feedback Not take it as a criticism, Purposeful Specific Really reflect Your first idea is not going to be your best idea

Table 13

Themes for Individual Teachers

Teacher L

TEACHER	THEME	DATA SUPPORTING THEME
TEACHER L	Team	Support
	Mindset	Opened mindedness
	Student centered	Where the kids are at
	Innovative	Brain that can process through a curriculum
		Endless possibilities
		Creative
		Fun
		Inspiring
	Reflective	Better way to teach
	Sees the big picture	Vision for lifelong skills
		What they need
		Let go and let them fail
		Work through this,
		Not going tell you the answer
	Feedback	Hard to get
		Hard to
		Use the kids to give feedback
		Helpful
		Specific
		Kind
		Build at a young age
		not as criticism
		ways to improve

Summary

In response to the research question, the researcher has compiled notes and data from the participants using the research question as a guide in response to the data.

What drives a teacher to shift from traditional teaching methods to a Project Based mindset?

What challenges could hinder a teacher from making the shift to a Project Based mindset?

> "As a result of the influence of humanism, we tend to see adult education as particularly collaborative and participatory. Sitting in a circle, working in groups, and interacting with others are hallmarks of adult education practice….. From a constructivist point of view, learners share their experiences and resources with each other to create new knowledge" (Cranton, 2016).

Using reflective practice, the researcher combines the notes taken in the reflexivity journal in combination with participant interviews to conclude that the strongest thread running through this group of educators is a sense of team. According to Cranton (2016), teachers embark upon a transformative journey. There is a hidden expectation among teachers and a pattern they develop as they assume the role that society places upon them. The pattern develops as (p. 147):

Self: Awareness
- Fragmentation of teacher-self and self
- Struggling to understand Self as teacher
- Integration of Self into teaching
- Understanding of Self both separate from and the same as others

Developing Awareness of Others
- Concrete, specific, unquestioned perceptions
- Consciousness of individual differences in relation to subject area acquisition

- Consciousness of others' level of personal development
- Complex, multifaceted understanding of others' diversity

Developing Relationships

- One-dimensional relationship based on rules
- Articulation of preferred nature of relationship
- A variety of ways of relating to student in different contexts
- Relationship that emphasizes the development of others' authenticity

Developing Awareness of Context

- Inflexible rules and generalizations about context
- Awareness of the influences of context on teaching and authenticity
- Critical questioning of context issues
- Setting oneself apart from context-bucking the system if necessary

Developing Critical Reflection

- Critical reflection on specific skills
- Critical reflection on teaching, institutional norms
- Content and process reflection on broader issues
- Critical questioning of premises (Why is it important to…?)

Adult learning is not merely a clump of knowledge, but rather a linear progression that is supported within the cultural system that each individual is connected to with communication being the golden key to acquiring new knowledge (Mezirow, 1991). The research noticed a prominent pattern during the interview process that lead the process back to Cranton's (2016) patterns.

The teachers seemed to be on a progression line rather than all having the same developed characteristics. All participants had experienced the self-awareness phase. The exact time this happened is not evident, but the evidence is there due to all having the ability to communicate their teaching beliefs and being able to articulate the reasoning behind their thought process. See Table 14.

Table 14

Team Strengths

	Strengths
Team A	Their strong bond as a team. Excellent work ethic and values. Familiar with the curriculum. Enthusiasm for PBL. Desire to learn more. Strong sense of community involvement. Perseverance. Reflective practice.
Team B	Their strong bond as a team. Excellent work ethic and values. Familiar with the curriculum. Enthusiasm for PBL. Their combined team experience with PBL. Their ability to see the "big picture" and adjust projects accordingly. They are willing to "just run" with their projects. They seek outside professional learning experiences. Willingness to share their ideas. Reflective practice. Focus on student growth. Set learning goals for students.

