

**TEACHER PERCEPTIONS OF CHANGE: A QUALITATIVE STUDY OF A STUDENT-  
LED, PROJECT-BASED INSTRUCTION INITIATIVE**

A Dissertation by

Penny Hargrove

Master of Education, Wichita State University, 2005

Bachelor of Science, Kansas Newman College, 1994

Submitted to the Department of Counseling, Educational Leadership,  
Educational and School Psychology  
and the Faculty of the Graduate School of  
Wichita State University  
in partial fulfillment of  
the requirements for the degree of  
Doctor of Education

May 2014

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LED, PROJECT-BASED INSTRUCTION INITIATIVE**

The following faculty members have examined the final copy of this dissertation for form and content, and recommend that it be accepted in partial fulfillment of the requirement for the degree of Doctor of Education with a major in Educational Leadership.

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Jean Patterson, Committee Chair

---

Donald Gilstrap, Committee Member

---

Sharon Goodvin, Committee Member

---

Kimberly McDowell, Committee Member

---

Marlene Schommer-Aikins, Committee Member

Accepted for the College of Education

---

Shirley Lefever-Davis, Interim Dean

Accepted for the Graduate School

---

Abu Masud, Interim Dean

## **DEDICATION**

In memory of my mother, Brenda J. Blue and grandparents Kenneth M. and Juanita A. Kisner. To my father, Arthur D. Blue, thank you for always believing in me and allowing me to be your daughter. To my best friend and loving soul mate, Lowell (Grover) Hargrove and remarkable sons: Kenneth and Nathan Coln. Finally, to my grandchildren Renata, Kulton, Samuel, and Kavin, may you always have the courage to achieve your dreams!

## ACKNOWLEDGMENTS

Who can I possibly thank all of the individuals that had to patience and fortitude to support me as I completed this lifelong dream and four year endeavor. To my sister, Sherry, brother, Art and his wife Jamie, thank you for pushing me to set an example for you. To my second mom, Patsy Coln, thank you for your loving and encouraging support. To my friends Faye and Dennis Dahna, Pat and Brian Knott, Sue Jenkins, Donna Ferguson, Tamara Konrade for giving me the courage to believe in myself and for understanding when I choose writing over time with them. To the incredible ladies I am blessed to work with: Mary Clary, Janet Duncan, Lesli Grimm, Loretta Luna, Kay Schultz, Jill Sprick, and Brenda Thonen, for encouraged and supported me through the highs and lows of this research. To Dr. Jean Patterson, without her direction, support, and constructive criticism this endeavor would not have been possible. To my professors and mentors: Dr. Patrick Terry, Dr. Sharon Goodvin, Dr. Donald Gilstrap, Dr. Kim McDowell, Dr. Marlene Schommer-Aikins, Dr. Kristen Sherwood, Dr. Claude Weathersby, and Dr. Jo Bennett who never stopped believing in me and challenged me to learn and grow every step of the way. Thank you to my classmates and friends, who always had my back, a shoulder to cry on, and ears to listen non-judgmentally.

## ABSTRACT

This study investigated teachers' perceptions of change as it relates the implementing student-led, project-based instruction. Fullan's theory of change implementation was the theoretical framework used to examine what influenced the teachers' willingness to change. The four specific areas of investigation were teachers' perceptions about (a) the *need* for adding student-led, project-based learning, (b) the *clarity* of the teachers' knowledge about teaching using student-led, project-based learning, (c) the teachers' preparedness to undertake the *complexity of student-led, project-based instruction*, and (d) the quality and practicality of current implementation and expansion of practices. The data was collected from interviews with teachers in traditional and project-based classroom environments, informal classroom observations, and a collection of teacher and student related artifacts. The data revealed three themes that impacted their perspective: the different teachers groups perception as to the need for PBL, a clear understanding of what PBL is, the complexity of implementation and the quality and practicality of implementation within the classroom environment. From the findings, I suggest for successful implementation of PBL or other innovative pedagogical methodologies, policymakers need to develop assessments and assessment policies that move away from assessing only discreet content knowledge. Secondly, schools need well-trained experts in the pedagogical methodology being implemented, through pre-service teacher training and/or ongoing professional development. Third, the implementing school or organization should develop a collective, shared definition and vision for the implementation. Finally, teachers, student, and parents should be provided a choice of instructional methodologies as a pathway toward high school graduation.

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## **Chapter 1**

### **Research Problem**

With the pressures of high stakes testing, teachers often find it difficult to balance implementing instructional innovations with state mandated curriculum and assessment standards. In many cases, efforts to prepare students for the specific content identified in state standards and assessments guides have led teachers to abandon or avoid innovative teaching methods such as self-directed, inquiry-based instruction models, because of time constraints (Wallace & Kang, 2004) and other barriers (York-Barr & Duke, 2004). Self-directed, inquiry-based learning is a facilitative model of instruction where students lead an investigative and problem solving learning process that results in a defensible solution. Examples of self-directed, inquiry learning are commonly referred to as student-led, project-based and problem-based learning. The purpose of this study was to examine high school teachers' willingness or resistance to implement student-led, project-based learning.

The apparent trend under the No Child Left Behind law has been for teachers to opt for lower level cognitive skills instruction and to focus on test preparation. There are some teachers, however, who defied this logic and incorporated a constructivist pedagogical approach called student-led, project-based inquiry instruction their classrooms (Ward & Lee, 2004). This pedagogy has been shown to generate student interest and make learning content more relevant for students (Geier et al., 2008; Ravitz, 2008; Wurdinger, Haar, Hugg, & Bezon, 2007). If this type of pedagogy is engaging and makes content relevant, then why are more teachers not embracing it?

A variety of conditions have been found that influence teachers willingness to embrace or resist changing their instructional practices (Hargreaves & Goodson, 2006; Fullan, 2007). Research has reported some of these conditions include: teachers' beliefs, attitudes, or pedagogical ideologies; their content knowledge; their pedagogical knowledge of the proposed instructional practice, strategy, method, or approach; and the availability of instructional resources, materials, or technology that align with the change (Freilich Hjelle, 2001; Gatt, 2009; Guskey, 2002; Hargreaves, 2005; Reeves, 2009). In a study to find out why teachers with high access to technology had low technology usage, Cuban, Kirkpatrick, and Peck (2001) discovered "initiating change is difficult because established practices are taken for granted and are seldom questioned by policy makers, practitioners, researches, and taxpayers" (p. 827). All of these conditions can be factors that determine the success or failure of new pedagogical practice implementation, such as student-led, project-based learning methodologies.

In addition, sometimes teachers just do not perceive value in the change, and/or teachers are not confident they will be able to manage the change successfully (Hargreaves & Fullan, 2012). Zimmerman (2006) explained "many teachers, because of experiences and frames of reference, have legitimate reasons for resisting change" (p. 247). The focus of this study was to understand the perspectives of teachers willing to change their pedagogical methodology to include student-led, project-based learning, and the perspectives of teachers who choose not to move away from traditional teacher-led instruction.

### **Purpose of the Study**

The purpose of this study was to understand what factors influenced a teacher's willingness to implement student-led, project-based learning instruction methods. Even though

research has demonstrated that student-led, project-based learning supports student achievement and the development of self-directedness, the limited understanding of how to transform traditional teaching models into student-led, project-based learning models hinders many from exploring this non-traditional instructional practice (Carr & Jitendra, 2000; Geier et al., 2008; Grant, 2009; Ravitz, Hixson, English, & Mergendoller, 2012; Wurdinger et al., 2007). While some teachers have embraced the use of student-led, project-based instruction, other teachers continue to rely on a traditional teacher-led, knowledge-based instructional methodology. In order to understand this phenomenon, I drew upon Fullan's theory of educational change.

### **Theoretical Framework**

The importance of a theoretical framework to a quality study was clearly stated by Fullan (2010) who wrote, "good theories are critical because they give you a handle on the underlying reason (really the underlining thinking) behind actions and their consequences" ( p. 15). At the heart of any research study is the desire to find an answer or to provide useful results. Fullan continued, "Without a good theory, all you can do is acquire techniques--- surface manifestations of the real McCoy" (p.16). Research grounded in credible theories provides the lens for which the reader can understand the philosophical perspective of the individual or groups involved in the study. For this research, Fullan's theoretical framework of educational change served as the lens for examining teachers' willingness to change their pedagogy from teacher-led to student-led, project-based instruction.

### **Theory of Educational Change**

According to Hargreaves and Fullan (2012), when it comes to educational change "there is no simple right answer" (p. 149) or formula. Often the change process begins with a few

teachers exploring new ideas or pedagogy that spreads to others (Hargreaves & Fullan, 2012). Fullan (2001, 2007b) explained there are two forces at work during the change process. One is top-down standards and accountability (national and state mandates), and the other is school professional learning communities (administrators and teachers priorities). Neither force alone can sustain change (Fullan, 2001, 2007b). Fullan summarized that a top-down accountability model often becomes a name and shame process that leads to resistance, resentment and—in some situations—passive retaliation. Similarly, when left alone, professional learning communities often develop unrealistic nearsightedness (Fullan, 2007b). When the two forces collaborate, sustainable, wide reaching systems change is more likely to happen. That is, a balance of top-down, bottom-up coordination is critical to implement successful instructional change.

Two main themes were noted in Fullan's (2001, 2007b) research on the implementation of change. The first was that innovation is viewed as a process instead of an event. The second is that all participants affected by the change have to develop their own meaning of it. Fullan (2001, 2007b) surmised the process of change does not happen quickly, it is actually a lengthy process. Fullan then identified nine critical factors to describe the implementation process of educational change. These interactive factors were organized into three main categories: (a) characteristics of change, (b) local characteristics, and (c) external factors. The characteristics of change are influenced by the teacher's perception of the need for change; clarity about what should change; complexity of what will be different once the change is implemented, and how extensive the change will become; and quality of the resources and professional training and practicality of the program to be implemented (Fullan, 2001, 2007b). The second category, local

characteristics, includes “social conditions of change; the organization or setting in which people work; and the planned and unplanned events and activities that influence whether or not given change attempts will be productive” (Fullan, 2007b, p. 93). Fullan divided local characteristics into four distinctive factions: the school district, school board and community, the principal, and the teacher. The perceptions and supports from these stakeholder groups ultimately can sway either successful or non-successful change efforts. The final interactive factor of implementation is the external factors of government agencies and legislation, both local and national.

Characteristics of external factors include policies, program initiatives, mandates and curriculum requirements, and funding issues the local stakeholders have little influence over. Fullan emphasized these factors as “a classic case of two entirely different worlds---the policymakers on the one hand and the local practitioner on the other hand” (p. 99). Different groups with multiple perspectives, influences, and objectives influence each side. All of the factors are interactive and significantly influence the change process.

This case study focused on teacher implementation of student-led, project-based instruction. Therefore, to make the study manageable, I narrowed the scope of this research study to the four characteristics that make up Fullan’s local factors and their influence on the interactive factors that affect implementation. Further studies could expand on the research generated from this study to explore the interactive factors. This research focused on the following characteristics of change: need, clarity, complexity, and quality and practicality.

### **Need**

Fullan (2007b) proposed that before a change can begin there must be a “perceived or felt need” (p. 88) among teachers, noting moral purpose, or the feeling that an initiative or change

will make a positive difference in the lives of those affected, alone is not enough for teachers to initiate change. Felt need is a belief that a problem or issue needs to be solved and the individuals involved can address the prescribed solution. Each teacher perceives the need and moral purpose of the teacher group differently. Fullan surmised that a foundation to successful implementation efforts has been a collaborative felt need or an approach where teachers collectively establish the goals and objectives of change.

In this study, I examined teachers' understanding of the vision for implementation, and whether there was a *felt need* to change their pedagogical practices to include student-led, project-based learning. Without this, discomfort could replace confidence until the teachers involved with the change can make sense of the process.

### **Clarity**

Teachers affected by the initiative should have a clear vision of what they are expected to do differently. In addition, there should be a realistic timeline and clearly articulated goals before and during the implementation process. However, this is often not the case, for, as Fullan (2007b) cautioned, “the more complex the reform the greater the problem of clarity” (p. 89). Fullan also warned about two forms of clarity that result in limited, non-sustainable, or no change. These forms of clarity are *false clarity* (p. 89) and *painful unclarity*. Fullan explained *false clarity* occurs when change is interpreted in an oversimplified way, that is, the proposed change has more to it than people perceive or realize. For example, teachers may evaluate past practice and alter their practices or pedagogies slightly to conform to what they perceive to be the vision of pedagogical change. This effort, in fact, does not address the core vision or objective, but teachers falsely believe they are doing what was asked of them. Teachers think



they have engaged in substantive change when they have not. This kind of superficial reform can undermine the change process and “actually make matters worse” (Fullan, 2007b, p. 90).

When teachers experience initiatives that are not clearly defined or do not have a clear direction, they are not adequately prepared and/or they have little to no support, they experience what Fullan (2007b) called *painful unclarity*. *Painful unclarity* can cause frustration, confusion, and innovation abandonment. Porter (1999) called this phenomenon the “broad and vague” approach (p. 67) and Fullan referred to it as the “too-loose problem” (p. 29). Both Porter and Fullan emphasized that oversimplifying the vision and direction of the change can be physically and emotionally taxing on those involved in its implementation. The goals of the implementation need to be narrowed and understood by all stakeholders involved in the implementation. To limit *painful unclarity* and *false clarity* during the implementation process, Fullan (2007b) suggested “to work on clarity all through the implementation process” (p. 90). For this study, I examined teachers’ perceptions of student-led, project-based pedagogy and their understanding of what its implementation should look like.

### **Complexity**

Complexity is defined as the perceived level of difficulty and teachers’ individual responsibility in making change happen (Fullan, 2007b). The complexity of change is not exclusive to the teaching staff; it affects both the teacher and the organization respectively (Senge, 1990). Each stakeholder group (leadership, teachers, support staff, and students) has a role in the implementation of school reform. For example, the role of leadership may be to provide the time and resources that allow for the changes, whereas the role of the teacher is to manage the complex details of implementation (Senge, 1990). Teachers evaluate the details of

the reform and determine how the change will be introduced, implemented, and sustained. They determine what the change will look like within their content area and instructional practices.

Fullan (2007b) elaborated on complexity stating:

The main idea is that any change can be examined with regard to difficulty, skill required, and extent of alterations in beliefs, teaching strategies, and use of materials. Many . . . changes require a sophisticated array of activities, structures, diagnoses, teaching strategies, and philosophical understanding if effective implementation is to be achieved. (pp. 90-91)

The more complex the implementation is, the more the potential exists for problems as well as opportunities for accomplishments. Fullan (2007b) warned that an implementation consisting of a high degree of complexity can also take the greatest toll on the organization if it fails. Fullan defined a high degree of complexity as a complete overhaul of what is perceived as the status quo. In other words, the degree of change is determined by how the change alters what the teachers perceive to be normal operations of the learning environment, curriculum taught, and/or instructional pedagogy.

Disequilibrium is a byproduct of an unclear change process and fragmented ideas regarding the complexity of the change components. Frequently, disequilibrium occurs with project-based learning because teachers are likely challenged by the complexity of providing the time necessary for students to complete projects, developing effective classroom management procedures, letting go of the flow of information, scaffolding learning activities, using technology to stimulate cognitive learning, and determining how the projects will be assessed (Marx, Blumenfeld, Krajcik, & Soloway, 1997). For this study, the complexity of implementing

student-led, project-based learning was examined through understanding the teachers' perspective on their willingness to change the structure of their classroom, to redefine their instruction, to develop different assessment procedures, or to redefine the roles of the teacher and/or students.

### **Quality/Practicality**

The final characteristic addressed in this framework is quality/practicality. The quality of a specific change initiative refers to the degree of focused attention put forth toward that particular change. This focused attention includes the reasonableness of the timeline and the amount of resources: personnel, materials, and time allocated to the initiative. Levin and Fullan (2008) warned that trying to implement multiple initiatives simultaneously can compromise the quality of the changes being introduced. In other words, the level of the focus and attention can determine the quality of the implementation, as teachers will be less successful if asked to implement too many initiatives at once.

Perceptual change needs to be nurtured; it does not just happen (Wasserstein-Warnet & Klein, 2010). If the process of change is not nurtured, teachers may not perceive the new instructional practice as a quality alternative to what they were already doing, but instead as an impractical initiative. Teachers who are able to see how the implementation of an initiative fits into their current instructional practices or how the initiative might enhance their pedagogical practices are more likely to implement the change. Ponticell (2003) explained, "Teachers have been shown to be conservative as a group. They tend to rely on traditional teaching methods and 'reflexively resist' curricular and instructional innovation" (p. 15). This is especially true if the teacher sees the change as discrete or detached from the coherent whole of their normal

instructional pedagogy. Changes perceived as complementing or facilitating what the teachers already do are often more practical. Gatt (2009) explained the importance of teachers' openness and acceptance, noting "efforts intended to bring about reform in education are futile unless they facilitate teacher change" (p. 164). Therefore a key to successful implementation of change appears to be whether or not the change is perceived as practical or feasible.

Practicality is determined by teachers' abilities and levels of knowledge to implement change. Fullan (2007b) described that practical and easy are not synonymous terms. Practicality is also dependent on the current school structures and conditions present to support the change. For example, during a study conducted in 78 elementary schools within eight Tennessee school districts, both rural and urban, Rosenholtz (1989) found that teachers who developed a consensus about the goals and operations of the building's classrooms were more likely to introduce new pedagogy and other efforts focused on increased student learning. The premise of Rosenholtz's ethnographic comparison offers insight about the quality of professional culture and its effect on teaching and student learning. Rosenholtz surmised that teachers working in collaborative, problem solving schools were better equipped to address the hesitations and uncertainties of classroom teaching change. These teachers displayed higher expectations for students academically, were not afraid to take risks by trying new instructional strategies, and demonstrated confidence in their knowledge of the content. Comparatively, teachers in ineffective schools were stagnant in their professional growth, afraid to take risks, and demonstrated a low degree of aspiration for change. Hargreaves and Fullan (2012) concluded collegiality was influential in determining teachers willingness to change their current practices.

Teachers working together to develop clear implementation structures and processes can create practical opportunities to explore new pedagogical practices.

Another area of practicality is whether or not adequate resources are available to support implementation of the initiative. Fullan (2007b) suggested implementation of changes can become impractical when they are of inadequate quality, or when materials and other resources are lacking. This is common when the change is politically motivated or mandated. Fullan (2007a) stressed that quality and practical change cannot be accomplished without challenges. Complex change cannot be accomplished by following others directions or watching as they demonstrate a new innovation. Complex change is a personal process that leads to “a deeper meaning” of the change through experiences “born over time” (Fullan, 2001, p. 80). For this study, both quality and practicality were analyzed from teachers’ perceptions of whether they had adequate resources, supports, and time for implementing student-led, project-based learning opportunities into their pedagogical practices.

### **Research Questions**

In this study, teachers’ perceptions were brought into the discussion of student-led, project-based learning and its integration into the high school setting. This research was conducted using Fullan’s (2001, 2007c) change theory as a framework to examine the teachers’ perceptions in a small Midwestern high school. Fullan’s four factors of change (*Need, Clarity, Complexity, and Quality and Practicality*) were specifically drawn in as the focus for the research questions.

- How do teachers in a small Midwestern high school describe the *need* for student-led, project-based learning instructional pedagogy?

- How do teachers in a small Midwestern high school describe student-led, project-based learning instructional pedagogy? (*clarity*)
- How do teachers in a small Midwestern high school perceive their preparedness for implementing student-led, project-based learning into their classroom? (*complexity*)
- What resources and supports do the teachers in a small Midwestern high school need in order to change their instructional pedagogy to incorporate *quality and practical* student-led, project-based learning opportunities for students?