Table 14

Team Strengths

Team C

Team C	Their strong bond as a team.
	Excellent work ethic and values.
	Familiar with the curriculum.
	Enthusiasm for PBL.
	Their ability to see the "big picture" and adjust projects accordingly.
	Their comfort with taking risks.
	They seek outside professional learning experiences.
	Their willingness to share their ideas.
	Work with other grade levels.
	Reflective practice.
	Focus on student growth.
	Set learning goals for students.

They have all passed through the awareness of others stage with evidence that each team has a deep connection with their teammates. They are all dwelling in the developing relationships phase and are establishing those with both their teammates and their students. See Table 15.

Table 15

Team Concerns

	Concerns
Team A	They are concerned about time constraints. How do they blend curriculum with projects? How to implement more feedback into the lessons and change the lessons as needed in mid-project.
Team B	They wish they had more time to plan as well as implement. Projects feel rushed. They want to be sure that their products are good.
Team C	They would like to explain to others that it's not something additional to do, but an integration with what they are already doing.

The next phase is where the differences begin to emerge. The developing awareness of context phase is where the teachers will begin to question current practices and explore new opportunities. Team A is at the emergence stage of this context where they are just beginning to pose questions about previous and current practices, Team B is at a deeper level, knowing that there are better practices and are beginning to "buck the system" and create those new learning

Experiences. Team C has jumped into the raging waters of change with no remorse. See Table 16.

Table 16

Team Suggestions

	Their Suggestions
Team A	Tiered professional development. More time to plan. More PD on how to mesh curriculum with projects.
Team B	 It's OK to try. It's OK to make mistakes. "It's overwhelming at first, but once you try it you're hooked."
Team C	Be open minded and willing to take a risk.

As far as developing critical reflection, Team A is aware that it exists and willingly discusses it, Team B is strengthening their knowledge and Team C is beginning to answer the "why are we doing this?" question.

The coding did not develop tidy groups that revealed secrets about the characteristics of teachers but rather a progression of the stages the teachers are in at the present moment. This study strengthens Mezirow's (1991) transformational theory in that "learning is best understood as an activity resulting from social interaction." (loc. 224)

To answer the research question: What drives a teacher to shift from traditional teaching methods to a Project Based mindset? The researcher concludes that in this particular study that would be the trust and bond that each individual has formed with the particular team in which they have been assigned. Together as a team, with a strong

culture system in place, these teachers are following the steps of transformation that the district is adopting.

Along with the team, each teacher has an overwhelming sense of knowing that the students need something more. They understand that they have been asked to provide richer classroom experiences for their students and fully believe that the changes they are being asked to make will be in the best interest of their class. They themselves actually like the new way of teaching as they are learning the process. They like the changes they see in their students both academically and as people. They believe that the project experience will prove to provide better classroom learning experience for their students so they are willing to go outside of their comfort zones and try the new method or in the case of team C to expand on what they already believe in. "You have to *do* things a new way before you can *think* in a new way." (Deutschman, 2007). These teachers are changing what they do and in the process changing the way they think.

To answer he second part of the research question: What challenges could hinder a teacher from making the shift to a Project Based mindset? Should support from each other or lack of support from administrators or the district occur, it would uproot the teams. A break in the trust, cultural shifts, or the absence of communication according to Cranton (2016) would also create problems in the course of PBL implementation. In order for the teachers to continue through the process they must be allowed within their culture of teaching to find their own path that meshes with their group without means of coercion or being set straight.

CHAPTER V

DISCUSSION AND CONCLUSIONS

Introduction

This chapter serves to unravel the findings from Chapter 4 and to provide

guidance for future research along with action plans for teachers, school leaders, and

districts. PBL is a transformative pedagogical practice that is becoming widely used as a

catalyst for necessary skills for 21st Century careers (Boss, 2015). The interviews and

observations in this study served to explore the key questions:

What drives a teacher to shift from traditional teaching methods to a Project-

Based mindset?

What challenges could hinder a teacher from making the shift to a Project Based

mindset?

The following recommendations describe the overall dimensions of the findings

from the previous chapter along with specific guidelines and recommendations for future

practice and research.

Discussion of Key Findings

During the first round of In Vivo coding the researcher was searching for key

themes in

the data, due to the previous research on the process of PBL (Boss & Larmer, 2018). The

first emergent themes were culture, teacher mindset, and a teacher's role in a 21st century

classroom. In the theme of culture, all three teams shared the same belief that PBL

strategies had no bearing on the culture in the classroom, noting that the teachers' perception of the culture was one conducive to learning and easy to work in prior to the transition. On the topic of teacher mindset, teams B and C mentioned mindset as a strong influence in their choice to embrace PBL. With the role of the 21st Century teacher, there was a progression in the teams with their responses. Members of the team saw their role as individuals who promote teamwork in the classroom, Team B had a stronger focus on helping students learn, while Team C felt their role was to provide experiences that students could use to foster their own learning.

The Need for Risk. According to Wagner (2012) an innovator has several characteristics, three of which are a willingness to experiment, take calculated risks, and tolerate failure. Similarly, Resnick (2017) describes the need for innovators, disruptors: "Risk-Takers. Doers. Makers of things. These are the X students, the creative thinkers. They've been the driving force for economic, technological, political, and cultural change throughout history. Today, everyone needs to be a risk-taker, a doer, a maker of things – not necessarily to bend the arc of history, but to bend the arcs of their own lives" (p. 32). The need for these different types of students, ones who seek to take risks and challenge the status quo is evident across the research-based results from this study. Teachers who promote these learners are a crucial factor in the success of our schools (Ritchhart, 2015).

An environment of risk-taking should be established. Teacher A didn't realize that she could mesh the BPL with her existing curriculum and didn't feel comfortable doing that at first. She is willing to take the risk and try the method, but unsure about leaving her comfort zone where she is organized and has full control. She needs professional

development or a coach that will take her through this process. She needs an

administrator that sees she is willing to take the plunge and nudge her on in. Teacher K

needs the same thing in order to fully immerse in PBL practice. Perhaps they could be

assigned to work with Teacher L and Teacher S from School C for coaching.

However, change is difficult. Pink (2010) notes that unlearning "old ideas is

difficult, undoing old habits even harder" (p.145). Changing teacher behaviors and beliefs

is critical to this study having lasting impact. To change a pedagogy, one must possess a

change mindset and be willing to step out of his or her comfort zone to take their own

learning to a new level. In some cases, just learning about fixed and growth mindsets will

be enough to change the way one thinks, especially if they are in the midst of changing

something in their life (Dweck, 2016). Although Teachers A and K did not mention being

aware of growth mindset, they are in the midst of changing from one to the other. From

Teacher A saying that she was surprised that PBL was "very teacher driven," and she was

surprised that it wasn't a "hot mess" and she actually did not have to lose total control.

She managed to shift her thinking from, "a bunch of kids doing whatever projects came

to their mind about whatever topic they wanted to do" to "it doesn't have to be 10,000

different things going on." She also acknowledges that she, "Still felt like I gave the kids

a lot of voice and choice in what they wanted to do. And we could have even given them

more." Indeed, one of the most pervasive myths about project-based learning is that it is a

boundless curricular approach to discovery learning. It is this loose and tight nature of

project-based learning that makes it powerful and yet also provides the inherent

resistance to this very approach (Boss, 2015). She was taking past experiences and

reforming them to make meaning in her own terms. Therefore, she was beginning to see

that what she had previously deemed to be reality of PBL was not how she was perceiving it during the experience and was experiencing transformative learning herself. (Mezirow, 1991). At the same time, she was shifting from a fixed mindset that she previously had about how a classroom should look to a growth mindset that will allow her to take more of a risk on the next project (Dweck, 2016).