## Chapter 2

### Review of Research and Related Literature

The purpose of this chapter is to expand readers' knowledge and explore literature regarding change and teachers' willingness or resistance to instructional pedagogical change. This chapter examines existing research on what has been found to influence teachers' perception of change and the implementation process. This literature review will also identify what researchers have defined as traditional teacher-led instructional methodology and student-led, project-based methodology as these two instructional methodologies are the foundation for this study. To begin, the history and available research regarding each of these instructional pedagogical methodologies is presented.

#### Traditional Instructional Methodology

Traditional instructional methods—or lecture-based, direct instruction—is defined by Ward and Lee (2004) as learning that “involves teacher presentation of content, usually through a lecture format, followed by activities to reinforce student learning” (p. 73), which is assessed through independent assignments and exams. Most commonly, schools utilize this form of direct instruction to teach concepts to children who are in the concrete-sequential stages of development, such as students in elementary school or those placed in special education programs. Doyle (1983) explained that within a direct instruction model, teachers systematically structure lessons and assignments and provide specific instruction on how to complete the task. These tasks generally have one right answer and are designed to lead to concept mastery. Although direct instruction is an effective method for teaching new concepts to novices, it hinders the process of analysis, evaluation, and creation important to the relevance and

construction of knowledge as the student progresses academically and develops critical thinking skills as defined in Bloom's Taxonomy (Krathwohl, 2002).

Traditional instruction is ubiquitous in schools across the country even as scholars and practitioners have continued to question whether it is the most effective method of instruction (e.g. Bagby & Sulak, 2009; Barron & Darling-Hammond, 2008; Bell, 2010; Darling-Hammond, Aness, & Ort, 2002; de Kock, Slegers, & Voeten, 2004; Mayer, 2002; Wehmeyer, Agran, & Hughes, 2000). An early example of disillusionment with the traditional model was posed by Dewey (1938) who speculated that students are rendered callous to new ideas. Dewey proposed that students tended to lose their curious attitude for learning through experiences with traditional education as compared to progressive methodology of learning by experience. For almost 100 years, philosophers and educational researchers have argued the need for an alternative that differs from traditional teacher-led instructional models, and proposed child-centered instructional pedagogy. Project-based learning is one model that emerged from this instructional philosophy.

### **History of Alternative Instructional Model: Project-based Learning**

Project-based learning is deeply rooted in the history of educational reforms and methodology as an alternative or addition to the traditional instructional model. For example, Kilpatrick (1918) is believed to have introduced the instructional pedagogy with his article published in *Teachers College Record* titled "The Project Method." Kilpatrick surmised that project-based learning aided in the development of literacy skills by increasing students' background knowledge and therefore, building students' proficiency of the content. When students completed projects with limited teacher intervention the result was increased cognitive



development as compared to teacher-directed rote memory activities. Kilpatrick believed that projects should be interdisciplinary. By blending the different content areas, students would be exposed to a richer array of ideas and real life concepts.

As a prominent member of the progressive movement during the early twentieth century, Dewey (1938) also advocated for incorporating methodologies which included project-based learning instruction. Dewey followed the progressive belief that the best learning environment for student academic growth was one where the students' interests were explored through practical inquiry and student-centered activities were designed with the students' learning styles in mind. Dewey further theorized that learning should prepare students for life and should be ongoing throughout adulthood.

Vygotsky was a contemporary of Dewey, although his works were not translated from Russian to English until the 1970s. Most notably, Vygotsky was known for introducing the theoretical epistemology and sociocultural approach of learning and child development. Theorizing that learning accelerated a child's mental development and the construction of knowledge, Vygotsky believed that the journey of learning should be a joint venture between the learner and teacher. Vygotsky (1978) surmised that this adventure is most advantageous when the learner is within his or her *zone of proximal development*. Described as a mediating relationship, the zone of proximal development includes a less capable student learning with the assistance of a more capable person, such as a teacher. Unlike traditional instruction, mediation provides instructional supports for the student to think creatively and reach his or her own conclusions. Vygotsky believed students should engage in a problem solving learning experience where their cognitive abilities are challenged through social interaction with teachers

and peers (Stetsenko & Arieviditch, 2002). Vygotsky advocated for students to be provided with projects that require joint problem solving and opportunities to develop plausible solutions (Johnson, Musial, Hall, Gollnick, & Dupuis, 2008).

Finally, another notable influence on the theory of project-based learning was Brazilian educator and critical pedagogy theorist Freire (2000). Freire advocated that traditional instruction suppressed students from the opportunity to liberate their own thoughts regarding their social conditions. Offended by the banking metaphor of teaching, Freire opposed the philosophy that children are empty vessels and the teacher's job was to fill the students with knowledge. Freire believed children were more than receivers of knowledge. Instead, children should be provided opportunities to create their own thoughts about their world or environment. If the child's learning is restricted by what is already understood, through teacher directed instruction, their minds are oppressed and their ability to think creatively is stifled. If children were educated in an environment that stimulated creative thinking and inquiry opportunities, they could restructure their social conditions. Freire emphasized, "Knowledge emerges only through invention and re-invention, through the restless, impatient, continuing, hopeful inquiry human beings pursue" (p. 53). Investigating real world problems and developing creative solutions were key concepts to Freire's ideology.

As has become evident from the works of Kirkpatrick, Dewey, Vygotsky, Freire and others, project-based learning is not a new pedagogical methodology (Barron et al., 1998; Ferretti & Okolo, 1996; Marx et al., 1997; Smith & Dodds, 1997). Although there are a variety of models, fundamentally project-based learning is centered on student inquiry mediated by a learning facilitator. The collaborative learning approach incorporates real world or realistic

themes where students work to construct rational theories for and/or possible solutions to address the theme.

### **Student-led, Project-Based Learning**

A number of more recent empirical studies have examined current models of student-led, project-based instructional models (e.g. Bell, 2010; Chu, 2009; Grant, 2009; Harada, Kirio, & Yamamoto, 2008; Ravitz, 2008; Wurdinger et al., 2007). For this study, I focused on an instructional model of project-based, problem solving inquiry referred to as student-led, project-based instruction. The most published and commonly accepted definition for this pedagogical model is “an in-depth investigation of a real-world topic that requires analytical thinking skills and resourcefulness in order to produce a creative product or solution” (Mokhtar, Majid, & Foo, 2008, p. 96). Bell (2010) suggested that project-based learning created a learning environment where teachers employ multiple instructional strategies aimed at helping their students research and create original projects. The objective of the project is to reflect on the students’ knowledge and their ability to apply this knowledge.

Within the last decade, educational reformers have frequently sought to change traditional learning environments to reflect realistic real world situations or challenges (Mergendoller, Maxwell, & Bellisimo, 2000). Students are better able to absorb and apply knowledge to complex tasks if given the chance to explore content concepts in a more authentic learning environment (Barron & Darling-Hammond, 2008; Darling-Hammond, 2010; Geier et al., 2008; Konings, Brand-Gruwel, & van Merriënboer, 2011; Lambros, 2004; Welner, 2010). By altering teacher pedagogy to include project-based learning opportunities, teachers can aid students in developing self-directed learning skills and stimulating creative and innovative

thinking (National Advisory Committee on Creative and Cultural Education, 1998). Robinson (1998) warned that the current structure and function of traditional education may stunt students' divergent, innovative, and creative thinking skills, all of which he believed to be foundational elements of learning.

### **Characteristics of Project-based Learning**

At the center of student-led, project-based learning is inquiry. Generally, it is comprised of authentic learning where students direct their own investigative inquiry to solve real-life problems. The teacher becomes a facilitator in the process by ensuring content standards are incorporated into the curriculum. Authentic learning means students develop a solution-focused project that exhibits or provides a reasonable and applicable solution to a genuine problem. For example, in a 2000 study of high school students, researchers found that authentic real world projects inspired higher student engagement and a deeper understanding of the learning concepts (Nicaise, Gibney, & Crane, 2000). Bas (2011) provided an additional example. In a study of 9th grade Turkish students that compared academic achievement and students' attitudes toward English Language Arts, Bas found increased levels in both areas as compared to students using traditional textbook lessons. Bas explained "students have a chance to practice their understanding on the learning material . . . not memorize the concepts" (p.12). Authentic learning challenges students to apply what they know and to research and find answers to questions they do not have answers for.

The premise of student-led, project-based learning is that students will apply content and concept knowledge while utilizing higher order thinking skills and inquiry to produce a creative, well-informed, and useful product (Edelson, Gordin, & Pea, 1999). For example, during their

study, Carr and Jitendra (2000) validated this premise. Carr and Jitendra studied 10<sup>th</sup> grade special education students engaged in student-led, project-based instruction exploring social issues, such as homelessness. They found student-led, project-based learning allowed students to infuse new knowledge with prior knowledge as they investigated and developed resolutions, questions, and reasonable answers. Carr and Jitendra concluded the student-led, project-based instructional approach “created an environment that supported diversified interests” (p. 43) and encouraged individual goal attainment.

The project-based process is a content delivery method that elicits student interest for the purpose of conducting an in-depth investigation of a topic. For instance, Nicaise, Gibney, and Crane (2000) described project-based learning as an educational setting where both the teacher and the students collaboratively learned together. The teachers’ role was to guide their students in narrowing their project goals and assist in the research. Pedersen and Liu (2003) claimed students find project-based learning more meaningful because they set and pursue their own goals.

Ideally, project-based learning takes place within small groups of students where their varied knowledge, skills, and interests can be merged to develop an authentic and relevant solution to a problem. A possible benefit of project-based learning is it taps into students’ interests by allowing them to create projects that result in meaningful learning experiences (Wurdinger et al., 2007). Wolk (2010) explained that once students gain experience with developing projects, they tend to expand their thinking and the thinking of their peers as they probe for information and their projects become more complex.

Project-based learning provides a hands-on approach to learning. Ferretti and Okolo (1996) described the primary goal of project-based learning as offering an “intrinsically interesting and pedagogically promising alternative to an exclusive reliance on textbooks” (p. 452). For example, many of the projects incorporated hands-on learning instructional strategies as compared to passive learning instruction. Carr and Jitendra (2000), for example, found that students’ awareness and prior knowledge of social issues were challenged as they engaged in projects about topics such as homelessness, poverty, and welfare. They had to apply their critical thinking and problem-solving skills to navigating the Internet and seeking rational, defensible solutions to these social issues. The hands-on experience of working with individuals and groups involved significantly increased the students’ understanding and awareness of the social issues. In addition to integrating hands-on learning during real time experiences, project-based learning delivers content in a relevant, real world setting and/or situation that integrates multiple content areas, encourages creative thinking, requires critical thinking inquiry, and results in a culminating product presentation.

### **Benefits of Student-led, Project-based Learning**

Multiple education researchers over the last half-century have documented evidence that project-based learning has many benefits (Carr & Jitendra, 2000; Dunlap, 2005; Harada et al., 2008; Newell, 2003; Smith & Dodds, 1997; Wurdinger & Rudolph, 2009). Students may benefit from opportunities to develop self-reflecting skills, take risks, and make mistakes. For example, Wurdinger and Rudolph (2009) conducted a study of a high school that was exploring the effectiveness of the project-based approach for teaching life skills. They concluded that project-based learning not only prepared students with strong life skills such as problem solving and

self-directedness, it also enhanced the students' self-efficacy. The conflict resolution and problem solving elements of project-based learning can be important lifelong skills that support the development of self-directedness. Wurdinger, Haar, Hugg, and Bezon (2007) explained when students are engaged in learning, both emotionally and physically, they absorb knowledge and can apply it. Consequently, project-based learning motivates students by creating a learning opportunity where they analyze and solve a problem.

Evidence of learning produced during a project-based activity can be multifaceted. Projects can be “catalysts that initiate the planning, testing, and reflecting phases, and as students design and build their projects they must solve problems that arise” (Wurdinger et al., 2007, p. 154). The projects provide opportunities for students to apply skills and knowledge beyond isolated content standards or unit objectives. For example, after conducting a five-week case study of teachers using project-based instruction and technology within an astronomy unit, Petrosino (2004) concluded the interconnectivity between student knowledge, quality assessments, and community involvement was significant. Drawing from the works of Bransford, Brown, and Cocking (2000) regarding their synthesis of research on learning, Petrosino argued that students who were engaged in project-based instruction were provided with more authentic opportunities to learn. These opportunities were hands-on and the relevancy reached far beyond the pages of a textbook and the walls of the classroom. As the student researches, analyzes, and problem-solves, mistakes are made and a multitude of possible solutions are attempted. Some solutions may succeed while others fail.

Often products developed during project-based learning are selected because they directly relate to or address a community condition, interest or service; thus, collaboration can occur and

the community can be called upon to contribute to student learning both inside and outside of the classroom between community members and students. Therefore, project-based learning can also provide a service for patrons within the school district and become a collaborative avenue for community involvement. When developing a project that benefits the students and community, an appropriate topic may be one which aligns with the school's cultural context, has available community resources, has the opportunity to be directly observed, and facilitates parent participation (Langhout, Rappaport, & Simmons, 2002). For example, a project based on how civic rules and regulations are developed and implemented included assistance from a local attorney. The attorney volunteered his time to mentor the student as he/she researched the chosen topic. During the research evaluation the attorney, teachers, and a parent representative worked together to determine whether the student mastered the project objectives.

Another important possible benefit of project-based learning is the opportunity for students to work cooperatively with peers. This collaboration has been found to generate deeper thinking and detailed project planning and culminating products (Ferretti & Okolo, 1996). All of the above mentioned components are skills and talents that have been suggested as necessary for students leaving high school (e.g. Carr & Jitendra, 2000; Ferretti & Okolo, 1996; Langhout et al., 2002; Petrosino, 2004; Wurdinger et al., 2007; Wurdinger & Rudolph, 2009).

### **Teacher's Role in Student-led, Project-based Instruction**

Teachers play a pivotal role in the facilitation of project-based learning. Educational research has found that students benefit from considerable guidance and interventions throughout the student-led, project-based learning process to enable deeper learning and ensure mastery of content standards (e.g. Grant, 2009; Petrosino, 2004). Without guidance, students often



approach the process as simply collecting and presenting an assignment that can lead to copying and pasting with little real learning (Bell, 2010; Petrosino, 2004; Wurdinger & Rudolph, 2009). The teacher's role in project-based learning is to collaborate with students on a united journey. The teacher facilitates or coaches the student's outcomes and insures the content standards are being addressed as opposed to dispensing content knowledge. The educator is charged with ensuring that students are information-literate before engaging them in project-based assignments (Mokhtar et al., 2008). This is especially important with the rate at which factual information is changing and growing. As a facilitator, teachers support their students in problem-solving, inquiry learning, and stimulating the development of student self-directed learning. Galloway and Lasley II (2010) determined the partnership between students and teachers can also position the student and teacher to learn from each other and from other students. As the teacher interacts with each student he or she can pair or group students with similar projects together to support one another. Students, therefore, can be exposed to multiple ideas and perspectives beyond those of their teacher. With the teacher facilitating the process, students are more likely to concentrate on constructing and applying new knowledge in each stage of project-based inquiry, thereby demonstrating personal understanding of the content, and the application of transferable skills (Barron et al., 1998). Therefore, it appears the relationship and supports between the teacher and student can determine the level of learning reached by the student. For instance, studies have documented that when project-based strategies are initially implemented, teachers tussle with the impulse to enable students who appear to be struggling. Teachers may mistake normal aspects of the cognitive learning process as a lack of motivation or

skills on the part of the child. It is important to the learning process for teachers to consciously restrain the impulse to enable their students.

Student-led, project-based learning can be time intensive, especially in the beginning (Grant, 2009). Echoing this drawback, Chu (2009) reported concerns with the extra time and efforts required of teachers using student-led, project-based learning in his mixed methods study of the effects of project-based learning on teachers and a librarian. Chu concluded the benefits of the teachers' time and effort stretched beyond the dimensions of learning. Students not only learned content, but the projects aided in their independence and self-confidence. Therefore the benefits of preplanning outweighed the time and effort inherent to student-led, project-based instruction.

The teacher also acts as a model for self-direction, a coach to motivate independent problem solving, and a cheerleader to keep the student excited and hopeful. Langhout, Rappaport, and Simmons (2002) explained one component of project-based instruction is its potential to provide opportunities to build relationships between the students, teachers, and community as they collaborate to build relevant project themes. Learning that continues beyond the confines of the classroom supports lifelong learning and self-direction.

Students' emotions also may play an important part in the constructive process of inquiry that indicates a zone of intervention for teachers. Thus, teachers benefit from having an understanding of the psycho-sociological process of gaining self-efficacy in order to help their students develop a stronger sense of academic self-confidence. When students face a barrier during the learning process, the teacher can facilitate the student's journey through that challenge (Sharma, Petrosa, & Heaney, 1999). Much like a skilled guide leads travelers through uncharted

territory, teachers lead their students' cognitive behavior and "self-regulatory learning strategies such as self-monitoring, self-evaluation, goal setting and planning, self-consequences, and environmental restructuring" (B. J. Zimmerman, 2002). The teacher's role is to provide the student with emotional support needed as they develop the habits and skills of self-directedness.

### **Comparing Student Outcomes of Project-based Learning with Traditional Instruction**

Students provided with project-based learning opportunities have performed better on standardized assessment than students whose learning was influenced by traditional teacher-led rote instruction (Bas, 2011; Chu, 2009; Ferretti & Okolo, 1996; Geier et al., 2008; National Advisory Committee on Creative and Cultural Education, 1998; Ravitz, 2008; Wurdinger et al., 2007). Teachers, however, tended to believe the opposite – that traditional, direct instruction is needed to obtain high scores on standardized assessments. Geier et al. (2008) conducted a three-year study encompassing over 5,000 seventh and eighth grade middle school science students and teachers in 18 urban areas that reported improved assessment scores by students participating in project-based learning instruction compared to students participating in traditional, direct instruction. The comparative study was designed to test whether project-based problem-solving learning instruction or traditional teacher-driven instruction produced higher standardized assessment performance. The findings showed students who completed at least one project-based problem-solving inquiry opportunity significantly outperformed the students who were taught the same content standards using traditional instructional methods. Grant (2009) provided another example where students exceeded the learning objective through student-led, project-based learning. Grant's case study covered a ten-week span during which eighth grade geography students completed various human rights projects. Projects were scaffolded to

student interest and ability. Although Grant found the scaffolding approach to project-based learning took added effort and time for the facilitating teachers, they perceived the students' academic gains were worth the extra time and energy.

A more recent case study by Chu (2009) concluded that project-based learning based on inquiry was superior to traditional rote learning in a Hong Kong primary school. Chu studied groups of students within a single elementary school. One group of students was exposed to project-based learning instruction, while the second group was taught using traditional instruction pedagogy. Chu found the students who participated in project-based learning had higher research, problem solving, literacy, and technology skills than students engaged in traditional instruction. The students involved in project-based learning also demonstrated stronger interpersonal and communication skills. Geier, et.al. (2008), Grant (2009), Chu (2009) and other researchers (e.g. Donham, Kuhlthau, Oberg, & Bishop, 2001; Harada et al., 2008; Harada & Yoshina, 2004; Hu, Kuh, & Li, 2008) have provided a sampling of the empirical evidence available demonstrating increased student achievement when student-led, project-based learning is used. This evidence leads to the question of what researchers have discovered, to date, on what influences a teacher's willingness or resistance to change their pedagogy.

### **Research on Teachers and Pedagogical Change**

Although there has been a significant amount of research conducted on change in schools and education as a whole, there is limited research addressing what shapes individual teacher motivation to pursue pedagogical change (Reio Jr., 2005). Previous research rarely isolated the thoughts and attitudes teachers had that determined their acceptance of change and willingness to alter their perception of the art and science of their teaching to meet proposed school reform.