Teachers KR, S, and L have already started to shift the mindset to a growth position. Teacher KR recommended that teachers embrace PBL "because it does seem overwhelming at first. And then once you do it you're hooked. You get hooked right away because you see what the kids can do." Teacher S noted that the willingness to fail is a key component needed for shifting to this new mindset. Teacher L commented on having support while navigating the non-linear nature of adopting this new curricular approach: "Let's just do it, and we just kind of figure it out as we go and sometimes it doesn't work and sometimes it's not pretty, but you kinda stumble your way through, and eventually you get the hang of it, and it gets better and better." Indeed, the change process is unnerving and filled with errors, but the potential benefit to the students is well worth any discomfort experienced by the teacher (Cranton, 2016).

The Role of the Revolutionary. "A shift to PBL sometimes starts at the grass roots with a core group of teachers who become advance scouts for their colleagues" (Boss, 2015, pg. 6). The teacher who thinks outside of the box and refuses to bend to the status quo will be the teacher who makes things happen wherever she goes (Ritchhart, 2015). Teacher KM, SH, and L are the teachers on the combined overall team who volunteered to be the first to implement the changes needed. They will be the teachers

that the others can lean on when they have doubts about the roller coaster ride of PBL style teaching. These are the leaders that drive the shift and convince others to change practice. Teacher KM started her inquiry when a former teammate began her own PBL exploration. Her open-minded tendencies and natural curiosity gave her the courage to step out of her comfort zone and try the new method. She in turn shared her new knowledge with her new co-worker. She discussed that during the interview she knew that Teacher SH possessed the same sense of enthusiasm for PBL that she did and was excited to have her join the team.

Whereas, Teacher L didn't wait for an initiative to realize that change was necessary when she stated, "I just felt like there's gotta be a better way." Her thought process and overall ability, along with her leadership skills gave her the momentum to roll and to take her partner with her. She was able to present her ideas to her teaching partner, who also possesses a growth mindset and together they worked through initial fears and took the first step toward PBL implementation. Coaching sessions with Teacher L could give Teacher A and Teacher K more confidence to make some changes.

Teachers A and K are also the revolutionaries in their perspective school. They are stepping out and taking the risk before the other grade levels. "Involving those who are affected by the change in the actual change process is one of the best ways to build ownership, buy-in, and sustained commitment. Leadership is critical in providing both the vision and the support for the changes that are needed to make it happen" (Lezotte & Snyder, 2011 location: 770). In schools B and C the principals are supportive of the initiative to the point that they give teachers the tools they need to help the

implementation. Principal B arranged for the team to be in the interview process to choose their new teammate, which proved to be a positive move for the team structure. She also followed up with the new teammate to be sure she understood the vision of the district and the school and what her role would be on the team. She came in with support from the principal and had the opportunity to work with other teachers in the district to build a strong base for her teaching. Support and trust from administration will be a key detail in the success of teacher shift. Without this support, teachers will revert back to the ways they learned how to teach (Deutschman, 2007).

The district leadership recognizes that "change takes time and must be viewed as a process and not an event." (Lezotte & Snyder, 2011, location 770). The process of implementing PBL slowly is giving more time for much needed reflection on the part of the teachers. They are able to relate to prior knowledge and construct new learning as they work in a team to present ideas of their own and support ideas of others. This gives them the confidence they need to step out and be the revolution (Cranton, 2016). Therefore, the change process rests strongly on the shoulder of the trusted change agent or revolutionary at various interlocking levels: district leader and classroom teacher (Lenz, 2015).

The Need for Trust within Collaborative Teams. Collaborative teams work best when their members integrate ideas from outside sources with the theories and practices they have learned when preparing to be a teacher and mix all of that with their own curiosity for discovering new ideas. (Pentland, 2013). Thinking back to meeting the teachers, the interview, and the observations, the researcher notes that to be a teacher on

any of the three teams would be a positive experience. The energy they possess along with the drive and dedication to their students make their teams strong. The researcher was particularly impressed with the trust that Teacher S has for Teacher L. Similar trust also is present in the other two teams. Lencioni (2012) says that for a team to be truly cohesive they must trust each other. This is a point that all three teams have in common. They all possess that element of trust in each other and in their leadership team to provide the opportunities they need for success.