Normally, school reform research has focused on the school culture as a whole or the cultures of multiple schools (Hess, Maranto, & Milliman, 2000).

Fullan (2007b) believed the explanation for changing education are simple to explain, yet the social implications are complex. He further described the process of change as “less a question of dogmatic resistance and bad intentions . . . and more a question of difficulties related to planning and coordinating a multilevel social process involving thousands of people” (p. 84). Describing the implementation process, Fullan said it is “putting into practice an idea, program, or set of activities and structures new to people attempting and expected to change” (p. 84). The implementation process alters three distinct aspects of schools. They are the curriculum materials needed to support the change, what teacher practices or strategies make up the change, and teachers’ understanding of curriculum and learning practices. Although Fullan separated curriculum from teacher practice, in reality they are intertwined. Curriculum cannot be separated from pedagogy, or from the culture of the building and community. They all intertwine to create the learning environment (O'Brien, Stewart, & Moje, 1995). Teaching practice is what drives curriculum and students’ unique learning styles and academic development drives the appropriateness of the teaching practice.

Resistance or acceptance of change can be generated by the teacher’s personal philosophy of teaching, attitudes toward change, or ideology of what pedagogical methodology is effective (Fullan, 2007a, 2007b, 2008; Gitlin & Margonis, 1995). Although there has been increasing interest on teacher pedagogical beliefs and decision making concerning the use of critical thinking activities (Torff & Warburton, 2005), this is still a relatively limited area of study. Bruner (1996) validated a possible need for further exploration, finding that teachers are

the ultimate change agents. Therefore, if the teachers primarily determine the implementation outcomes of pedagogical reforms, it makes sense to learn from them; to understand what factors influence the implementation process of student-led, project-based learning and why some teachers embrace it and others resist. Understanding the teachers' perception is key.

### **Teacher Willingness to Change**

The effectiveness of reform efforts is mostly determined by the teacher's acceptance or resistance to change (Hess, 1998; Wagner, 2008). Fullan (2007c) and other researchers who study the educational change process (Cochran-Smith & Fries, 2001; Guskey, 2002; Timperley, 2011; Tschannen-Moran & McMaster, 2009) have determined that most teachers will gradually move toward supporting the innovation as long as there is sufficient time, information, and support in both resources and professional training. It is important professional learning be provided in a timely manner and stimulates teachers' reflection and interaction with peers (Kwakman, 1998). For example, in a study of 12,000 teachers in Chicago, teachers were more likely to support reforms if there was shared decision making, strong leadership, teacher collegiality, and community support (Sebring & Camburn, 1992). In another study about teacher receptivity to a curriculum and instruction implementation in seventh and eighth grade home economics classes in New York, researchers concluded that in-service training, appropriate resources, and a sense of job security contributed to successful implementation of pedagogical change (Katz, Dalton, & Glacqinta, 1994). The study regarded home economics teachers' implementation of self-paced content-based learning modules. They were charged with facilitating student learning and monitoring progress. The teachers were asked to relinquish part

of the content that had been taught as whole group teacher-directed instruction and shift to computer based assignments and assessment.

Teachers' receptivity to change can be positively influenced when they are a part of a supportive school culture, involved in the decision making process, and when the most influential teachers are supportive of the proposed change (J. Zimmerman, 2006). Reio Jr. (2005) explained:

Teachers are most likely to experience open vulnerability when they feel safe enough to risk opening themselves to the possibility of embarrassment and emotional stress for the sake of relationship building and student learning when they believe a person or situation will benefit. (pp. 986-987)

This sense of safety can encompass many variables as can the teachers' sense of fear.

### **Teacher Resistance to Change**

Even when teachers believe an innovation will produce a positive outcome, some hesitate to incorporate the new pedagogy into their classrooms. Various reasons have been found throughout research on teacher resistance to change. Factors that have led to teacher resistance have included: existing belief systems (Ertmer & Ottenbreit-Leftwich, 2009; Hew & Brush, 2007; Twigg, 2010), lack of conceptual knowledge (Lawless & Pellegrino, 2007), low self-efficacy (Mueller, Wood, Willoughby, Craig, & Specht, 2008; Tschannen-Moran & McMaster, 2009), lack of motivation (Young, 2005; B. J. Zimmerman, Bandura, & Martinez-Pons, 1992), and perceived workplace constraints or limitations (Roehrig, Kruse, & Kern, 2007). Research on each of these factors is described below.

**Existing belief systems.** When teachers are asked to change, it can challenge the way they see themselves and their effectiveness. Therefore the change could challenge or go against what teachers perceive as quality pedagogical practices. These challenges to their mental models, or contextual interpretations of reality, can promote anxiety and resistance. This appears to be especially true when the teacher or teacher group believes what they are doing is effective. In a study of teachers resistant to implementing an instructional innovation, the researchers found when a proposed change disrupted the normal flow and instructional norms of the teachers work day they were more reluctant (Duffy & Roebler, 1986). Eleven teachers participated in the study, and Duffy and Roebler found they accepted the innovation once they restructured the new practice to fit what they “already know and made it fit their perception of reality” (p. 57). The researchers concluded that teachers who believed the innovation or implementation process was not sensible to the structure of their classroom were most resistant to the reform or innovation being proposed.

Other examples of studies concerned with teacher receptiveness to change were conducted by Chubb and Moe (1990), Hess (1998), Hess, Maranto, and Millman (2000), and Spencer (2000). They determined the teacher’s length of service and the nature of local school culture are two significant factors. Veteran teachers are often reluctant to change due to the number of reforms they have encountered within their careers. As Mohrman and Lawler (1996) stated, veteran teachers have experienced one educational reform after another. Veteran teachers have seen how reforms held up as innovative and revolutionary have proven unsuccessful, lost their promise, and been replaced by new or improved practices and programs. Additionally, veteran teachers have expended countless energy, effort, and resources to hone their pedagogical



methodology. These experiences have shaped who they are and what they believe is appropriate to the content and age level they are teaching. Drawing on research of teachers at different grade levels and different stages of their career, Hargreaves (1994), also found that teachers' motivation to embrace educational reform decreased with teaching experience. In a study of teacher complicity and resistance, Bushnell (2003) discovered that even though early career teachers complained or demonstrated resistance to impending reforms, only veteran teachers, under the perceived protection of tenure and social status, openly rebelled. Bushnell found that some veteran teachers felt they had earned the right to reject the reform.

Fullan (2007b) suggested without support, the pressure of their day-to-day demands can overshadow and impede sustained implementation efforts of the teachers. Changing teachers' perception of what is effective and ineffective in their isolated classroom can be difficult without a strong support system. The depth of knowledge a teacher possesses can also influence a teacher's readiness for change.

**Lack of conceptual knowledge.** Teachers who do not have a concrete and applicable knowledge of the concepts of a new pedagogical practice can become paralyzed by fear of the unknown. Even though the teacher may have developed relevant knowledge about the pedagogy, their understanding of how to translate this knowledge into practice could still be underdeveloped (Ertmer & Ottenbreit-Leftwich, 2009). In one study, Geijsel, Slegers, van den Berg, and Kelchtermans (2001) surmised that intentional ongoing professional development led to a deeper conceptual understanding of a large scale implementation. In another study involving the implementation of technology as a tool for student learning, Ertmer and Ottenbreit-Leftwich (2009) also found that seeing examples of the new pedagogical innovation in practice

was a powerful tool that supported both the development of teachers' conceptual knowledge of the implementation and belief that the change was warranted. A lack of conceptual knowledge can impact the change process by leaving teachers with low self-efficacy for their capacity to implement the change successfully.

**Low self-efficacy.** Teachers' sense of self-efficacy is their belief that within themselves they have the coping skills and resources to gain control over a particular situation, and therefore can complete a task or assignment (Bandura, 1993, 1997). Wise (2007) discovered that self-efficacy is an influential factor in overcoming situations that people perceive as difficult, such as change. As one's personal efficacy level increases, one is more likely to problem solve and work toward achieving a satisfactory solution, change in practice, or meet a goal.

Teachers with low self-efficacy have been found to be less open to change (Bandura, 1986, 1993, 1997; B. J. Zimmerman et al., 1992). Since self-efficacy reflects teachers belief in their ability to carry out the actions or behaviors of the given situation (Bandura, 1997), a lack of self-efficacy can negatively affect or stunt the change process. In the literature, self-efficacy is sometimes used interchangeably with confidence (Erford, Duncan, and Savin-Murphy (2010). When teachers lack confidence in their capacity to change their practice, or they lack confidence in their ability to perform the skills required for implementing the new instructional practices, the result can be resistance. Resistance can present itself in another facet of low self-efficacy; that of procrastination (Erford et al., 2010). When teachers lack self-efficacy, they may attempt to adapt current practices to look like the new innovative practice. This can lead to what Fullan (2007c) called *false clarity* or oversimplification of the implementation.

A teacher's willingness to step outside his or her comfort zone to change a behavior or practice can be further affected by the level of collective efficacy among the cumulative staff of the school. Rooted in self-efficacy, collective efficacy is a group's shared beliefs in its potential ability to organize and achieve a course of action or task (Bandura, 1997). From an analytical synthesis of multiple studies regarding the influence of collective efficacy on teacher change, Goddard, Hoy and Hoy (2004) explained, "perceptions of collective efficacy directly affect the diligence and resolve with which the group chose to pursue their goals" (p. 8). When teachers possess self-efficacy and there is collective efficacy present in the school culture, teachers have been found to adopt and embrace an innovation (Bandura, 1997; B. J. Zimmerman et al., 1992). However even with a high sense of self and group competency, some teachers still did not embrace changing their instructional practices. For example, in a dissertation study conducted during the 1998-1999 school year with six elementary teachers who were mandated to change their reading instruction method, the teachers resisted the change and were not motivated to fully adopt the innovation, no matter the consequences. The teachers in the study expressed concerns that the administrators and policy makers disregarded their expertise or professional opinions and expected them to implement mandates blindly (Freilich Hjelle, 2001). The teachers did not openly lash out of the administration. Instead, they passively put little effort into fully implementing the mandates and adapted the methods to fit within what they were already doing. This study is an example of what Fullan referred to as *false clarity* (Fullan, 2001, 2007b).

**Lack of motivation and workplace influences.** Motivation has been defined as the intrinsic and extrinsic factors that account for an individual's encouragement, course of action, and wherewithal of a chosen behavior (Keller, 1979). Expanding upon this definition, Brooks

and Shell (2006) posited “motivation is a process through which a learner consciously or subconsciously allocates working memory to a learning task” (p.18). The inclusion of working memory to the definition is applicable because working memory addresses short term memory and changes in one’s thoughts as cognitive processes develop (Brooks & Shell). Therefore motivation can influence a teacher’s acceptance of or resistance to learning and applying instructional practice reforms. Another influence to the acceptance or resistance to change has been linked to workplace constraints and limitations.

According to Abrami et al. (2008) teachers evaluate what they perceive to be both physical and psychological demands of the implementation process. Demands such as class and preparation time, effort, and the lack of specialized materials and resources, and lack of professional development and training are other limiting variables that can influence teacher resistance.

### **Summary**

The literature reviewed in this chapter provides empirical research and educational reform advocacy regarding student-led, project-based instruction and the teachers’ role as change agent. Chapter two was written to provide the reader with information describing both the pedagogical methodology for traditional teacher-led instruction and project-based instruction. Additionally, this chapter provided research relating to teachers and change. Chapter 3 describes the research design and methodology that I used for this study of teacher perspectives of change as it related to student-led, project-based instructional pedagogy.

## **Chapter 3**

### **Methodology**

A qualitative case study design was used to gain an understanding of teachers' perspectives on the implementation of student-led, project-based instruction at a rural high school in Kansas. Stake (2010) explained that qualitative researchers seek data that represent personal experience in particular situations" (p.88). According to Yin (2006), a case study should be employed when the researcher is examining an explanatory question that requires direct observation and the collection of data in the natural setting. Since the purpose of this study was to examine the perspectives of two teacher groups in the same high school with differing pedagogical practices, I felt a qualitative case study was an appropriate methodological approach. My journey was to understand first-hand why and how each teacher group developed their differing perspectives of PBL and what factors led to the development of these perspectives.

The rationale for selecting a qualitative case study methodology was that qualitative findings are "not arrived at by means of statistical procedures or means of quantification" (Strauss & Corbin, 1998, p. 17). Instead, qualitative research evaluates raw, real life experiences, under real life situations with the "phenomenon of interest unfolding naturally" (Patton, 2002, p. 39). To elicit those perceptions, semi-structured interviews, classroom observations, a review of artifacts and documents, and a self-efficacy survey were used as the main data collection techniques.

## **Research Site: Shocker High School**

The study was conducted at Shocker Unified School District's high school located in a rural Midwestern state in the United States of America. To ensure confidentiality, the real names of the school and district have been replaced with a pseudonym. The high school currently serves three small communities along with part of the rural County where the towns are located. This high school was selected for the study because it provides two distinctly separate tracks (traditional teacher-led and student-led, project-based) for their students to follow throughout their high school experience to meet graduation requirements. The high school employs 22 teachers that service 174 seventh through twelfth grade students. Additional description and details about Shocker High School are included in Chapter 4.

## **Participant Selection**

Shocker High School was purposefully selected because it allowed me to collect data on teachers who have chosen to utilize student-led, project-based learning as well as a set of teachers who have continued to teach using traditional teacher-led instruction. The teachers who participated in the study were intentionally selected due to their diverse roles, content areas, and responsibilities within the school, although not all the teachers identified were either willing or able to participate. All 22 of the teachers assigned to Shocker High School were invited to take the self-efficacy survey. Of the 22 teachers, 11 completed the survey. The other 11 teachers either were absent from school on the date the survey was given or did not consent to taking the survey. The group of 11 teachers who consented and completed the survey were made up of the following: four project-based learning teachers, two traditional math teachers, one traditional

Language Arts teacher, one social studies teacher, one science teacher, one art teacher, and one special education teacher.

Of the eleven teachers who completed the survey ten teachers participated in interviews and observation for this study. Five of the teachers primarily used a traditional, teacher-led pedagogical approach. One art teacher facilitated learning in the project-based learning classroom, in addition to teaching full-time in a traditional art classroom. Four teachers used a student-led, project-based learning (PBL) pedagogical approach to teaching. These teachers were selected because of their role as either a project-based learning teacher or content specific traditional instruction teacher. By placing the teachers into two groups, either the project-based teacher group or traditional, teacher-led instruction group, I was able to compare the teachers' differing pedagogical preferences.

To insure the protection of human participants, Wichita State University's Institutional Review Board reviewed and approved this study proposal before data were collected. Participants were advised of informed consent and confidentiality and signed a consent form prior to participating in the data collection. The consent form outlined the purpose of the research, stated participation was voluntary, assured confidentiality, and provided participants with the opportunity to withdraw from the study at any time before, during, or after data collection.

### **Data Collection Plan**

I employed a variety of data collection tools, such as a self-efficacy survey, voice recorded, personal interviews, and video recorded classroom observations conducted on site at the end of the spring semester in 2013 (Creswell, 2007; Merriam, 2009; Stake, 2010). I also

collected and analyzed documents and artifacts retrieved from the site (Creswell, 2007; Merriam, 2009).

In order to become familiar with the building and staff, I scheduled an observation visit with the building principal. The purpose of this observation was to tour the high school, meet the staff, introduce and distribute the self-efficacy survey, review the informed consent form, and to begin collecting artifacts from building administration. Once the teachers gave written informed consent, I distributed the self-efficacy survey and scheduled video recorded classroom observations with the eleven teachers involved in the study. The purpose of the classroom observations was to experience how each teacher conducts their classroom and what instructional methods they used (Merriam, 2009; Stake, 2010). The data gathered from these observations help me target the interview questions for the next stage of the data collection (Stake, 2010).

The interviews were conducted with the ten teachers who participated in the observations. The purpose of these interviews was to “get deeply into the complexity” (Stake, 2010, p. 97) of the teachers’ perspectives of how and why they use their chosen instructional methods within their classrooms. It was also to understand their perception of implementing student-led, project-based learning as an instructional strategy. Once the observation data, initial interviews, and artifacts were reviewed and transcriptions completed, a follow up interview with the participating teachers was conducted to review the data collected and transcripts, and to clarify any misconceptions (Merriam, 2009).

**Self-efficacy survey.** It should be noted that, prior to administration of the survey, I provided a brief description of this study. The Hoy and Woolfolk (1993) short form teacher efficacy scale survey was offered to all of the teachers at Shocker High School. The survey was



given to 16 teachers, and eleven of the surveys were returned. The purpose of the survey was to assess teacher perceptions regarding their level of self-efficacy since it has been identified as a factor that can effect a teacher perception of change. The statements were designed to specifically evaluate the teachers' self-efficacy of teaching utilizing a Likert scale. Participants ranked each statement using a scale of 1-5 (strongly disagree, disagree, neither agree nor disagree, agree, strongly agree).

The survey developed by Hoy and Woolfolk (1993) was adapted from a lengthier survey developed by Gibson and Dembo (1984). Originally, the definition that formed the foundation for Woolfolk and Hoy's survey for teacher efficacy was described by Ashton (1985) as a teacher's "belief in their ability to have a positive effect on student learning" (p. 142). Hoy and Woolfolk (1993) deduced that this definition was too broad. They refined the definition as having two distinctive dimensions: personal teaching efficacy and general teaching efficacy. Personal teaching efficacy was defined as a "teacher's personal sense of efficacy" and their belief they have the power to personally reach and teach all children (Hoy & Woolfolk, 1993). General teacher efficacy is the "general belief about the power of teaching to reach difficult children and has more in common with teachers' conservative/liberal attitudes toward education" (Hoy & Woolfolk, 1993, p. 357).

The survey contains five statements for each dimension. The statements are mixed throughout the survey, and scoring is mixed with both straight scoring (1 lowest indicator-5 highest indicator) and reverse scoring (1 highest indicator-5 lowest indicator). The reverse scored items all refer to the personal teaching efficacy dimension and are statements 3, 6, 7, 8, 9

on the survey. The self-efficacy survey is located in Appendix A. Once the surveys were complete I began the classroom observations.

**Classroom observations.** The purpose of the classroom observations was to allow me to see the teachers in both the traditional, teacher-led pedagogy setting and the student-led, project-based setting. I conducted ten, 60 to 90 minute long, individual classroom observations using the classroom observation form located in Appendix B.

As an *observer as participant* Merriam (2009, p. 124), I assumed the dual role of actively participating in classroom activities and pedagogical practices as well as observing and documenting teachers' usage of the chosen pedagogical methodology. Merriam explained, "The researcher's observer activities are known to the group; participation in the group is definitely secondary to the role of information gatherer" (p. 124). By being an active participant in the classroom, I was able to generate questions for teachers that specifically addressed what I experienced in the classroom regarding instruction and assessments as they were administered. This allowed me to have more insight into the teachers' day-to day-challenges and how they responded to them within their chosen instructional pedagogy.

Observations were conducted in seven separate teacher classrooms. There were fewer observations than interviews due to the classroom set up of the project-based teachers' classroom. All of the individual core content (Language Arts, Mathematics, Science, and Social Studies) teachers were asked to participate based on the content taught and current involvement with traditional, teacher-led instruction. Ten teachers, six traditional and the four PLP classroom teachers agreed to participate in the observations. The classroom environment of the Personalized Learning Program is different than that of the traditional classroom. Teachers

involved in the Personalized Learning setting collaboratively organize and facilitate instruction using a student-led, project-based pedagogical in one large classroom. Since all of the Personalized Learning teachers are located within a single classroom, the observations involved the teachers present in the classroom at the time the observations were conducted. Therefore, all four of the teachers may or may not have been present and involved in any given observation.