Team A has a bond and trust with each other that makes them cohesive. They are each other's support system and are willing to work together. They have the courage and they may not know it yet, but they have a growth mindset. They need to mine the courage from a supportive leader that is willing to help them set goals and push them. They need a safe environment so they will take risks. They will rise to the challenge. They understand the need for reflection, and once they determine how to get PBL to align with their curriculum goals they will be on their way to a strong PBL team.

Team B understands how important growth mindset is in preparing students for 21st Century learning. They draw energy from each other to embark upon new teaching concepts and explore new learning opportunities using the professional development provided by the district and adding their own twist. They are also not afraid to take chances and seek outside opportunities in addition to the training provided by the district. They feel safe in their environment and are willing to share their ideas with others. PBL for them is a natural extension of their teaching and is easily meshed into their curriculum.

Team C is cohesive enough that they finish one another's sentences. Their energy and thought processes are on the same plane so they can work through a project as though it was second nature. When this is combined with their trust and respect, they have for each other they are a very strong team and are focused on student learning. They set their goals and those of their students high and follow up with reflection and feedback for both.

Most often during the bounds of this study, the success of the team does not lie within the strength of the team's experiences or intelligence, but in the communication of the members. Teams with members who go outside of the team and bring ideas in have greater success rates than those who don't (Pentland, 2013). When school leaders focus on improvement and support learning communities that work together students learn better (Sheninger, 2014). In this study the teams who fully trust each other both in and out of the classroom were more comfortable with the PBL process, willing to take more risks and take them more often and in turn had a higher student success rate in terms of implementation.

The Structure of the Building. The idea of the structure of the building was not one the researcher had been anticipating when the research began. But it was noted that the one thing that seemed to make a difference in all the elements was the physical space that existed between the classrooms. The closer in proximity the teachers were the better their relationships and their work patterns. The researcher suggests that classroom changes that would accommodate a closer physical presence be considered for Team A.

This could possibly help with their need for reflection if they can discuss the project as it is happening.

The Time Challenge. Teachers need time carved into their day to collaborate, and with increasing demands on student success teachers must get creative with time (Eaker & Keating, 2012). The hours encompassed in a school day are beyond the control of teachers. But creativity within those hours of teaching can clear time for creating lessons that provide ample hands-on learning experiences for the students.

The teachers in teams B and C did not seem as pressed for time. This could possibly be due to the arrangement of the classrooms having common areas or no walls. Since remodeling the building would not be an option, scheduling projects in the common areas of the school could be a novel solution. Having both teachers in the same vicinity and possibly moving all students to one classroom could potentially help. Another possibility could be the addition of and outdoor classroom, or activities designated in an outdoor setting. Teachers can collaborate as the students work, without the risk of leaving them unattended. They can also "share" the students and add another collaboration partner for the student.

Possible District Support Strategies. Since time was a concern to all three teams, a recommendation from the researcher would be the addition of support groups for teachers who are willing to accept the challenge but are not familiar with the strategies or knowledgeable about the process. Teachers could be allotted a set number of hours throughout the year to collaborate, possibly providing subs during the afternoon once every quarter. These should be not as rigid and formal as a typical professional

development, but a place for teachers to build relationships with each other so they are better prepared to take more risks in their own classrooms. Teachers should be given the option to choose a location away from school if they would be more comfortable. They could perhaps collaborate on a PBL they plan as a collective group and reconnect afterwards to share reflections. Teacher A explains that "A good quality chunk of time to really revise and edit," would make a difference in the project.

The district already offers professional development during the summer months and these teachers had a positive reaction to this with teacher K stating that "I think the summer workshop they did for us really helped. The one thing I wish, is that we had more time." The researcher suggests that weaving open time into these workshops for more planning during the workshop could be helpful. A trial implementation run that will let the teachers rehearse the outline of the lesson without executing the entire lesson during the workshop could be a possible confidence booster for the actual lesson.