The classroom observations were scheduled at a convenient time for the teachers, and the format was shared prior to the visits. The classroom observations were video recorded, along with my taking field notes. Rogers-Dillon (2005) explained the importance of taking quality field notes, as forcing oneself to write them it “discourages short cuts and an over reliance on memory” (p. 450). The extended intervals of observations were continued until I reached the point of redundancy. All teachers were informed that the observations were voluntary and they could stop the observation at any time.

During the classroom observations, the video recording was operated by an assistant assigned by the high school administration. The assistant used a tripod stationed next to me and downloaded the video files onto my personal computer. The camera was focused on the teacher and at a level to avoid identifying facial shots of the students. The identity of the assistant was determined during the initial conversation with the building administrator and was approved by the participating teachers.

As is the case of observational data, video recordings provided me with a non-biased “continuous and relatively comprehensive record of social interaction” (Erickson, 2006, p. 181). The video recordings allowed me the opportunity to reexamine data repeatedly and to examine deeply the complex verbal and non-verbal interactions taking place in the classroom (Powell,

Francisco, & Maher, 2003). Rubin and Rubin (2005) added that video recording also “becomes the data that you analyze, first to figure out what follow-up questions to ask and later to develop the themes and theories that will be the product of the study” (p. 110). Since electronic devices, such as video recording equipment, do not have the composite to think, Erickson (2006) suggested that footage collected is “to some extent phenomenologically neutral” (p. 3). According to Townsend (1978), phenomenologically neutral is a non-judgmental perspective of what is being experienced. Video recording provides a record of the experience that is either objective or subjective and is therefore phenomenologically neutral.

**Personal interviews.** I conducted interviews with ten teachers from the high school. Interview times varied, but lasted between 60-120 minutes in length. This time was split into multiple sessions to become fully informed. The interviews allowed me to develop a deeper understanding of what was observed in the classroom observation and to explore the research questions fully. The interviews took place in either the teacher’s classroom or another location comfortable for the teacher.

Individual teachers were selected for an interview based on their current involvement with either traditional, teacher-led instruction and/or student-led, project-based instruction. There were five teachers within the traditional teacher-led instruction classrooms that participated in the individual interviews. There was also one fine arts teacher who participated and four participating teachers within the Personalized Learning Program. The teachers within this study represented most of the four core content areas in the different instructional pedagogy settings. For example, I studied a teacher endorsed in Language Arts in the traditional instruction setting and one endorsed in language arts in the Personalized Learning Program. This

was the same with social studies and science content areas also. Mathematics is not taught in the Personalized Learning Program, thus I only interviewed the traditional instruction mathematics teachers. The fine arts teacher taught in both programs.

Permission from the interviewees to use an audio recording device was requested and granted. Therefore, I used the audio recorder to assure accuracy when transcribing the interview data. Throughout the interviews, questions changed as central issues arose that needed to be explored more deeply or clarified (Golafshani, 2003; Merriam, 2009; Rubin & Rubin, 2005; Stake, 2010). As new findings emerged, a need to generate new subtopics became apparent. Thus, my questions were modified or expanded to test how deeply the theory or personal perspective influences the question and to provide rationale for the interviewee's answer. Such an approach "ensures that when you finish gathering data, you will have answered your question and have sufficient material to produce a rich and nuanced report" (Rubin & Rubin, 2005, p. 63). See Appendix C for interview protocol and questions.

**Artifacts.** Artifacts were collected throughout the study. Merriam (2009) emphasized that qualitative "documents of all types can help the researcher uncover meaning, develop understanding, and discover insights relevant to the research problem" (p. 163). Artifacts were gathered during both the interview and classroom observation portions of the study. Artifacts included teacher lesson plans, student projects, YouTube video footage, school improvement documents, and grading tools or rubrics. Each of these documents was examined to see how the teachers instructed and assessed their students. The teacher lesson plans provided data regarding the sequencing of the lesson and timeline for assignments and assessment completions. They also provided a snapshot of the academic standards that drive the instruction. The student

projects, YouTube footage, and the rubrics, or grading tools, allowed me to see how the teachers assess students in student-led, project based learning classroom as compared to the final assessments in the traditional, teacher-led classroom. The artifacts also provided insight into why the teachers selected the instructional methodology they used, either traditional, teacher-led instruction of student-led, project-based instruction. In addition, these artifacts were important to this research because they provided examples that supported or refuted other data. Patton (2002) suggested that artifacts can “provide stimulus for generating questions” that can lead to “more direct observations and interviews” (p. 233).

### **Data Analysis and Interpretation**

According to Creswell (2007) “Data analysis in qualitative research consists of preparing and organizing the data . . . for analysis, then reducing the data into themes through a process of coding and condensing the codes, and finally representing the data” (p. 148). For this study, the data were systematically collected from the self-efficacy survey, video recorded footage, observation field notes, audio recorded interviews, and artifact documents. All video and audio recordings were transcribed. Rubin and Rubin (2005) explained that although transcripts do not have to be perfect, they should “include grammatical errors, digressions, abrupt changes of focus, profanity, exclamations, and other indications of mood such as laughter or tears” (p. 204).

The video recorded data were repeatedly reviewed and compared to the transcriptions to insure both verbal and nonverbal behaviors were documented. The transcripts and the video reviews allowed me to repeatedly analyze what was experienced and to explore patterns, themes, and to create additional interview question. Once the interviews were transcribed, I also sorted

the data on the transcripts and identified possible similarities between the interviews and observation data.

The transcript data from the video and audio recording were separated into chunks of usable information. Bogdan and Biklen (2007) described this process as unitization. Unitization is a process for breaking data into manageable and meaningful segments. An Excel spreadsheet was utilized to store the data so that I could systematically examine the themes and findings. Merriam (2009) suggested that the chunks of data should be coded by adding notations on the spreadsheet that are relevant to the research question. Using the coding process, I was able to compare the coded data in order to isolate and construct categories.

The data gleaned from the artifacts was sorted and coded according to the research question and/or themes gleaned from the observations and interviews it appeared to support. They were also used to help elaborate and provide details in an effort to describe the classroom environments. For example viewing the video footage of an artifact on videotape while examining the actual artifact at the same time or coding field notes and viewing the source of the event when the field note were taking served to clarify my understanding of the event. Another benefit of field notes, in conjunction with video recordings, was my ability to reconstruct and analyze the events to glean a more comprehensive understanding of what occurred (Dressman, 2008; Rubin & Rubin, 2005).

By comparing one piece of data to another and assigning a code to each piece of the transcripts, I was able identify the themes (Creswell, 2007; Merriam, 2009; Patton, 2002; Rubin & Rubin, 2005; Stake, 2010). Once the themes were identified, I employed a process described as axial coding. Axial coding is about links and relationships (Strauss & Corbin, 1998). This

process helped me in “mining the data” (Merriam, 2009) for the potential relationship between the study’s theoretical framework and the coded data, and allowed me to complete “synchronous coding” of the mined data as it related to my theoretical perspective and research questions (Powell et al., 2003). Synchronous coding is described as the process of coding one data source as I refer to or experience another source of data. These multiple sources of data aided me in building an in-depth understanding of teacher acceptance and resistance of student-led, project-based learning (Creswell, 2007; Merriam, 2009).

### **Research Quality**

To gauge the quality of the data gathered for this research, I focused on the validity or trustworthiness of the research. In this study, the self-efficacy survey, observations of classrooms, teacher interviews, and collection of documents and artifacts such as curricula, project planners, demographic profiles, student work, and test results served as the primary data sources. Although Denzin and Lincoln (2008) warned that “data and information are not evidence until two things happen: first, someone recognizes it as data, and second, an inquirer subjects it to some form of systematic analysis, which turns it into evidence directed toward some question or argument” (p. 6). None of the documentation including field notes and videotapes become usable data until they were formally analyzed and meaning was constructed (Erickson, 1985). Therefore, data gleaned were analyzed for its “evidence and clues” (Bogdan & Biklen, 2007, p. 117) and findings constructed.

According to Eisenhart and Howe (1992) validity as it relates to educational research is the trustworthiness of the inferences drawn from the data. Shenton (2004) explained “the trustworthiness of qualitative research generally is questioned by positivists, perhaps because



their concepts of validity and reliability cannot be addressed in the same way in naturalistic work” (p. 63). Harrison, MacGibbon, and Morton (2001) also added, trustworthiness is “the ways we work to meet the criteria of validity, credibility, and believability of our research—as assessed by the academy, our communities, and our participants” (p. 323). Qualitative research may not define an objective truth, as with quantitative research, due to the subjective reality of the various participants and the researcher. Yet, multiple strategies can be used to establish the credibility and validity of the findings (Merriam, 2009). The strategies used in this study consisted of: data triangulation through using multiple methods and multiple data sources and member checking (Creswell, 2007; Merriam, 1998, 2009; Stake, 2010).

**Triangulation.** The objective of triangulation is to minimize “flaws in our observations and assertions” (Stake, 2010, p. 37). Throughout this research I stayed focused on two types of triangulation, which were use of multiple methods and multiple data sources. By comparing what I observed during the classroom observations against what I heard in the interviews and experienced through the artifact documents I was able to validate the relevance to the themes and findings of this study (Merriam, 2009). The surveys, observations, interviews, and artifacts made up the elements of triangulation.

Multiple sources of data were also used for triangulation. Merriam (2009) suggested, “using multiple sources of data means comparing and cross-checking data collected through observations at different times or in different places, or interview data collected from people with different perspectives or from follow-up interviews with the same people” (p. 216). I incorporated each of the scenarios mentioned within this study, meeting the criteria for the second type of triangulation. Creswell (2007) explained that triangulation provides the

researcher with a process that “involves corroborating evidence from different sources to shed light on a theme or perspective” (p. 208). Triangulation brings each piece of the puzzle together, interlocking to creating a picture of reality through the use of an audit trail. Sandelowski and Barroso (2003) described the audit trail in qualitative research as the research documentation that describe the methodological design and the analytic “decisions made in coding, categorizing, and comparing data” (p. 806) When all elements are present and accounted for, the study results can be validated as reliable (Merriam, 2009). The triangulation of multiple data sources with the theoretical perspective is important for establishing the validity of the data (Bogdan & Biklen, 2007; Golafshani, 2003; Merriam, 2009; Piantanida & Garman, 2009).

**Member checking.** Member checking is the process whereby the researcher asks study participants to review the information gathered during its collection (Stake, 2010). Creswell (2007) further delineated gathered data to include the “analyses, interpretation, and conclusions back to the participants so that they can judge the accuracy and credibility of the account” (p. 208). This is done to double check that what was seen and heard was perceived and interpreted correctly.

Freeman, deMarrais, Preissle, Roulston, and St. Pierre (2007) reiterated the quality of qualitative research is “constructed and maintained continuously throughout the life of the research project and includes decisions that researchers make as they interact with those they study and as they consider their analyses interpretation, and representations of data” (p. 27). Establishing trusting relationships with the participants is one key to mining valid data that have been constructed into the findings and recommendations of this research (Creswell, 2003, 2007;

Merriam, 2009). Participants were provided with and asked to review the preliminary analysis, which consisted of my findings and they provided feedback to clarify missing information.

### **Ethical Considerations**

To insure the protection of human participants, Wichita State University's Institutional Review Board approved this study before data were collected. Pseudonyms were used for both the district and the teachers. Participants were advised of their rights to informed consent and its confidential provision prior to each interview and/or observation. All study participants were asked to sign the consent form prior to participating in the data collection. The consent form outlined the purpose of the research, stated that participation was voluntary, assured confidentiality, and insured the opportunity to withdraw from the study at any time before, during, or after data collection (Creswell, 2007; Stake, 2010). The informed consent form is included in Appendix D.

To further protect the confidentiality of the participant, Powell et al. (2003) insisted that "storage and disposition of the videotapes are also key issues" (p. 409). The video recordings, along with the audio recordings, are stored in a secure location and were transcribed using coded identifiers for the participants to address the confidentiality issues. Once the defense of the study is complete and the five year APA requirement elapses, all recordings and written documentation will be completely destroyed (Rubin & Rubin, 2005).

### **Researcher Positionality**

As the researcher, this study was likely influenced by my assumptions, subjectivity, and life experiences. Peshkin (1988) suggested that individuals "may be guided by unpostulated and unlabeled assumptions about what constitutes fact par excellence and how people make sense out

of the disparate events of their social world” (p.37). Assumptions are inherently imbedded in educational research and analysis. For instance, this study was selected with the assumption the research findings would provide the reader a deeper understanding of the researched problem and aid the reader in designing, planning, and implementing pedagogical change.

In addition to assumptions, I was also aware of my personal subjectivity. Peshkin (1988) explained “subjectivity is a garment that cannot be removed” (p. 17) and was present during the entire research study. Peshkin (1988) warned when the subjectivity of a researcher “remains unconscious, they insinuate rather than knowingly clarify their personal stakes (p. 17). In other words, if I, as the researcher, viewed the data through the prevalent lens of my subjectivity, I could have misrepresented the participants’ views, and the findings might not have been valid. My subjectivity has been exposed and reflected upon for the findings to be clearly identified.

By identifying and monitoring my subjectivity, I was more likely to identify my feelings and reactions, so that I can limit the influence they have on this study. Peshkin (1988) further explained “if researchers are informed about the qualities that have emerged during their research, they can at least disclose to their readers where self and subject became joined” (p.17). My personal “subjectivity audit” (Peshkin) has resulted in the following list of subjectivity influences: the innovation seeker I and the pedagogical equalizer I. These passions and core beliefs have been forged into my thought process and could have influenced my perspective of what I experienced during this research.

**Innovation seeker I.** Throughout my career, I have studied and taught multiple pedagogical programs and strategies, both in the classroom, and to teachers for use in their classrooms. This subjectivity influences my drive to find, define, and implement differentiated

models of learning. I believe that all students can learn, although there is not one model that works for all learners. Some students demonstrate learning within the traditional, teacher-led model and some students struggle. These struggles lead to failure and/or students dropping out of high school.

For example, as a mother of two distinctly different learners, I watched as one son excelled in a traditional, teacher-led instructional model and one son failed and dropped out of high school, bewildered by the educational system. Thus, I've spent my career exploring education innovations or alternatives to find instructional pedagogies that reach diverse or nontraditional learners. However, I also understand that what is perceived as successful in one high school setting may not be successful in another, despite their similarities in demographics and available resources both at home and within the school environment. This desire to help all students also influences my second subjectivity issue.

**Pedagogical equalizer I.** As I have deeply reflected and audited my research, an expression of my subjectivity has emerged. I call it my pedagogical equalizer I. I described this as Peshkin (1988) did. This subjectivity has “emerged from seeing ordinary-to-poor instruction” (p. 19) throughout my administrative career. As an administrator my job has been to evaluate teaching quality. I have experienced classroom to classroom inequality; from students subjected to subpar instruction in classrooms to students blossoming in differentiated instruction environments. Central to both examples were the strengths and weaknesses of the teachers and their utilization of appropriate instructional pedagogy. These teachers also displayed a concrete knowledge of how their students learned and a genuinely caring presence.

I utilized a reflective journal to help me identify my subjectivity and continuously worked to “taming” (Peshkin, 1988, p. 20) it. This reflexive process aided me in better managing their influence on my perspectives within the study. If left unattended, these factors could have influenced the quality of data generated and the construction of the findings, conclusions, and implications. As a researcher, I needed to take a neutral stance toward the classroom observations and interview statements and set aside what I believe is effective instruction and pedagogy. By video recording the observations and reviewing the recordings multiple times, it helped keep me honest, as I strove to gain an understanding of the teacher’s perception of reality compared to my own. During the documentation and analysis sections of the research, I continually reflected and consciously reported from this neutral position, making a mindful effort not to evaluate the quality of teaching I experienced.

### **Summary**

The methodology chapter was intended to provide a comprehensive picture of the components of this study. This chapter provided the reader with the rationale for using the qualitative case study research methodology; what data collection tools were used; how the data were analyzed and findings constructed; and what criteria were implemented to insure data quality.

## **Chapter 4**

### **The Case of Project-based Learning at Shocker High School**

This case study was conducted in Shocker USD 111's high school, located in rural southeastern Kansas. The high school serves three small rural towns along with part of the county surrounding those towns. The district consists of one elementary school, one middle school, one high school, and a virtual school. The total district enrollment at the time of the study was around 550 students. Four hundred students are transported to school by bus, since the district covered approximately 450 square miles. The primary industries in the area where the district is located are agriculture, agriculture related businesses, education, and medical services.

This high school provided three distinctly separate academic tracks (traditional teacher-led, student-led, project-based, and an alternative computer-based off-site setting) for the students to follow throughout their high school experience to meet graduation requirements. It should be noted this study examined only two instructional tracks: the traditional track and the project-based learning track. The third instructional option was offered in an alternative setting and consisted of a computer-based instructional model, facilitated by a licensed and endorsed secondary education instructor. In the 2012-2013 school year, Shocker High School employed 22 teachers who serviced 174 seventh through twelfth grade students.

At the time of this study, Shocker High School reported a gender ratio for male to female students as 50.57% to 49.43% respectively. The school's racial profile showed the population as being made up of students that are 96.55% Caucasian. The breakdown of the minority population was as follows: 1.15% African American, 1.72% Hispanic; and .57% other, which generally includes students who identify as Asian, Native American, or multiracial.

Shocker High School had historically performed well on state assessments by exceeding the state’s Adequate Yearly Progress school accreditation requirements. Even students that qualified as low socioeconomic status had performed well. Low socioeconomic status is defined as a child living in a household whose family income is below the national poverty standard and therefore, eligible for the U.S. Department of Agriculture free or reduced lunch program. Over 53% of the students attending Shocker High School in the 2011-2012 school year were classified as economically disadvantaged. This percentage increased to 55.7% in the 2012-2013 school year, the year this study was completed. Below, Table 1 illustrates the last two years of proficiency percentages of Shocker High School students on state assessments in reading, math, and science for all students and students identified as low social economic. Since Shocker High School is part of a recently consolidated school district, valid state assessment data is only available since the 2011-2012 school year.

Table 1  
Annual State Assessment Results - Percentage of Students Scoring Proficiency or Above

School Year	All Students- Reading	Low Social Economic Students- Reading	All Students- Math	Low Social Economic Students- Math	All Students- Science	Low Social Economic Students- Science
2011-12	95.2	95.5	75	75	84	82.1
2012-13	91.8	88.9	84.8	83.3	85.1	84

**Teaching Staff at Shocker High School**

For the 2012-2013 school year, there were twenty-two teachers at Shocker High School. Six teachers taught within traditional teacher-led, single content (Arts, Language Arts, Mathematics, Science, or Social Studies) classrooms. Four teachers primarily taught either full-



or part-time within the Personalized Learning Program (PLP), which was student-led, project-based learning instruction. One of the PLP teachers also serves as its Program Director. Nine of these 10 core subject teachers participated in the study (five traditional teachers and the four PLP teachers). The remaining twelve teachers, with the exception of the art teacher, were involved in career or technical education, fine arts, study skills, or distance learning courses and were outside the scope of this study.

The art teacher also participated in the study because he was an active adjunct teacher for the PLP. Students went to him during his planning time for short periods of instruction. He communicated with the advisor about the student's progress and level of proficiency. He worked mostly with students who were doing photography projects, as well as facilitated learning content such as photography and 3D graphic arts embedded within larger projects.

To ensure confidentiality, real names of participants have been replaced with pseudonyms. The project-based learning teacher pseudonyms all begin with the letter "P" and the traditional classroom setting teacher names begin with the letter "T," as I present the narrative of this data.

### **Overview of PLP**

There are five central components of the PLP. Students select the topics or projects, teachers differentiate their instruction, and use authentic end of the project assessments, serve as facilitators and co-learners, and parents and community members are involved in the process. Any Shocker High School student can apply to participate in the PLP, but before a student's application can be considered, the student and his or her parent(s) must attend a scheduled public meeting that reviews the program and its expectations. If a parent is not able to attend the

scheduled meeting, he or she is permitted to schedule a private meeting with program staff. Parents must verbally commit to being involved in the program and to supporting the expectations of the program. According to staff, parent support has been strong for this program. To date, no student has had to be turned away for lack of parent support.

The four PBL teachers all taught together in a single classroom and conducted weekly seminars in their core content areas. One teacher held a Language Arts endorsement, one a Social Studies endorsement, and two held Science endorsements. The seminars were informal and provided the student with the personalized content knowledge needed for their specific projects. These teachers formed the teacher advisory board for the PLP and facilitated the projects using ongoing communication and collaboration between themselves and the students. The PLP program has evolved since its inception in 2007 when the charter school grant was approved and implemented.

### **History and Background of PBL at Shocker High School**

In an effort to match academic outcomes, student learning styles, and Kansas content standards to their students' needs, Shocker School District educators petitioned for and were approved by the Kansas State Board of Education to be a 9-12 charter high school in 2007. Paxton explained, "Some of the older teachers, or more experienced teachers saw the issues and problems, and recognized that we need something else for our students and the PLP program was born." Although state assessment scores were rising, teachers were concerned by student disengagement, a lack of student motivation, and an increased percentage of D and F grades, especially among ninth graders. Therefore, the impetus for project-based learning came from the

school's veteran teachers who wanted to provide students with a more relevant learning environment and instructional methodology.

The Personalized Learning Program (PLP), a project-based approach to teaching, was the foundation for the charter school grant. The charter was approved for the entire school to implement innovative teaching and learning strategies with project-based learning to be the focus. The district provided professional development for the whole school in 2006, a year before the PLP program was implemented, and the teachers and administration developed an implementation plan. It is important to note that the district only provided formal training for all of the teachers during the first year of the implementation. Since that time, only the teachers involved in the PLP program have engaged in additional professional development. The PLP teachers have taken it upon themselves to seek professional development outside the district.

From the beginning, the PLP focused on integrating Language Arts, Social Science, Science, Technology, and a variety of elective courses into multi-content projects. Mathematics, however, was not included in the PLP plan. The mathematics department perceived that because the mathematics content spirals from concrete to abstract concepts, teacher-led, direct instruction was the most appropriate instructional methodology for students to grasp the content.

The program was originally written as a standards-based approach to content delivery as opposed to a textbook-based continuum for determining curriculum delivery. Patsy explained what happened during the early days of planning and implementing the program:

I helped start the PLP program. In 2006-2007 is when we were given one hour every day. Myself and three other members of our team had one full year to plan what we thought the program would look like, how the program should flow.

She went on to describe how in the beginning, “we started out teacher-driven. The projects were good. The products were good. But the kids did not enjoy it. It wasn’t focused on their passion.” As Patsy noted, “the projects were good,” but the students were not enthusiastic about projects selected by their teachers. Students also had been taught learning meant rote memorization with the focus on getting a grade. Shocker High students needed to learn how to learn in a different way. As the teachers reflected on the first year, they sought feedback from the students and revised the program based on their input. Patsy went on to describe the process of moving from teacher-led to student-led project-based learning, “So we revamped the program for the next year. The second year, we started with a teacher-led project to get the students used to the process, than had the students start branching into doing their own projects.”

In order to demonstrate the research process and expected outcomes of PBL, the teachers led the students through their first project for students entering the PLP classroom. They had discovered in the first year students did not know how to be self-directed. The objective of the first project was to gradually release the responsibility for project development to students and to provide them with resources and supports to successfully generate a self-directed senior project, which included an internship. One of the human resource components of the PLP program was an internship mentor. Patsy explained:

The final was a senior project that had to include an internship somewhere. The students had to go somewhere, whether it was for one day, or throughout the whole semester. So the students had to have an adult mentor that was involved in their project. That year, we had forty-five seniors that we had to do that with, so it keeps you hopping.

Most of the internship opportunities were provided through local business and industry members such as local farmers, service providers, and teachers from another district school. The PLP teachers soon realized that not all of the students' project topics could be supported locally. Therefore, the advisory committee members have networked with professionals in a variety of education, business, and public service arenas throughout the state to find individuals willing to mentor the students.

The grant did not address the student-led component that is presently part of the Personalized Learning Program. As the program has changed since the original grant, continuous efforts to improve the program led to a student generated curriculum beginning with teacher generated essential questions and authentic activities. The foundational components of the projects have been to (a) deliver academic content as well as critical thinking and problem solving, communication, collaboration, and creativity and innovation outcomes; (b) expert mentors' facilitation; and (c) interdisciplinary content.

The grant ended in 2010, three years after its inception, due to state budget cuts. The district felt the program provided students with three specific benefits, so they provided the personnel and funding needed to continue the program. These benefits were (a) integration of an innovative standards-based approach to critical thinking and problem solving, communication, collaboration, and creativity; (b) enhanced student engagement and authentic learning opportunities; and (c) integrated creative and unconventional instructional techniques, methodologies, and structures that promoted student performance and achievement.

As noted in Patsy's quote, in the first year, all seniors were placed in the PLP. The following year all juniors were added. Although assessments showed gains in engagement, use

of technology, teacher collaboration, state assessment scores, and staff development activities, some students continued to struggle with the self-directed aspects of the project-based instructional methodology. Therefore, the staff in the third year decided to provide two options in which students could participate to gain the competencies needed to earn their high school diploma. Students that select the traditional teacher-led, direct-instruction receive instruction through teacher-led assignments and assessments. The second option is the PLP classroom and project-based learning instructional methodology, which will be expounded upon in the following paragraphs.

**Project development.** Project topics are identified by the students and communicated to a teacher advisory committee. The teacher advisory committee is made up of at least two PLP teachers who assist the students in pinpointing and refining their project topic. The teacher advisory committee also assesses the completed project. Once the project proposal is approved by the teacher advisory committee, community mentors and other content teachers join the team to form the project advisory committee. Community mentors are recruited by the teacher advisory committee and the PLP program director. The recruiting challenge is to find at least one mentor within the field of interest to work with the student throughout the project. The project advisory committee is normally comprised of about twenty people from the community and school who advise the students. Parents are asked to approve the topic as well, particularly if it is a sensitive issue. A proposal form is required to be fully completed before a student can receive approval for a project.

Patsy shared an example of how projects were developed. She told of a young lady who was interested in becoming a teacher. The teacher advisory committee “suggested that she

research what teachers do in their classroom every day and develop a project about it. We let her choose the grade level.” Since the student was undecided about whether to become an elementary or a middle school teacher, she was assigned a mentor from both schools and split her time in each building. As part of her final project, the student was to research and develop a unit to teach in the elementary classroom. Petra further noted, “traditionally, young people do not have this type of practicum experience until they have are in college.” First hand career exploration in high school is rare. By placing the young lady in both school environments the student was able to better gauge her own interests and passion. Patsy noted that the purpose of allowing the students to research and explore their interests is to help them plan their post-secondary education or prepare them for the world of work after graduation.

The time it takes for students to complete a project can vary. Some may take as little as a couple of weeks and others require the entire school year. Credit is not given according to seat time or Carnegie units, but is based on the student meeting the content objectives. Final project products also vary. Some of the projects are large; for example; one student planned and organized a Veteran’s Day assembly that included community veterans and state representatives. Another example was a group of students who worked through the bureaucratic process to establish a disc golf course in the community. Some projects were smaller such as a Prezi presentation on the Civil War and its impact on the economy of the United States. Other examples were student produced newsletters, speeches, physical products, or movies.

To demonstrate they have mastered the content standards embedded in the project; students defend their products to the advisory committee. The advisory committee evaluates the project using a rubric consisting of communication skills and content standards specific to the

student project. The rubric is customized toward the interdisciplinary standards agreed upon by the student and his or her advisory committee.

### **Survey and Qualitative Outcomes**

In this section are the results from the Self-efficacy survey and from the qualitative data collected during the interviews, observations, and artifact collection. The qualitative results have been organized into themes to make them more understandable for the reader. Some of the findings could logically fall into multiple themes. Therefore, Fullan cautioned, “We should avoid thinking of sets of factors in isolation from one another. They form a *system of variables* that interact to determine success or failure” (2007, p. 86). Some of the teacher perceptions encompassed multiple identified themes and research questions.

#### **Self-Efficacy Survey Results**

The self-efficacy survey was offered to the 16 of 22 teachers who were present at the high school at the time of the survey. The six teachers missing were gone due to illness, extracurricular activities, or other school related business. Of those 16 teachers at Shocker High School 11 consented to completing the survey.

Self-efficacy has been identified as a factor that can impact a teacher’s resistance to change (Erford et al., 2010; Paglis & Green, 2002). The purpose of the survey was to gauge their perceptions of self-efficacy. A teacher’s level of self-efficacy can impact the teacher’s *felt* need for change as it relates to their beliefs and practices. Teachers with higher self-efficacy have been reported to be “more open to new ideas and more willing to experiment with new methods” (Thoonen, Slegers, Oort, Peetsma, & Geijsel, 2011, p. 504). Four of the teachers surveyed taught primarily in the PLP, an integrated project-based learning classroom setting. The other



seven taught in a single content traditional classroom setting. The survey consisted of ten questions using a Likert scale (1=strongly disagree, 2=disagree, 3=neither agree nor disagree, 4=agree, and 5=strongly agree) to rate the teacher perception of their self-efficacy. The survey contains indicators for both Teaching Efficacy and Personal Efficacy. The lower the score on each of the Teacher Efficacy items, questions 1, 2, 4, 5, and 10, the stronger the teacher's sense of teacher efficacy. Data from the teachers working in the student-led, project-based classroom setting were compared to data from the teachers providing instruction in the traditional classroom setting.

The teacher efficacy survey results were initially examined by summing scores for each subset of the survey. One subset assessed participants' efficacy in teaching (Teaching Efficacy). The other subset assessed participants' efficacy to successfully teach in the face of barriers from the students' home environment. Although this was referred to as personal efficacy in the past (Tschannen-Moran & Woolfolk Hoy, 2001), I have chosen to refer to it as efficacy to overcome barriers (Overcoming Barriers Efficacy) in order to be more clear about what was being assessed.

The first analysis conducted involved reverse scoring items in order to generate scores that consistently implied a greater sense of efficacy with higher scores. Using Analysis of Variance to test group differences between groups yielded non-significant results (PBL mean equals 21.50, SD = 3.11 and Traditional mean = 19.14, SD = 2.73).

With a small sample size, it is difficult to detect significant differences. Another approach is to develop categories for each dependent variable. A reasonable assumption that participants are in agreement with the efficacy scale would be that they responded on average

with at least a 4 for each of the five items (on each respective scale). With this in mind, a dichotomous variable was generated for each efficacy scale. The number one was assigned to summed scores below 20. The number two was assigned to summed scores 20 or higher. Using these dichotomous scores as dependent variables, two Chi Squares were conducted with teacher category (traditional versus project-based) as the independent variable. There was no significant difference in the dichotomous score of Teacher Efficacy. More importantly, there was a significant difference in the dichotomous score in Overcoming Barriers Efficacy:  $\chi^2(1) = 7.22, p < .01$ . Seventy-five percent of the project-based teachers had a sense of efficacy that they could overcome home environment barriers. In contrast, 100% of the traditional teachers did not have the sense of efficacy to overcome these barriers. In summary, the difference between traditional and project-based teachers is in their sense of being able to overcome barriers, rather than an overall sense of effective teaching.

### **Teacher Perceptions of Project-based Learning**

Both individually and collectively, the teachers at Shocker High School communicated varying definitions of, and value for, project-based learning instruction. During the collection of the data and artifacts, I found no evidence of a district or building developed definition or process for project-based learning. Multiple interpretations of projects and project-based learning were voiced and a variety of examples provided during the interviews, observations, and artifacts collection. The two teacher groups shared differing perceptions about the value and effectiveness of facilitating project-based instruction, which is led by students and integrates content standards.

## **Project-based Learning at Shocker High School**

The four teachers in the project-based learning classroom generally provided a consistent definition of project-based learning, which aligned with my observations. These teachers verbalized and provided student work samples identifying project-based learning as a collaborative, multiple-content, integrated instructional approach to learning driven by student interests and learning styles. Paxton explained her teaching philosophy embedded in project-based instruction.

I think that it's a different mindset, and you have to give up power, you have to give up control, you have to be flexible. You have to listen very carefully, and if a student takes off on one tangent, one area, you have to know how to foster that and encourage that, and not say no, and shut them down.

Paxton clearly articulated her approach to teaching, one where flexibility, being a careful listener, and giving up power and control to students is essential for them to be successful.

**Mentorship of students.** The project-based learning teachers valued the mentorship component of the program, which consisted of collaboration between the student, the teachers, community members, parents, and professionals. Personal mentorship was provided to both individual students and small groups. Petra explained, "Now you have the parents, you have the teachers, you have the student, and you have the community all working together to help develop this young person." Education was no longer the sole purview of school personnel, but extended to parents and the community.

The teachers described the importance of mentorship as a means for helping the student(s) as they gathered resources, searched for knowledge, and created authentic

presentations or products for which they were assessed. The power of this mentoring opportunity was observed during a student presentation on a project that explored animal science. The student was paired with a renowned professor from a regent's university in the state. With guidance from the mentor and his classroom teacher, this student researched the effects of antibiotics on cattle. The level of learning this student exhibited appeared to be comparable to an upper level college biology course. The relationship between the student's interest, the high school teachers, and the mentor appeared to have created a learning experience that went beyond the content standards written in the curriculum guide used in the high school biology class.

**Integrated content.** The projects observed within the project-based learning classroom integrated content standards from various subjects, unlike the traditional classrooms, which focused on a single subject. For example, I witnessed a student presenting a project to demonstrate proficiency in multiple standards including reading, research, problem solving, technical writing, public speaking, marketing, graphic design, and multimedia production. The summative information provided demonstrated the student spent most of the summer and school year collaborating with a local church to develop, deploy, and manage its website. During the presentation, the student articulated the many challenges faced, what learning took place, and how the experience enabled her to meet the content standards in each area. The student's passion for technology and the quality of the work demonstrated also led to a job opportunity with another local business.

A foundational component of the project-based instruction structure, as described by the PBL teachers, was that projects are student-driven. For example, some students wanted to earn

fine arts credit outside the traditional band and choir setting. So a group of them developed a project. Patsy explained how the project was facilitated:

We brought in . . . a singer/songwriter/producer from New York. She spent a week with our kids. And they wrote their own music, they sang, they played instruments, they recorded the music, they made their own album. We had a program that night for our community.

Petra added, “When [students] get involved in their interests, they become more interested in inquiring and learning about the content.” Therefore, students were given the autonomy to select the content standards they focused on, the central theme of the project, and how they demonstrated competency. As noted in the example above, the interests of the students were not isolated to the resources within the school or community. In another example, I observed one group of students defending their progress on a project centered on their interest in learning the Russian language. This group of six students described how they simultaneously studied the Russian language and taught adult Russian students in Russia to speak English. Using Skype, the students within the group worked in pairs with Russian students to do research. The students used various technologies to communicate with the Russian students, in written form using email and verbally using Skype. Because of the time difference, some of the sessions were outside the normal school day. The students hoped to continue, and possibly expand, this foreign language opportunity in the 2013-2014 school year. Assessing the language development of students was also a mutual process between the two countries because none of the teachers at Shocker High School spoke Russian.

**Assessments.** Subject-area instructors determined student mastery of the standards through the project. The project assessment primarily focused on student mastery of state and national content standards. For example, students were required to defend their projects to the project-based learning teacher advisory committee. The assessment committee was comprised of two or more advisors. Many times the expert mentor, parents, peers, or community members joined in evaluating the presentations. Patsy explained the project assessment process, “The project assessment is very similar to a dissertation defense. Students have to provide compelling information and prove they have reached proficiency in the standards addressed in their project.” If the teachers and/or the committee are not satisfied with the student’s project, because it does not quite meet the standards identified in the project proposal, the student is given as many opportunities as needed to rework the project to demonstrate proficiency. Patsy added, “There have been times when the students have been instructed more than once to provide additional information before the final grade was given.” All of the teachers in Shocker High School are involved in some way with the projects of the students in the PBL classroom. Petra described how:

All teachers within the school have a part in grading a student project. For example, our Language Arts teachers grade the outlines, essays, and other written parts of a project.

The students are assigned to these teachers and they determine if the student has mastered the standards.

As Petra noted, with the exception of the math teachers, all of the teachers in the high school have some role in the PLP classroom, although only the art teacher mentioned his role as an adjunct teacher during the interviews. The traditional teachers’ role is to provide the students

with feedback and suggestions as they progress through the project, as well as participating in the assessing the final product. Students are held to high standards and given chances to improve upon the project to demonstrate they have mastered the standards. Petra added, “The assessment is not a one-time multiple choice test.” The assessment process observed was complex and individualized. No two projects artifacts were the same.

**Project management.** The artifacts collected from the project-based learning classroom were diverse. One teacher showed me a grade book, which contained 36 separate course codes, representing 36 different high school content areas being graded during the semester. Paxton stated, “At any one time you will have 30 students in here, but there are 90 to 120 projects going on at the same time that you’re managing.” I observed the four teachers in the PLP classroom juggling multiple content area assignments and fielding diverse questions from the students. They were also facilitating students in varying stages of research and project development in multiple content areas. Patsy explained how difficult it is to juggle the work:

It’s too much for some people; they just can’t handle it. It’s hard when you have started teaching one way and then switch to putting the control in the students’ hands. Now, my job is as a facilitator. It’s my job to keep the students motivated and on track with their goals.

Implementing PBL is a paradigm shift for many teachers. The pace of learning is no longer controlled by the teacher. Assignment timelines are flexible and classroom management is unconventional. The PLP classroom is a collaborative learning environment for both the teachers and students.

**Students and teacher learning together.** In the PLP classroom it was apparent the teachers were learning alongside the students. Petra emphasized, “Everyone in here is learning. The students learn from us and we learn from them.” When asked to share what she learned from students, Paxton responded:

Oh, every day I’m learning something. I didn’t know how to make my cell phone into a 4G hotspot, so I had a student show me that. I’ve had students show me some tricks in Movie Maker. In fact, the Twitter thing blew my mind, and so I had training on Twitter, all kinds of tech applications.

Technology was not the only area the students had switched roles with the teachers and become the educator. As someone coming from an urban background, the kids were eager to teach Paxton about farming and agriculture, noting it “gives them the confidence and makes them feel like an expert, and then they’ll delve deeper into what they are interested in.”

I personally experienced this collaborative learning during an observation. On this particular visit, I had issues downloading the video from the recorder to my computer. The teachers and I could not find a solution, so Petra suggested we ask the students in the class to help solve the problem. One student suggested uploading the videos into a program that compressed the files and then emailing them to me. The student provided a brief tutorial and it worked remarkably well. This brainstorming and problem solving by the class was not unusual, it appeared to be the norm. Although two of the teachers were endorsed in secondary science, one in secondary language arts, and one in secondary social students, they were all actively involved in all areas of academics. I observed that knowledge was not given to the students by the teachers, knowledge was explored by everyone.