Implications for Future Practice

School Recommendations. The purpose of this study was to use the experiences of these teachers to create professional development for teachers who are experiencing transformational changes in their pedagogy either due to their district initiative or by their own choice. The researcher has determined that for professional development to be useful to teachers going through this process that the needs and requests of the teachers should be considered. Cranton (2016) states that as supporters of those who wish to change that "we need to do everything we can to ensure that people are able to negotiate any difficulties they may encounter," (p. 122).

The recurring trend from the interviews regarding effective professional development was time. This being in the form of time to plan and time to reflect. The district could consider setting aside some extra teacher work days that will focus on giving more planning time to the teachers. The PD could have a facilitator who supports the teacher during the session as they plan the PBL. One obvious trait that emerged in team B and team C was their personal need to grow and find their own sources for growth. According to (Dweck, 2016), "people in a growth mindset don't just *seek* challenge, they thrive on it." (p.20). They weren't waiting to be told what to do, but instead were seeking advice from others on their own. Dweck (2016) also states that "when you enter a mindset, you enter a new world." (p.15). This world will be new to navigate and will feel odd to some. These people need support in place to guide them through this new person they are becoming until they understand what it feels like to grow in this manner.

When making recommendations it is crucial to include leadership in the plan. The leader sets the tone for the school so making sure that all leaders are on board will give the beginning teachers confidence to take risks (Reeves, 2016). Teacher L stated that "if you don't have the support of the principal to try out something new, it's difficult to feel that comfort level truly jumping in." Principal A shared with me that he will be retiring at the end of this school year, so the first priority would be to find someone to fill his role that understands the process and offers support for the initiative.

District Recommendations. *Mindset.* One possibility for professional growth could be helping all teachers understand the role that teacher mindset seemed to play with this

group. Helping teachers identify and understand the process gives them something solid

to grasp. Knowing that feeling like they don't have time to do it all and knowing what it

feels like to let go of some of the things they feel are necessary can give them confidence

to move forward. Teacher A said in regards to trying to teach curriculum and adding a

project, "its ok to put your project in place of that, and I don't think that came across, but

I think that would have saved us on some of our projects." Often times these habits are

difficult to let go and teachers must be continually reassured that it's normal to feel that

way. Self-awareness according to Cranton (2016) is the first step toward learning new

habits that lead to a change of perspective.

The researcher would like to suggest that time be allowed for the teacher teams across

the district on the same grade level be allowed time to collaborate and plan without a set

agenda. Transformation is a process and takes time, relationships are an important part of

creating strong teams, so giving time to teachers without asking them to partake in formal

record keeping or a formal meeting agenda will give these teachers time for collaboration

and relationship building. Teachers need the freedom and time to face challenges and

correct missteps in the process (Lenz, 2015). Once relationships are established and trust

is built, a commitment to the group will form and formal agendas will emerge (Cranton,

2016).

- **Summary of Recommendations**
  - o Teacher recommendations: collaboration, trust, and risk taking. Building
    time into professional development that allows for relationships to form
    and trust to be built amongst teachers is important. Physical space that

allows teachers to be in each other's presence without risking the safety of the students.

- o School recommendations: top down support, clear mission/vision school-wide set a focus on why relationships are important, and goals must be established. Leadership must be on board and committed to establishing conducive work areas. If the building structure cannot be changed, the leader should look into establishing other common areas in the building to support collaboration.

- o District recommendations: top down support, ensuring a clear mission/vision is established for all. The district should explore a mentor program that allows for those who are on board to build relationships and trust with others who are open to the change and at their same place in the transformation journey. People work better when they feel that they are understood and there are others who think like they do (Cranton, 2016). They can work together to form their own leadership team and support each other as they go back into their schools to help their own teams.

Recommendations for Future Research

Based upon the interview results, this case study has potential to impact practice on a larger scale. Modeling from these teachers would be beneficial to helping more practitioners who are at these different stages of pedagogical change.