## **Traditional Classroom Perspective on Project-based Learning**

The traditional classroom teachers provided a wide array of perceptions of project-based learning. Many of these teachers defined project-based learning as teacher-directed assignments that were hands-on, multi-modal products and/or presentations. For example, Tyler described some PBL activities he used in a math class:

To do trigonometry ratios of right triangles, we've done bridge-building, talking about the different kinds of triangles and reinforcements. We did the working triangle in your kitchen, so they had to sketch out a 2D drawing of their kitchen, and then make the working triangle from their stove, refrigerator and sink.

The projects observed in the traditional classroom were mostly small group or individual projects. Within most of the project examples, the teacher provided rubrics with defined objectives and timelines to be met by the students. The artifacts of the projects were addressed by the state content standards the teachers chose to teach at the time of the project. These projects were largely prescriptive, meaning that the “guidelines that describe what to do in order to achieve specific outcomes” were directed by the teacher (Ullrich, 2008, p. 37). Tony provided an example of a prescriptive project:

Each project has built into it certain skills that I want them to learn and be comfortable with so as they go through the projects they'll get everything. I usually assign a project and leave it. I try not to make the projects too restrictive, so I leave some room for creativity so that the students know what is expected of them and they also know where they can take their own creativity and apply it to the project.

Most of the traditional teachers provided evidence that they had incorporated projects into their lesson planning. Artifacts collected or observed on display in the classrooms provided evidence of group and individual projects students had completed, such as individual multimedia projects on current events, historical timelines of significant historical events created by small groups of students, and models of chemical elements. Although not all of the teachers referred to the evidence as such. Instead of calling them projects the teachers referred to them as group work, hands-on learning, kinesthetic assignments, or experiments.

Not all traditional teachers perceived project-based learning as a viable instructional strategy for their classroom. Tad explained, “I really haven’t seen any more benefit from the project with the groups as the teacher-led basis.” These teachers had questions regarding rigor and accountability, which they saw as problematic with utilizing project-based learning as an instructional methodology.

### **Differing Views on Self-directed Learning, Rigor, and Accountability**

There were differing perspectives among the teachers about whether high school students are mature enough and developmentally prepared to be self-directed learners. Some of the traditional teachers did not believe that students were metacognitively ready to make curriculum decisions or to set the pace of their own learning. Tad shared, “I do feel that teacher-led instruction is probably the best approach due to the in-depth knowledge that some of the material goes into. I think a lot of the kids would have a very hard time learning that on their own.” Most of the traditional instruction teachers also suggested that high school students do not have the background knowledge or self-discipline to develop and manage their learning at the same level required in the traditional, teacher-led classroom. The traditional instruction teachers perceived

this lack of background knowledge made it necessary for teachers to directly teach the key concepts in order for students to maximize their learning. Without teachers guiding the students' learning they feared students would not grasp all of the standards they believe need to be taught.

**Developing self-directed learners.** The PBL teachers did not disagree with the need for students to have background knowledge, but argued that with mentoring and as needed instruction, students can grow to become self-directed learners. They provided artifacts that demonstrated former students who had developed into self-directed learners and created projects that met or exceeded the level of rigor normally associated with high school level curriculum. As mentioned above, all incoming students to the program begin with a teacher-led project that is designed to gradually release the project-based learning process and objectives to the students. Sometimes the teachers still have to back up and interject background content and factual knowledge. Paxton explained:

For instance, I had a freshman boy who started to tackle a job about nutrition, agriculture nutrition for cattle. We hooked him up with a professor at Kansas State University and another person who had a doctorate in nutrition. It was a little bit over his head. So we had to come back, give him more foundational things to do, let's reel this back in. Now as a problem solver he's reading papers that are extraordinarily difficult, and research from other people and what they have done. He is able to understand it and work with it. Now he is going to be doing an internship with one of the world's leading bovine geneticists.

Paxton's example demonstrated how PLP teachers adjusted and differentiated their instruction accordingly when they saw gaps in a student's foundational knowledge, while still maintaining high standards.

**Rigor.** The level of rigor within the PLP classroom was set at the appropriate level based on the student's developmental needs. Each project was leveled toward the depth of knowledge the student was developmentally ready to explore regarding the content within the project.

During a classroom observation, Patsy challenged me on this point:

If you were to walk out here and look at my kids, you would never know what child is gifted, what child has a special need, and we have a lot of that out there. You would never know that. Each child is working at their personal [learning] level. We challenge them without overwhelming them.

I observed several incidences where students requested clarifying background information and the teachers would provide examples or a lesson to teach the student the information they were lacking. Paige, Sizemore, and Nease (2013) proposed rigor as "the extent to which students are challenged to think at high levels" (p. 106). The artifacts collected showed differentiated instruction based on what the student needed to fill in knowledge gaps – not lowering standards or reducing rigor. Thus, not all of the artifacts were at the level described by Paxton in the previous paragraph, but all exhibited some type of higher order learning and were developmentally appropriate. This differentiation was not experienced in the traditional instruction classrooms. In these classrooms, most students were held to the same objectives and expected outcomes. For students with special needs, special education teachers and para-

educators were observed modifying assignments by reducing expectations or assisting students with task completion.

The two teacher groups differed in their perception of rigor as it related to the student experience in the project-based classrooms. Project-based learning teachers like Perry emphasized that PBL “is very rigorous, but to a traditional teacher it doesn’t look very rigorous.” Students in the project-based learning classroom were required to complete and defend at least three major projects per semester. They completed this work non-conventionally and independently. During one observation, I noted that although all of the students had personalized workstations, not all of them were seated at a desk. For example, during a visit, I observed a student working on a history presentation while lying on a sofa. She was watching video footage from the History channel, summarizing what she had learned and working on a PowerPoint presentation on the topic. Another example was a student sitting at a high top table reviewing science information from a textbook and then taking notes. Not all of the students were operating with the same objectives or within the same content area. They were all working independently and sought guidance from their teachers when they needed to filter conceptual ideas, clarify what they had discovered, or process background knowledge. Although students were arranged in an unconventional setting, the artifacts collected about their projects demonstrated a high level of rigor and depth of knowledge.

Traditional teachers expressed concerns and skepticism about the level of rigor in the PBL classroom. To illustrate, Tad shared, “When a kid tells me that they do a project over the history of baseball for a history credit, to me that sounds a little stretched. We don’t have time for kids sitting around doing silly projects like this.” It was evident the unconventional learning

environment precipitated perceptions for many of the traditional teachers that limited learning was occurring and time was being wasted on frivolous topics.

Patsy disputed the perception of limited rigor, noting, “I’ve been in both worlds.” Based on her experiences in traditional and PBL classrooms, she was convinced the PBL approach was superior, because “You learn more in-depth. You learn how to write. You learn how to research. Just because you’re not taking a pen and paper test does not mean that there is not rigor there.” The PLP teachers cited the depth of knowledge students demonstrated on projects presentations as evidence of a high level of rigor. In the traditional classroom, the pace and content taught are determined by the teacher as opposed to the project-based learning classroom where the student is held responsible for learning and for setting the pace of the project. Therefore, independent learning styles and the unstructured classroom setting could give an observer a false perception of the level of learning taking place in the PLP classroom.

**Accountability.** When asked about the biggest challenges teachers face in determining what teaching methodology to employ, Perry stated, “The big thing is accountability.” Concerns about accountability centered on the high stakes standardized state assessments and was mentioned by both teacher groups. Teachers mentioned specific concerns regarding student performance on the Kansas State assessments given to all students in mathematics, language arts, science, and social studies. High school students must take a state developed and administered assessment in each area at least once during the student’s high school experience. Students who do not score at the State’s determined level of proficiency on each assessment must take a second assessment on mathematics and/or language arts by the end of their junior year. The second assessment is taken after the student is provided with an opportunity to learn more about the

content standards addressed on the state assessment. Although both teacher groups expressed a high degree of stress related to preparing students for the state assessment, each group's perception on the effectiveness of their chosen pedagogical methodology for preparing student for the assessment were distinctly different.

Teachers who utilized traditional instruction all perceived that teacher-led, direct instruction was the most effective methodology for addressing the amount of content required in a given subject area each school term. Tabor emphasized, "When we're state assessment driven . . . it's not worth the time that it takes to get behind, because we have to push and push and push." Tad also suggested, "I think it would be hard to get them [the students] to achieve all of the objectives we're trying to get them to learn going with an individual project." Several of the traditional teachers perceived that teacher-led instruction was more effective because the teacher could insure required content is taught. The traditional teachers cited increased student proficiency on state assessments as evidence that traditional instruction was an effective instructional methodology. The PBL teachers challenged the notions of the traditional instruction teachers that traditional instructional methodology was effective for increasing student scores on the state assessment. For instance, Petra offered evidence that PBL students performed as well or better than students in traditional classrooms. She stated, "My project-based learning students actually scored twenty points higher on average than my traditional classroom students" on a state assessment. Petra attributed these results to her project-based learning students having the opportunity to dig deeper into a content area. Since my assessment of the available data from the state assessments only included aggregated test scores, I was unable to support or refute the claims made by either teacher group.

The traditional instruction teachers also feared that if students had the autonomy to determine what standards would be a part of the project, they would not cover them all, and would not be prepared for the state assessments. In other words, many traditional instruction teachers perceived that it was not worth the time it takes to do PBL, because the project could limit the time they have to cover all of the state standards being tested. It appeared these teachers' focus was on covering the content rather than the learning experience. Although, with the state's newly adopted college and career state standards calling for higher order thinking and depth of knowledge, most of the traditional instruction teachers communicated their perception that higher expectations would be placed on them to include project-based learning opportunities for their students. Many of the traditional instruction teachers shared Terry's concern when he stated, "Projects are okay, but I am not familiar with the types of projects they do in the PLP classroom or really PBL as a whole." Although the traditional teachers review the PLP students' work, some appeared to be isolated from the everyday workings of the PLP classroom. The two groups alluded to a division of perspectives regarding what is actually occurring in the PLP classroom and its effectiveness for student learning.

### **Teacher Education, Experience, Tradition, and Philosophy:**

#### **Barriers to PBL Implementation**

The lack of preparation and experience with PBL on the job or in college, the longstanding experience or cycle of 19<sup>th</sup> and 20<sup>th</sup> century traditions of teaching, and engrained personal philosophies were mentioned by both groups of teachers as barriers for implementing PBL. Although all of the teachers professed the belief that all children can learn, they differed in their perceptions of what learning methodology better prepared students for success. The



consensus of both teacher groups was they had received inadequate training in instructional strategies differing from the norm of the traditional, teacher-led methodology.

**Teacher training.** One perspective that both the traditional classroom teacher and the PBL teachers shared was the lack of training on PBL and other innovative methodology during their teacher preparation coursework. For most of the teachers at Shocker High School their undergraduate coursework consisted of content knowledge attainment. Patsy, a late career teacher, expounded:

In all of my college experience, I did not have one methodology class. It was not a requirement for graduation. Not once did we explore teaching methodology. We never broached the topics of teaching strategies, or ways to group our students.

Instruction in many of the teacher education content courses was delivered in large lecture settings, which employed traditional textbook reading assignments and multiple choice or short answer assessment formats. I observed this same model of instruction delivery in many of the traditional instruction classrooms during my visits to Shocker High School.

Most of the teachers perceived their teaching styles and philosophy were shaped by either their own K-12 experiences or the experiences they had as student teachers. The teachers in the traditional setting all stated they acquired their pedagogical philosophy either in college courses or through their student teaching experience. As noted, college coursework is not the only arena pre-service teachers' experience that shaped their teaching philosophy. Tyler clarified:

I think what really shaped me more than anything was my student teaching. I had several observations where I went to different schools and I saw different teachers and what they were doing. Then I got lucky and I got placed in a school with a gentleman that kind of

really personified all the ways that I believed in education, and taught that way. And that really made a huge impression on me, and things like how he set up his room is now how I set up my room. So there are so many things that I drew from that experience that completely shaped the way that I teach now.

Tyler's statement suggested that his student teaching experience merely reinforced what he already believed was good teaching either from what he observed during the teaching practicum experience or his personal education experience.

**Career path.** The perception of what type of instructional methodology is most effective also appeared to be influenced by where the teachers were in their careers. Terry, who has taught for eight years, submitted "I like the structure of the traditional classroom. I am comfortable in that setting as compared to a more open setting such as the PLP classroom." After a few years of teaching, teachers appear to become comfortable and confident in the methodology they have used and believe has produced adequate student results. To illustrate, Terry expressed, "There are varying degrees of what teachers feel comfortable with. For example, I do feel lecture is important and I will have student do note taking. That is how I feel comfortable teaching." Not all teachers utilizing the traditional instructional pedagogy were convinced the traditional methodology met the needs of their students, but thought it would be too difficult to alter the perceptions and attitudes of some students and teachers comfortable with the traditional instruction model. For example, Tyler shared the hypothesis, "We've got kids that still have that same old mentality, and we're going to have teachers that still have that same old mentality that are going to be stuck in that kind of model." Interestingly, the move to change to the PBL methodology of instruction was driven by a small group of teachers concerned they

were not meeting the needs of the students and was willing to explore alternative ways to maximize student learning.

The PLP program was actually started by a small group of veteran teachers who agreed the one size fits all approach was not adaptable enough to meet the diverse needs of all of their students. So they researched, explored options, and received additional training to incorporate alternatives to traditional teacher-led instruction. Paxton explained, “Whereas older teachers, or more experienced teachers I should say, have seen the issues and see the problems, and recognize that we need something else and say, ‘yes, I’m willing to try this.’” The traditional teachers evidenced that students were not engaged and were unmotivated. They also noticed that students lacked the soft skills and creative problem solving skills they perceived to be important for students.

**Teaching philosophy.** At the heart of the teachers’ perceptions were their beliefs about teaching and learning. All ten teachers interviewed expressed the belief that all kids have the ability to learn, if given appropriate supports and opportunity. Both teacher groups also articulated the philosophy that student’s do not all learn in the same way, at the same speed, or in the same classroom environment. Patsy suggested, “You’ve just got to find what is it that they want to learn, and how do they learn the best.” When it came to instructional approaches, however, the PLP and traditional teachers diverged in their views.

Like the other PBL teachers, Paxton advocated for the PLP classroom structure and function as an appropriate setting for discovering how students learn best. She proclaimed about the PLP students, “They are all working within their preferred learning style.” PLP teachers strongly believed that for students to be ready for post-secondary college or careers a

differentiated innovative methodology was most appropriate. Paxton supported this perspective when she provided an account of a recent scholarship event students attended:

We had some students that had a scholarship opportunity. They had to go to a state university on Saturday to test for a scholarship. The scholarship format was set up for the applicants to complete a specific project. They had only a few hours to do the project. Well, our [PLP] kids came back just thrilled. They had an advantage because they knew exactly how to set up the project and knew all the components for making the project work. They not only got the project done, they all also won scholarships. So, we [the PLP teachers] really feel we've prepared them for no matter what they're going to do for college or work, wherever they're going to go. We believe we have found a way to reach our goal of preparing them for life after high school.

Paxton emphasized her belief that PBL better provides students with the skills needed to be ready for both college and careers after graduating high school.

The traditional teacher-led instruction teachers were equally passionate about their philosophies of teaching and what effective instruction for their students looked like. For example, Tad shared, "In math I do feel that teacher-led instruction is probably the best approach due to the in-depth knowledge that some of the material goes into that I think a lot of the kids would have a very hard time learning ... on their own." The teachers all shared a genuine concern about the students they work with and the perception that each and every one had the potential to learn. During my observations and interviews it was evident that most of the traditional teachers were also defensive of the traditional methodology and its history. For example, when talking about the students, Tanner noted, "when they go to college they are going

to have to know how to learn in the traditional way. Our job is to get them ready.” Tanner believes high school students will encounter lectures and traditional tests once they get to college and PBL will put them at a disadvantage. The teacher philosophy of what an appropriate instructional methodology is for student success was what separated the two groups of teachers.

### **Summary**

In summary, in 2007 a few of the veteran teachers concerned they were not meeting the diverse needs of their students felt compelled to explore alternatives to traditional teacher-led instruction. As the years have come and gone, teachers advocated for both an extended PLP and traditional, teacher-led. The purpose of having two programs is to allow students and teachers an option. Both the students and teachers could work and learn in their preferred learning environment. The implementations of these changes have been multi-dimensional with evidence of perceptual differences four factors of change (Fullan, 2001, 2007b). The next chapter will address these factors: the different teachers groups perception as to the need for PBL, a clear understanding of what PBL is, the complexity of implementation and the quality and practicality of implementation within the classroom environment.

## Chapter 5

### Conclusion and Implications

This chapter will present the conclusions and implications of this research as derived from the findings. The chapter begins by revisiting the questions I posed, as well as Fullan's theoretical constructs of the implementation of educational change. This is followed by a discussion of the conclusions derived from the examination and reflection of the findings through the lens of the theory of educational change, specific to Fullan's characteristics of change and other relevant literature. Finally, this chapter will explore the implications of this study, which extends beyond the realm of Shocker High School to other sites grappling with the implementation of new pedagogical methodology.

#### Review of Research Questions

The implementation of change in educational organizations can be a difficult and taxing process. According to Fullan (2007b), "Implementation consists of the process of putting into practice an idea, program, or set of activities and structures new to the people, attempting or expected to change" (p. 84). The successful implementation of educational change is dependent upon many interacting factors (Fullan, 2001, 2007b). The scope of this study was narrow and addressed only one of Fullan's factors referred to as the *Characteristic of Change*. Fullan described four characteristics of change that impact implementation: 1) the *need* for change, 2) *clarity* about what should change, 3) *complexity* of what will be different once the change is implemented, and how extensive the change will become, and 4) *quality* of the resources and professional training and *practicality* of the program to be implemented (Fullan, 2007b). The

research questions were purposefully developed to reflect each of these four characteristics. The fundamental questions of this research were:

- How did teachers at Shocker High School describe the *need* for student-led, project-based learning instructional pedagogy?
- How did teachers at Shocker High School describe student-led, project-based learning instructional pedagogy? (*clarity*)
- How did teachers at Shocker High School perceive their preparedness for implementing student-led, project-based learning into their classroom? (*complexity*)
- What resources and supports do the teachers at Shocker High School perceive they need in order to change their instructional pedagogy to incorporate *quality and practical* student-led, project-based learning opportunities for students?

### **Analysis of Findings**

Through Fullan's framework of implementation of change, I was able to make sense of the phenomenon of differing perceptions regarding the implementation of PBL at Shocker High School. The following is my analysis of the teachers' perceptions of the need for pedagogical change, their sense of clarity of PBL, their preparedness for the complexity and whether PBL is a quality and practical initiative for Shocker High School.

#### **Differing Perceptions of the Need for PBL**

Six years after the inauguration of the PLP classroom at Shocker High School, the two teacher groups have separated and developed differing perceptions of the *need* for implementing PBL. The splitting of perceptions occurred between the traditional, teacher-led, direct instruction teachers and PBL teachers. I found four components that accounted for the

perceptual differences of the individual teachers and the two teacher groups as a whole. These differences were: the teachers' level of self-efficacy, specifically their perceptions of their ability to overcome barriers; the teachers' level of experience and training in PBL, the teachers' philosophy of what constitutes effective instructional pedagogical methodology, and the pressures from the No Child Left Behind Act's testing and accountability mandates.

**Efficacy.** As noted in Chapter 4 by the self-efficacy survey and the qualitative data, the PBL teachers demonstrated a higher level of self-efficacy than the traditional teachers, specifically in their belief that they could overcome barriers. This could account for their willingness and belief in the need to explore and implement PBL. The higher self-efficacy could also explain why the original teachers advocated for PBL in the charter established in 2007. At the time of the charter, the student performance and proficiency statistical data showed that approximately eighty-five percent of the students were performing well, and that approximately fifteen percent were underperforming. In other words, some teachers perceived that the academic needs of *all* of the students at Shocker High School were not being met utilizing the traditional instructional methodology. It was clear to the teachers advocating for PBL that change was warranted. On the other hand, the traditional teacher group advocated they were comfortable and confident that the traditional pedagogical methodology was sufficient. The traditional teachers expressed the belief students needed to conform to the traditional structure and functions. This group of teachers articulated that the statistical data demonstrated the current traditional methodology were working for the majority of students and that change was not needed.



**Experience and training.** As I described in chapter 4, the group of teachers that started the PLP program perceived PBL as an instructional methodology that met the needs of all of their high school students. Although none of these teachers had pre-service training in PBL, they took it upon themselves to research, advocate for, and pursue extensive training in PBL. In contrast, the traditional instruction teachers suggested they have had limited exposure to PBL pedagogical methodology. Like the PBL teachers, traditional instruction teachers had not received any formal training in PBL methodology during their college experiences. Only those teachers employed at Shocker High School during the initial year of the innovation received any of the professional development the district presented. This lack of ongoing teacher learning has significantly affected the two teacher groups' perception of PBL. Without pre-service education or ongoing professional development, the traditional instruction teachers lacked a frame of reference for PBL. Consequently, they could not confidently judge the merits of PBL and how it might benefit their students. This lack of experience and confidence triangulated with the self-efficacy data regarding the teachers' perceptions of overcoming challenges and barriers. It also significantly impacted the differing teacher philosophy.

**Teacher philosophy.** The PBL teachers advocated for PBL instruction because they philosophically did not believe traditional instruction met the diverse needs of their students. They put forward the belief that to be college and career ready, high school students need to move beyond teacher-directed content attainment to self-directed application of relevant knowledge. The metamorphosis from relying on traditional instructional pedagogy to a willingness to change their beliefs can be attributed to a change in the teachers' beliefs and confidence. The PBL teachers at Shocker High School were motivated to take risks and were

comfortably flexible, because they perceived the students in their classroom needed them to be in order for them to achieve academically.

Although the traditional instruction teachers expressed an interest in PBL, they were skeptical of the need for changing their pedagogical methodology to align with PBL. The traditional instruction teachers had a level of comfort with the traditional instruction methodology, which they believed was better suited for the type of instruction students would be exposed to in college. Most shared a belief that if students were prepared for the college experience, they would also have the skills for the workforce. Therefore, teachers within the traditional instruction group perceived PBL as a waste of time.

Both groups of teachers focused on college readiness, yet their philosophical beliefs and approaches differed. The PBL teachers perceived that by teaching the student how to think critically and problem solve, as well as other soft skills they would be better prepared for college or the world of work. Whereas, the traditional teachers perceived that traditional college experience mirrored that of the instruction traditionally found in a high school classroom environment. Therefore, they believed traditional instruction was still beneficial for preparing high school students who would be continuing with post-secondary experiences. Granted, both groups perceived their instructional methods were the best for preparing students for career and college, although PBL teachers were broader in their post-high school aspirations for students, thinking about more than just college.

The traditional teachers also articulated a philosophical perspective that for high school students to perform well on standardized assessments, the traditional teacher-directed pedagogy is the most effective. This belief was fostered by the structured content-centered format of

traditional instruction. By teaching the specific content identified on the test, the traditional teachers could ensure student exposure and knowledge of assessed content, therefore, better preparing the students for the annual state assessments.

**State assessment.** The accountability pressures of No Child Left Behind have created a high level of anxiety for all teachers at Shocker High School. It has been well-documented the pressures to raise test scores can be daunting. The results of the state assessments are published and publicly scrutinized locally and nationally. The traditional instruction teachers appear to have a higher level of anxiety about the assessments than the PBL teachers. This gave the impression that the accountability pressures of the state assessment significantly influenced the traditional teachers' conservatism and reluctance to change.

Although both groups of teachers believe there could be a place in their instructional practices for PBL, they disagreed on the impact PBL may have on their students' preparation for the state assessments. Although the PBL teachers provided evidence that the students' in the PLP classroom scores exceeded those of their traditional instruction peers, the traditional teachers still perceived that PBL limited the amount of time that should be spent covering the content being assessed. By limiting the preparation time, it also jeopardizes the students' readiness and ability to demonstrate proficiency. The traditional teachers also shared the perception that traditional instruction has been shown to be a tried and true methodology, noting the cumulative increased assessment results on the school's annual yearly progress reports. The data for this annual report has been documented since the 2002 inception of the No Child Left Behind law. The data collected for compliance with No Child Left Behind Act, supported their

perception the increased student performance was due to using the traditional instructional methodology. Thus they saw no *need* to significantly change what they were doing.

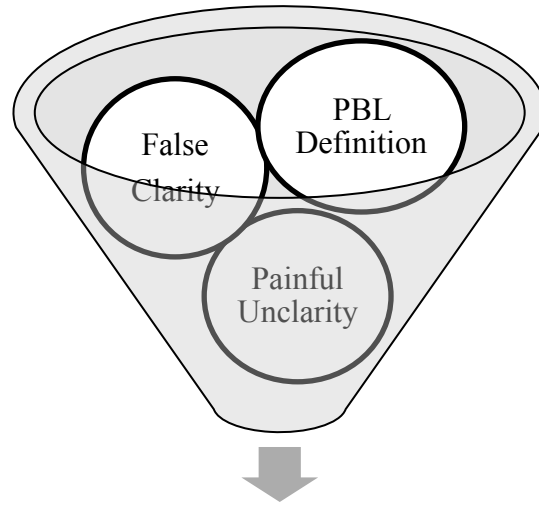
On the other hand, the PBL teachers demonstrated a *need* for change, citing data that demonstrated their students' exceeded the achievement of students in the traditional classroom on the state assessments. The bottom line was that both groups perceived their pedagogical methodology best prepared their students to perform well on the annual assessment. The differing perspectives can be attributed to the traditional teachers' misconceptions and misunderstandings about PBL, along with the level of self-efficacy each group demonstrated.

### **Differing Perspectives of Clarity**

Fullan (2007b) defined the second factor for implementing change, *clarity*, as a clear understanding of the “goals and means” of what needs to be changed and why (p. 89). Evidence from the interviews highlighted that not all of the staff at Shocker High School clearly understand what project-based learning is, or how it would benefit students. PBL is dissimilar to traditional teacher-led instruction methodology in many ways. Therefore, each aspect of the PBL methodology must be clearly understood by the teachers responsible for the change. Fullan (2001, 2007b) advised that differing perceptions of the adopted change can also trigger some teachers to revert to the status quo. This can occur, not because the teachers are being defiant, but because they are unclear about what they are to do differently. As evident in this study, the importance of understanding the *need* for change cannot be underestimated. Nor can a clearly stated rationale for what is expected to change and why.

Although the PBL teachers have the most comprehensive definition of what PBL means and how to implement it, their understanding is not shared by all of the high school teaching

staff. Teachers within the traditional instruction classroom discussed implementing PBL, yet their explanations and artifacts presented a picture of teacher-directed group projects, experiments, and/or kinesthetic assignments. To illustrate, what some of the traditional teachers shared as examples of PBL were teacher-directed and small group prescriptive projects. In their descriptions of projects, the components of PBL were not present. As described in chapter 4, one traditional teacher emphasized he found no value in having “kids sitting around doing silly projects.” These examples illustrated that some of the traditional teachers were exhibiting what Fullan (2001, 2007b) referred to as *false clarity* and other teachers’ demonstrated *painful unclarity*. *False clarity* “occurs when change is interpreted in an oversimplified way; that is, the proposed change has more to it than people perceive or realize” (p.89), whereas *painful unclarity* “is experienced when unclear innovations are attempted under conditions that do not support the development of the subjective meaning of the change” (p. 29). The teachers, who believed they were doing PBL, but were not, demonstrated *false clarity*. Teachers who had misconceptions about PBL and its necessity demonstrated *painful unclarity*. The teachers with *painful unclarity* were unable to comprehend any benefits that PBL could provide, or glean its usefulness. Lack of communication between all of the teachers and administration caused the disconnection of clarity between the staff. Figure 1 illustrates the importance of communication in any implantation.



Lack of Communication

Figure 1. Clarity Funnel

The findings demonstrated that the teachers who utilized traditional instruction lacked a true grasp of PBL, thus they lacked clarity of how to implement PBL and how it would be of benefit student achievement. The teacher groups did not share a common understanding of what PBL was, what pedagogical methodology looked like or how changing would benefit the academic success of the students at Shocker High School. While the State's Department of Education and state legislators have exemplified Shocker High School as an innovative school because of its PLP program, the teachers exhibited a limited understanding regarding PBL. This significantly influenced the buy-in for change from traditional instruction teachers. It has also created tension between the two teacher groups. Simply put, many of the traditional instruction teachers lacked a clear understanding of PBL pedagogy. This lack of understanding has led to frustration and skepticism.

**Communication.** Frustration and unclarity are common when communication is absent.

The frequency of communication and level of mutual support are two strong indicators of a

successful implementation (Fullan, 2007b). The nature of each teacher group's classroom structure and environment naturally impacts the dynamic of communication. The PBL teachers shared the same classroom, thus their communication was continuous throughout the school day. This ongoing dialog provided a platform of mutual support as they processed toward a shared understanding and meaning of PBL. The PBL teachers met daily, sharing the duties of teaching, planning, and assessing student projects. The constant collaboration fostered the development of a cohesive program definition and description. They collectively clarified a uniform vision of PBL. This perspective is not shared by the traditional instruction teachers.

In contrast to the collaborative classroom environment constructed by the PBL teachers, the traditional instruction teachers have separate classrooms and content areas, and do not generally plan collaboratively. As a result of this isolation, the teachers have constructed their own reality of PBL, or avoided the implementation of PBL altogether. As mentioned, the traditional teachers both exhibited false *clarity* and *painful unclarity*, which influenced their perception of the *complexity* of the implementation of PBL.

### **Differing Perspectives of the Complexity of PBL**

A second important conclusion during the research was the perceptions of the two teacher groups' regarding the *complexity* of implementing and managing PBL. Fullan (2007b) explained, "*Complexity* refers to the difficulty and extent of change required of the individuals responsible for implementation" (p. 90). Innovative instructional approaches, such as PBL, are a paradoxical shift for teachers, students, and parents. Traditionally, the focus of instruction has been the transfer of knowledge from the teacher to the student. With the introduction and instantaneous access to information, there has been a groundswell of education policy makers

and researchers calling for a shift of focus from knowledge attainment to teaching students how to disseminate information and apply the accessible knowledge and information. As described in previous chapters this is not a new education philosophy. It is a resurgence of the constructivists' ideals. This paradoxical shift is that teachers and students are equally responsible for the student's learning. Teachers are no longer the gatekeepers to the content knowledge. Innovative approaches such as PBL are based on this paradoxical shift of student-centered, constructivist, shared responsibility of learning. Many of the traditional teachers were not convinced a shift to PBL or a constructivist student-centered pedagogical methodology was realistic. They expressed a conviction that the traditional teacher-centered methodology was still delivering results. PBL was a dynamic shift that they and their students were not ready to make. They philosophically perceived the traditional pedagogical methods they were utilizing were suitable for their students' education. As described in chapter 4, the complexity of the shift to PBL was a significant challenge for the traditional instruction teachers. The traditional teachers saw the PBL as requiring too much of them and was an add-on instead of an alternative to how they covered their content. They truly perceived PBL as a daunting task. Their perceptions were probably rightly so. PBL requires a higher level of thinking and abstraction than more traditional instruction. You cannot teach higher order thinking skills if you do not use them yourself. Bransford et al. (2000) explained that some teachers are naturally contextual thinkers, whereas others think more abstractly.

Traditional instruction is an abstract methodology that is comfortable for teachers who are naturally concrete and sequential thinkers. PBL is a contextual methodology where learning is constructed through experiences. For traditional instructors to adjust their approach to



teaching, they would have to alter their way of thinking, which is uncomfortable and perceived as daunting (Bransford, et al., 2000). Bransford et al. (2000) also pointed out that overly contextualized knowledge makes it hard to transfer knowledge from one situation to another. Therefore, the learner needs some abstract representations of knowledge to promote transfer or application from one situation to another. It is less about being an abstract thinker, than it is how the teacher views the subject matter or level of epistemology regarding the content.

Bransford et al. (2000) explained that there are two categories of teachers: the novice and the expert. Figure 2 illustrates how the PBL teachers reflect the characteristics of expert teachers and the traditional teachers reflect the characteristics of the novice teachers.

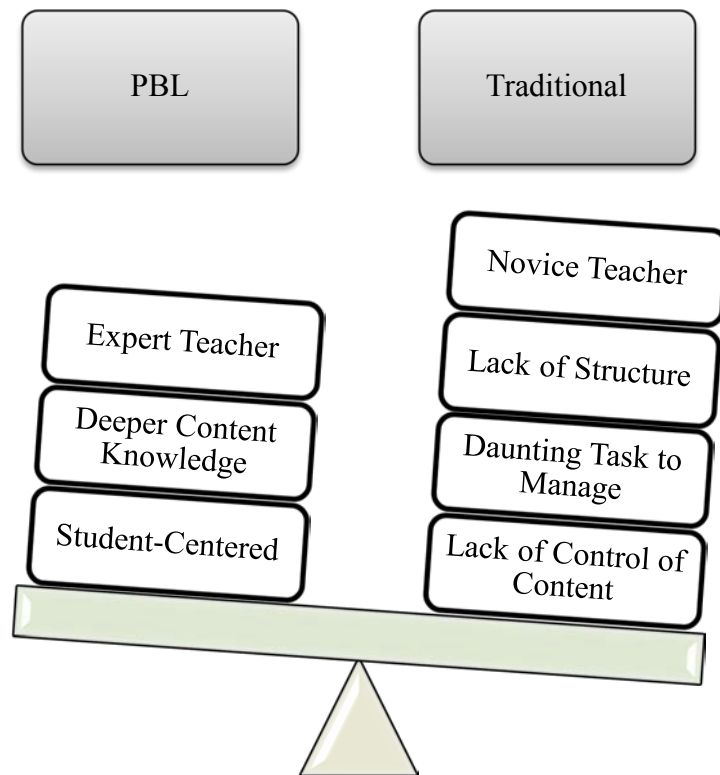


Figure 2. Unbalance between Expert Teachers (PBL) and Novice Teachers (Traditional)

The memorization and mastery of text objectives used by traditional educators was described as a novice teaching approach. In contrast, experts demonstrate the ability to organize their knowledge around core concepts and big ideas rather than discrete facts, which is how knowledge is often presented to students. In the expert's classroom, students perform well on the assessments because they can flexibly transfer their knowledge to a different context. Whereas in a novice classroom, research suggested that students generally demonstrated "a general set of problem solving skills or memory for an array of facts" (Bransford et al., 2000, p. 239). Bransford et al. (2000) emphasized that "experts have acquired extensive knowledge that affects what they notice and how they organize, represent, and interpret information in their environment" (p. 31). Using their theory, it can be surmised that the PBL teachers might fit their notion of experts, whereas the traditional teachers are still at the novice stage, regardless of their years of teaching experience.

In addition to teaching content in a way requiring abstract reasoning, traditional teachers also expressed concern that their students were not ready to handle the responsibilities for self-directing their own learning. The bottom line was that the traditional teachers perceived the transition to PBL as too extreme and complex and were unwilling to change the structure of their classroom. Nor were they willing to redefine their instruction to fully implement PBL, develop constructivist assessment procedures, or redefine the roles of the teacher and/or students. The traditional teachers also perceived that level of rigor between their traditional classrooms and the PLP classroom appeared to be dissimilar. They perceived the lessons and student work offered in the traditional classroom to be more rigorous than the projects the students were producing in the PLP classroom.

The PBL teachers acknowledged that, to traditional instruction teachers, the classroom environment does not appear as disciplined or rigorous as that of the traditional setting. As described in chapter 4, students do not sit in rows of desks or tables in the PLP classroom. Although they each have their own cubicle, students were observed studying in a variety of ways including lying on a sofa and working in small groups in a conference room outside the classroom. The traditional teachers were not comfortable with this kind of educational environment. They saw it as unstructured and therefore less rigorous than the sequenced curriculum they deployed within their classroom. Traditional teachers saw the unstructured and flexible timelines of the PLP classroom regarding project completion as unmanageable and too complicated to insure that all of the content standards were met during the time allowed by their bell schedule. They shared a perception that students needed to be taught responsibility for the same deadlines and expectations of their peers. As the content expert, the traditional teachers needed to set the pace and determine the content delivery.

### **Differing Perspectives of the Quality and Practicality of PBL**

Finally, the two teacher groups differed in their experiences and perceptions of the quality and practicality of implementing PBL. Fullan (2001, 2007b) described a *quality* and a *practical* implementation of change as one driven for the purpose of improving student achievement, not based on political necessity. A *quality and practical* implementation of change is also an innovative adoption where teachers are provided with appropriate and adequate availability of materials and other necessary resources, including adequate time for development, planning, and staff development. Figure 3 depicts the struggle between the two teacher groups

and their perceptions of the pedagogical methodology that should be used at Shocker High School.

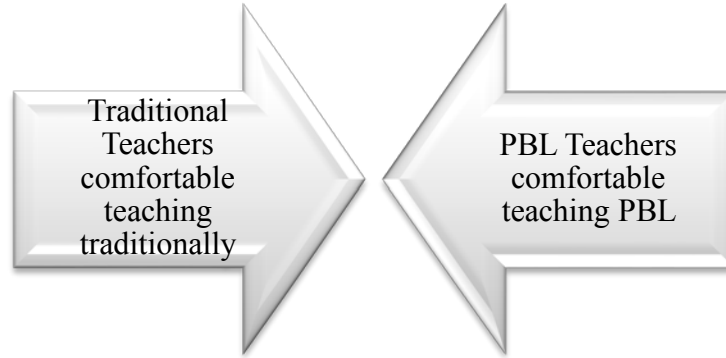


Figure 3. Pedagogical Tug

Fullan (2007b) described two pitfalls schools can fall into that jeopardize the *quality and practicality* of a successful change implementation. He explained:

First, it is easy for system leaders to go about developing such a system without realizing that the heart of the matter is instructional improvement linked to student learning – all teachers, all the time. The second shortcoming is the aforementioned need to single out collaborative cultures as vital for developing all teachers, vital for accelerating the pace and quality of reform, and vital for lateral and vertical accountability. (p.13)

Both of these pitfalls were evident at Shocker High School. The traditional instruction teachers cited they were untrained and uncomfortable facilitating the PBL pedagogy. Instead they believed they were best prepared to offer their students a quality learning environment using traditional instruction. They also shared the perception that PBL was not practical in their classroom due to the number of content standards to be addressed in order for students to be ready for the annual high stakes state assessment.

On the other hand, half of the PBL teachers were part of the original teacher leaders that developed and implemented PBL in 2007. These teachers, and the others teachers who have taught in the PLP classroom over the years, have devoted a significant amount of time and resources to researching, implementing, and modifying the PLP program. These efforts were to insure the program remains focused on meeting the diverse needs of the students within that classroom. The district has also allocated needed resources including building a classroom specifically designed to accommodate the untraditional classroom structure. Therefore, the teachers in the PBL classroom have embraced what they believe to be a *quality and practical* educational opportunity leading to improved student achievement.

**Choice.** Both teacher groups suggested multiple instructional methodologies are warranted at Shocker High School. As noted in chapter 4, Shocker School District does offer a third alternative for students to earn credits toward graduation. This setting is outside of the high school building. This instructional option is offered in an alternative setting and consisted of a computer-based virtual instructional model, facilitated by a licensed and endorsed secondary education instructor. By providing optional instructional tracks, teachers at Shocker High School rationalized that the *quality and practicality* of implementation PBL was only one dimension of a multidimensional solution meeting the diverse needs of their current students.