The recommendation from this researcher would be to continue this research with an open line of communication to these teachers for the next 3-5 years because true

change takes this long to be established (Pink, 2010). The researcher would also be interested in adding teachers who are at earlier stages of the process as well, to see if their growth patterns are similar to these. The researcher also has other questions that occurred from this research. Could teachers possibly enter the profession with strong mindsets that lead them to teach this way and how did they establish those mindsets prior to their teaching careers? Do some teachers build trusting relationships easier than others? Why do some teachers find change to be easier and others resist?

This study needs to be replicated in multiple districts from differing population samples to see what trends and patterns emerge in both complementary and contradictory fashions in order to ensure that PBL initiatives are fully realized and more practitioners experience it as a transformational pedagogy.

Summary of Recommendations

- Continue to foster team relationships and add a grade level planning/reflection day 2-4 times per year. Make this an off-campus day in a casual setting to allow teachers to be vulnerable to each other so much needed bonds of trust can form.

- Arrange time for teachers to visit each other in their classrooms not just to observe, but to be a part and participate in projects.

- Change the physical layout of the classrooms in School A. Arrange for the teachers to be in a closer proximity while teaching so collaboration will be easier at the point it is needed most.

- Consider having principals participate in reflections sessions.

- Let the teachers design their own professional development schedules as well as planning and reflection schedules.

Limitations & Delimitations

The limitations for this research include the essence of time. Since systematic change takes five to seven years (Reeves, 2016), the researcher would ideally follow a group of teachers for five to seven years to determine long term progress towards learning a new pedagogy. Due to lack of resources and the researcher being employed in a different state, the practicality of the research continuing over a long period of time is not feasible. However; the researcher would be open to check-in mini sessions to add notes to the reflexivity journal to either confirm or dispute current findings. In that capacity more quantitative research would be incorporated to track student learning as well as teacher transformation.

Another limitation from this study is that it focused only on the teachers who experienced the changes. A more thorough study should include administrators and the role they play in supporting teacher change. This study should also be expanded to include other factors such as the contractors hired to train the teachers who implement the changes.

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APPENDICES

Appendix A

Survey

This survey provides preliminary information that will guide any necessary changes to the interview questions.

Prior to implementing Project Based Learning on a scale of 1 to 4 with 1 being not satisfactory and 4 being very satisfactory how would you rate……

1. Your knowledge of Project Based Learning?

   1   2   3   4

2. Your application of Project Based Learning?

   1   2   3   4

3. Your passion for Project Based Learning?

   1   2   3   4

4. How active in class were your students prior to Project Based Learning?

   1   2   3   4

Appendix B

Interview Questions

2. Describe what your classroom looked like before implementing Project Based Learning.

   a. After?

3. How would students have described their experience before Project Based Learning?

   a. After?

4. What was your role in the classroom before Project Based Learning?

    b. How has that changed?

5. Describe the culture of your classroom before Project Based Learning implementation.

6. What types of procedures and rituals have you implemented to help with your transition?

7. What is your role in the classroom now that you are using Project Based Learning?

8. Describe what students are doing?

   a. What skills are they demonstrating?

   b. What knowledge?

9. How is this different than before Project Based Learning?

10. What impact are you seeing with student engagement?

   a. Student ownership of learning?

      b.   Student achievement?

      c.   Transfer of knowledge and skills?

11. What culture shifts are you seeing?

12. Describe the transformation that took place with your teaching practice during the implementation process of Project Based Learning.

13. What practices did you maintain?

14. What practices did you abandon?

15. Did you get the support necessary for a smooth transition from…

      a.   District leaders?

      b.   Administration?

      c.   Team members?

      d.   Parents?

16. What type of support did you get from others?

17. Was professional development adequate to make you feel comfortable during the transition?

18. What type of support could have made the transition better?

19. What has been a high point in PBL implementation for you?

20. Low point?

21. What cultural shifts do you notice in your school?

22. Who or what has served as an inspiration during your PBL journey?

23. What advice would you give a teacher who is just starting PBL implementation?

24. What prior teaching knowledge helped you the most as you began the implementation journey?

Appendix C

Checklist of Topics

Team

Mindset

Student centered

Innovative

Reflective

Sees the big picture

Feedback

Appendix D

IRB

INSTITUTIONAL REVIEW BOARD
Office of Research Compliance,
010A Sam Ingram Building,
2269 Middle Tennessee Blvd
Murfreesboro, TN 37129

MIDDLE TENNESSEE
STATE UNIVERSITY

Human Participant Research Proposal
IRBF004: EXEMPTION REQUEST FORM

"Exempt" Definition:
It is important that seekers of exemption status must remember that the phrase "exempt" does not reflect its literal meaning but those protocols that qualify for "exempt status" are often reviewed by the MTSU Office of Compliance and do not require an annual continuing review. However, the procedure and documents requirement for exempt protocols are mostly same in comparison to those protocols that require more IRB oversight.

What does this form contain?
This new exemption request form contains several newly added features to help researchers to clearly outline their proposal to collect data from living individuals. Although more information is requested from the applicants, the review process is expected to focus on the research and human intervention than on minor issues. This form also contains space for reviewer comments thereby allowing the review process to resemble an informative discussion. The applicant must provide the necessary details for questions in Sections 1-11 (Refer to the following list of contents). The Sections 12 & 13 are for Office Use only.

1. Project Information
2. Investigator Information
3. Exemption Determination
4. Exemption for Research with minors
5. Selection of Research Category
6. Research Methods & Instruments
7. Participant Selection & Recruitment
8. Informed Consent
9. CITI Training
10. Mandatory Documents & Attachments
11. Investigators' Declaration and Assurance
12. *Review (Office Use)*
13. *IRB Action (Office Use)*

Mandatory requirements
- Completed informed consent form - Click
- All of the investigators must complete all required research-specific CITI training modules - Click
- In addition, other documents may be required

Instructions for document submission.
- This application and support documents must be submitted by the faculty member who signs Section 11.2.
- Send all documents as separate files but in a single email to irb_submissions@mtsu.edu
- Submit all IRB forms in their original MS Word format – DO NOT CONVERT TO PDF

Review & Timeline
- Once the OC confirms that the application is complete, a complete review will be completed within 2 weeks
- This form will be sent back to the investigators with reviewers' comments and other instructions
- The review process is iterative and it depends on how swiftly the investigators are able to address all reviewers' concerns.
- Once a final approval has been issued, a "locked" version of this form will be sent to the investigators to be used as a guideline for their study.

Appendix E

Interview Sample

Team A

Teacher A

Teacher K

1. Describe what your classroom looked like before implementing Project Based Learning

K:

Before we started with project based learning, we used a lot of different techniques as far as getting them to work in groups, working on different assignments, they used computers, they worked one on one with teachers and small groups, strategy groups. So we try to get them up and moving throughout the day so they're not just sitting without direct instruction.

A:

We do a lot of teaching kids how to work with partners and what does that partnership look like, but then we also teach them how to work independently because we feel like that's kind of important to that whole process too. So K and I kind of run very similar classrooms, its very structured, but we sort of give some independence too.

     a. After?

Me: Would you say its changed since you started implementing project based learning?

Amy: I don't know if that's changed or if it's the way that kids can work in a group and come with an end product together has changed, because we've really only done one big project with them, so I don't know if we can truly say we can see a complete difference in how they work together.

K: I would agree with that just because we do so much group work anyways that we were trying to prepare them. I think bringing in the project based, it helped to prepare them ahead of time, how to work in groups. Because now you're working on one final project and you have many different opinions and ideas and we're still working on how to work through those when kids like their idea the best.

Appendix F

Sample Interview Coding

Teacher S

Teacher L

S

just transitions

subject

specific units

specific kits for science

specific things for each curricular

L

isolated lessons on a concept

topic

do lessons

topic curriculum

topics were never integrated,

science

social studies

never woven together before,

S

projects

never project based learning things