### **Implications**

High schools around the United States and abroad are in the midst of implementing or planning to implement student-centered, constructivist approaches, such as PBL. From this case study of Shocker High School, I have identified implications that could impact the success or failure of these organizations' implementation of pedagogical methodology change. These

implications should be considered by pre-service and in-service teacher education providers as well as district and school leadership. The findings suggest for successful implementation of PBL or other student-centered, constructivist pedagogical methodologies, five themes need to be addressed. First, policymakers need to develop assessments and assessment policies that move away from assessing only discreet content knowledge. Second, teacher self-efficacy needs to be assessed and supported. Third, schools need well-trained experts in the pedagogical methodology being implemented, through pre-service teacher training and/or ongoing professional development. Fourth, the implementing school or organization should develop a collective, shared definition and vision for the implementation. Finally, teachers, students, and parents should be provided a choice of instructional methodologies as a pathway toward high school graduation.

### **Policy and Policymakers**

The standards and assessments developed to meet the mandates of No Child Left Behind policies appear to promote instructional pedagogy complacency. Current assessment policies under the No Child Left Behind Act measure discreet subjects and content standards (Berry & Herrington, 2011; Cuban, 2012; Wiseman, 2012). This precipitates a conservative teaching style that focuses more on teaching students to identify the correct answers, than teaching students to think and problem solve. With the primary focus on rote memory and singular correct answers, the traditional instructional pedagogical methodology has remained the foundational instructional methodology taught in K-12 schools as well as at most colleges and universities. Wiseman (2012) explained with the enactment of No Child Left Behind, colleges and universities have emphasized more subject matter preparation and “little, if any, pedagogical

preparation” (p. 88). This lack of diversity regarding instructional methodologies promotes the complacency evident with the traditional instructional teachers at Shocker High School.

Currently, the only schools being pressured to change are those with the lowest performing students on the state adopted annual assessments. As discussed, these assessments are singular answer, knowledge-based assessments. Therefore, if policy makers continue to determine a school’s worth and student achievement on these types of assessments, teachers are likely to continue to be complacent with traditional instruction methodology and teaching to the test. For pedagogical reforms to be implemented successfully, policymakers need to evaluate the consequences of the policies they put on place.

Recent changes in state and national testing policies appear to be more aligned for assessing students through the use of a cross disciplinary, higher order questioning platform (Berry & Herrington, 2011). The Common Core State Standards also referred to in this State as the College and Career Readiness Standards, adopted in 2010, were developed to assess students both on abstract content and contextual learning. English, Language Arts, and Mathematic standards were developed collaboratively by the National Governors Association and the Council of Chief State School Officers. Whereas, the Next Generation Science Standards were developed by a consortium of twenty-six states, the National Science Association, the American Association for the Advancement of Science, the National Research Council and the nonprofit organization, Achieve, that also assisted with the Common Core State Standards (Thurlow, Lazarus, & Bechard, 2013). Government and history standards structured to incorporate both the abstract and contextual knowledge have also been developed within the state. When the two sets of standards are compared evidence of a paradoxical change in teaching and learning are

evidenced. The new standards are less broad in the content being assessed, but students are required to think more critically and contextually. To date, policymakers in the state have not approved funding for this platform of assessments, therefore, no assessments using this platform have been given, nor research authored to either confirm or refute these claims. With all of the uncertainty the teachers at Shocker High School and across the state are understandably working in a chaotic, uncertain environment. This environment can significantly impact the teachers' efficacy perceptions.

### **Efficacy**

Teacher self-efficacy has been defined as a teacher's perception that they possess the resources and strategies to change student behavior and master instructional benchmarks (Tschannen-Moran & Woolfolk Hoy, 2001). For change to occur teachers need to develop or possess a strong self-efficacy, both related to their teaching efficacy and personal efficacy (overcoming barriers efficacy). Bandura (1997) categorized four unique sources for strengthening efficacy beliefs: mastery experiences, vicarious experiences, social persuasion, and physiological factors. Teachers need mastery experiences that occur through direct observation or experiences. For instance, when a teacher is either directly engaged in the use of a strategy that brings about student behavior change and/or desired instructional outcomes or observes the event they gain mastery experiences. An example of a mastery experience was evidenced at Shocker High School when those facilitating and observing the PBL projects personally experienced students demonstrating deeper conceptual understanding. From these experiences their perception of PBL changed. Bandura (1997) suggested that experiencing student success will likely increase the teacher's efficacy to change their pedagogical methodology to overcome



the barriers of other students that are underperforming. Woolfolk Hoy (2000) found the same connection in a study of early career teachers. The study noted the importance of pre-service education and student teaching experiences on the development of personal efficacy. Woolfolk Hoy (2000) concluded that pre-service teachers develop a sense of efficacy toward only instructional methods they encountered. This was due to the experienced or observed the student encountered and their perception that the pedagogical methodology was the catalyst for the students' success.

The student teacher example also addressed Bandura's (1997) second source of building efficacy beliefs that leads to higher efficacy, vicarious or modeling experiences. Vicarious experience occurs when a teacher believes they can reproduce the student success they have observed or experienced. When teachers see other teachers' generating activities and learning experiences that lead to student success, self-efficacy increases, therefore they are more likely to adopt similar activities or methodologies, so that their students might also succeed. Increased teacher exposure to constructivist methodologies that generate student achievement would be a positive way to provide teachers with vicarious experiences.

The third source Bandura addressed was verbal or social persuasion. Social persuasion generally occurs when a teacher has had limited or no exposure to a teaching strategy or skill. Social persuasion is accues when other teachers/mentors, administrators, or professional development providers introduce or remind teachers of different teaching skills or methodologies through specific suggestions. Peer pressure is a form of social persuasion. As exemplified at Shocker High School it can have a positive or negative impact on self-efficacy.

Bandura's (1997) final source for raising efficacy is arousal. Arousal is a physiological state. It involves the release of an individual's hormones signaling preparation for an action. The hormonal signal is either interpreted as a pleasant experience or an unpleasant experience. The teacher groups at Shocker High School demonstrated different levels of physiological factors. The physiological factors of the PBL teachers appeared to help the teachers feel alert or excited to take on the challenges of the projects and meeting state assessment accountability. On the flipside, the traditional teachers demonstrated unpleasant physiological factors that appeared to be paralyzing rather than helpful. The traditional teachers feared they could not transition to a student-level learning methodology and cover all of the content needed to prepare students for state assessments. All four efficacy sources: mastery experience, vicarious experience, social persuasion and empowering physiological factors can be addressed through changes in pre-service preparatory programs, professional development; a shared vision and definition; and choices.

### **Pre-service Preparatory Programs and Teacher Professional Development**

A key to sustainable change is to "invest in people, support people, and develop people" (Schlechty, 1990, p. 38). The teachers at Shocker High School all suggested that their teaching style and chosen pedagogical methodology was influenced by policy and policymakers, their pre-service preparatory program, and especially their student teaching experience. Bransford et al. (2000) explained that a teacher's experiences shape his or her teaching philosophy. As the central figure and principle agent for classroom reform, the teacher is the primary factor influencing whether a new pedagogy will flourish or flounder (Windschitl, 2002). Therefore, if innovative implementation is to be sustainable, teachers need to become experts, not only in their

context area of specialization, but in the innovative pedagogical methodology being implemented.

It is a bit disconcerting that traditional teacher training is designed to train teachers to only perform a skill. This can be problematic in constructivist pedagogical methodologies such as PBL. Teachers that utilize PBL and other constructivist methodologies need time and training to become content and pedagogy experts. They need mastery and vicarious experiences to build personal efficacy (Bandura, 1997). At Shocker High School, the teachers who have embraced the PBL methodology have also spent time learning and training to become expert in their subject matter content and in facilitating student-centered instruction. The traditional instruction teachers, on the other hand, are novice in their knowledge of constructivist teaching. These teachers view teaching through a reductionist lens, only knowing one way to teach. To become an expert, a different kind of thinking is need (Bransford et al., 2000). Teachers have to be competent enough to be flexible between traditional instruction methodologies and constructivist instructional methodologies. They need the self-efficacy to view teaching more as a continuum of teaching and learning and not as a one size source for imparting knowledge to students. They have to be able to address questions posed by students and be willing to acknowledge that they do not know everything. Learning and exploring with their students should be natural. Simply training someone to perform a task is insufficient.

**Pre-service training for secondary teachers.** It was apparent that constructivist pedagogy, such as PBL, was not part of the pre-service teacher education programs of the teachers at Shocker High School. Teachers who were predisposed to teach using PBL described receiving no formal training, other than the limited professional development the district

provided. In most universities and colleges, pre-service and graduate education is still focused on traditional instructional methodology and pedagogy. These traditional methods taught in most universities and colleges appear to be out of sync with the pedagogy being called for in K-12 schools (Fullan, 2007b; Windschitl, 2002). This sentiment was also expressed by Windschitl (2002), “Given the profound challenges (in every dimension of the teaching experience) . . . without fundamental changes in teacher development and preparation, as well as in the culture of schooling in general, the prospect is all but nonexistent” (p. 161).

Therefore, evidence from this study supports the need for higher education teacher education programs to be reevaluated. Unlike elementary pre-service teacher education, in which college coursework focuses on instructional methods for teaching reading, writing, mathematics, science, social and various fine arts, secondary teacher pre-service education continues to primarily emphasize intensive instruction of individual content areas. These classes are designed to deepen the students’ content knowledge, but they are not designed to instruct students on how secondary children learn the content. This in-depth knowledge is indeed important, but there should be a balance between subject matter knowledge and pedagogical content knowledge. Hoban (2004) concurred “the design of many teacher education programs is based on a conceptual framework that presents discrete skills and knowledge to students in independent courses” (p. 122). For most secondary teachers at Shocker High School their training was content immersion with little time spent on integrating the various content areas or on student-driven instructional methodologies. When discussing pre-service education in the United States, Fullan (2007b) advised, “Society has never yet sustained an interest in teacher

education reform, and until it does, there is no chance for meaningful educational improvement” (p. 270).

Over the last few years, teacher education in the United States has been under assault. Ongoing conversations at all levels of government and from philanthropic entities have begun to question college and university teacher preparation training methodologies (Dieker, Rodriguez, Lignugaris/Kraft, Hynes, & Hughes, 2014). There are many non-higher education institutions who advocate they should be allowed to train teachers (Ravitch, 2010). Virtual simulations and online teacher preparation programs are being developed. Dieker et al. (2014) suggested these programs would allow an educational option for “teacher candidates and struggling teachers to rehearse their skills, improve their skills, and build confidence in their abilities” (p. 30). In addition, colleges and universities have been challenged to reevaluate the methodology within their teacher preparation programs. In January of 2014, the new Council for the Accreditation of Educator Preparation standards were released, forcing preparation programs to change (Hawkins, 2013).

Some colleges and universities are beginning to adapt. They are closing the gaps between theory and practice by addressing topics that impact the classroom culture including such factors as relationships, diversity, constructivist pedagogies, assessment literacy, and teacher collaboration. Innovative instructional methodologies are being embedded within all levels of pre-service teacher training. A deep knowledge of the content is important, but without a deeper understanding of how to teach and facilitate learning, sustainable change is not likely. Darling-Hammond and Ball (1999) explained, “Nothing can fully compensate for the weakness of a teacher who lacks the knowledge and skills needed to help students master the curriculum”

(p.2). Mastery is more than knowledge attainment. It is the application of information learned and the ability to use that information to think critically. Pre-service programs need to balance their students' content knowledge attainment, and provide multiple instructional pedagogy experiences. Without firsthand classroom experience outside the traditional instruction setting, pre-service teachers will not have the self-efficacy experience sources identified by Bandura (1997), and therefore not fully develop the teaching and personal self-efficacy to be highly effective teachers. In most schools, a majority of teachers working in schools are veterans. Therefore, we must also look beyond pre-service training.

**Teacher professional development.** Although some professional development was initially provided by the district to the teachers at Shocker High School, it was not ongoing. If the district had provided ongoing training, more of the traditional teachers might have moved toward incorporating PBL into their instructional repertoire. High quality teacher professional development can be a key to sustainable change (Fullan, 2001, 2007b). For professional development to have a significant impact on changing teachers' pedagogical methodology, it must be ongoing and focused on the innovation being implemented (Joyce & Showers, 2002). Fullan (2007b) explained:

Professional learning is not about workshops and courses, or even meeting high standards and qualification frameworks. If done well, these are all important inputs, but they represent only a portion of the solution, let's say 30%. The other 70% concerns whether teachers are learning every day, continuously improving their craft collectively. The development of habits of learning can occur only if they present themselves day after day. (p. 283)

If districts intend to spend a significant amount of time, professional development, and supporting resources on the implementation of change, teachers need to clearly understand the expected outcomes. In the case of Shocker High School, teachers who did not want to change did not have to change. The school did not force a particular teaching philosophy, but accommodated multiple ways of teaching. Teachers need policies based on the standards of the new practice, as well as multiple opportunities to collaboratively explore and grasp the new pedagogical methodology (Fullan, 2007b).

Professional learning communities are one form of ongoing professional development that can provide these collaborative learning opportunities. Although the PLP teachers at Shocker High School did not call their collaborative working relations a professional learning community, they operated as one. Professional learning communities are not something teachers do; they are a collaborative way of thinking and a united working relationship. Professional learning communities cannot be forced or mandated, they are organic. Teachers that operate as professional learning communities share instructional resources, develop student learning opportunities, and reflect on student achievement are essential components of the successful implementation of alternative pedagogical methodologies (Fullan, 2007b; McLaughlin & Talbert, 2001). For example, in their study, Louis and Marks (1998) concluded a “Professional community among teachers proved to be associated with both [improved] pedagogy and social support for achievement among students” (p. 558). Additionally, Bryk, Bebring, Kerbow, Rollow, and Easton (1999) found that teachers who were a part of a professional learning community developed a collective sense of responsibility for implementing a constructivist approach aimed at improving student achievement and preparedness. However, Fullan (2007)

cautioned, “Collaboration makes a positive difference only when it is focused on student performance for all and on the associated innovative practices that can make improvement happen for previously disengaged students” (p. 285).

When the focus is not clearly defined, the power of collaboration can also take the team in the wrong direction. For example, McLaughlin and Talbert (2001) studied a high school with a strong collaborative learning community that ended up reinforcing traditional instructional methods. This high school implementation failed, as did their vision of providing constructivist pedagogy focused on a large group of students disengaged by the traditional approach.

Professional learning communities are only part of the professional development needed to successfully transform classroom instruction. One focus of these PLCs could be an assessment of pedagogies and their effect on student achievement. Louis and Marks (1998) advocated, “Schools and teachers will need help from outside in learning new forms of pedagogy and in how to assess the development of classroom qualities that foster learning” (p. 561). When there is a conflict in perspectives as to the effectiveness of a new innovative pedagogical methodology, having someone come in to the school from outside the district can add an objective, non-biased perception.

Researchers have suggested that effective professional development is not a single presentation or workshop. Effective professional development is a gradual process that includes instruction, relevant and meaningful activities with the content, peer collaboration, follow-up training, and reflection (Adelman et al., 2002; Lawless & Pellegrino, 2007; Porter, 1999; Sparks, 2002). It is not sufficient to establish policies and new instructional practices without a parallel and consistent effort with effective teacher professional development programs designed to



modify or transform the practices and perceptions of teachers (Fullan, 2001, 2007b; Guskey, 1986, 2002). If Shocker District administrators had provided ongoing and sustained professional development on constructivist pedagogy and PBL, it is likely more teachers would have changed their practice. This ongoing professional development cannot be a onetime sit and get. I would recommend a multiple step process, such as a mandated self-paced, computer-based book study where teachers can either gain professional development points or college credit. Each building and district-wide dialogue and discussions should be provided to develop a shared understanding of the new methodology and how it would fit in their academic culture. Once the teachers have a genuine knowledge and shared understanding of the concepts of the methodology, time with a pedagogical professional development expert should be introduced. The opportunity to work with this expert should help the teachers to build their self-efficacy through social persuasion and physiological factors. The new pedagogical methodology should then be the focus of in service training and professional development throughout the introduction year and beyond. This ongoing focus should provide the mastery experiences and vicarious experiences needed for the teachers to build their personal efficacy to overcome the barriers to change. As mentioned, professional development should be driven by a shared vision and clearly defined implementation plan.

### **Shared Vision and Definition**

The teachers at Shocker High School lacked a shared vision and common understanding of PBL. The development of a collective definition of what the adopted instructional pedagogy is and establishing goals regarding what learning looks like are necessary for successful and sustainable implementation. Fullan (2007b) explained, “shared goals served to focus efforts and

mobilize resources in agreed-upon directions” (p. 140). There are no cookie cutter instructional approaches or programs. There are multiple models and the methodology is generally customized per the culture of the instructional setting. Therefore teacher input in the development of the vision of PBL is important. Guskey (1986) proposed to give teachers valuable experience, expertise, and resources necessary for planning and developing new programs. By developing a collective shared vision and definition, and insuring that all staff receives training and ongoing support, the quality and collective perceptions of the programs should improve.

For schools wanting to implement or expand their implementation of constructivist instructional pedagogy methodologies, such as PBL, teachers should be given an opportunity to engage students within classroom operating with the selected instructional methodology to gain both mastery and vivacious experiences. For example, a skilled PBL teacher should mentor a less skilled teacher, or mentoring could occur through co-teaching and/or collaboration between the PBL teacher and teacher new to PBL. These options can be achieved by either a policy that all classrooms engage students in at least one learning opportunity per semester, or for teachers and students to spend time within a classroom using the constructivist approach. For example the teachers at Shocker High School could facilitate students as adjunct instructors or content specialist advisors in the PLP classroom. The students could participate in one PBL course during their first year in attendance at the high schools or complete a senior PBL project as a graduation requirement. From this opportunity, the traditional instruction teacher could gain firsthand knowledge and professional development regarding how PBL is structured, managed, and assessed. They could also develop more efficacy and positive physiological factors toward

using PBL. Additionally, students could generate an understanding of how PBL is structured. By experiencing the PBL project conception, development, and assessment, a true picture of the process should emerge for the all the teachers at Shocker High School. Kicken, Brand-Gruwel, vanMerriënboer, and Slot (2009) forewarned, “When students who are used to a teacher-directed learning environment suddenly enter an educational setting which demands them to direct their own learning, their lack of self-directed learning skills may impede them in becoming successful independent learners” (p. 440). Whereas, Guskey (2002) postulated that only after an experienced teacher is actively engaged in an innovative approach and has witnessed an improvement in student results will their perception change. At this point they become committed to the implementation. Without emersion into an implemented constructivist environment, the traditional instruction teachers and students have no experience to reflect on; thus, their perceptions are built on assumptions. Although this study demonstrated the benefits of PBL for the students involved in the PLP classroom, schools should not have a monolithic approach to instruction. Expert teachers are flexible, using selecting the methodologies that are appropriate for their students and the contexts of each learning objective. Students are diverse. They all have different needs and preferences for the learning environment that is conducive to them. Like their students, teachers also do not all have the some talents and aptitudes to assimilate the same pedagogical methods. Some teachers are still novice in their instructional methodology and/or content. They also have varying levels of both teaching and personal (overcoming barriers) self-efficacy. Therefore, it is important for all teachers to have a choice regarding what educational learning environment is appropriate.

## **Choice**

Effective instruction is not a one size fits all methodology. As Shepard (2000) suggested one reason to warrant choice is because in high school, students often come from elementary and intermediate school structures where they have been exposed to teacher-directed learning. They have been trained to know how the teacher assesses their performance, indicates their learning needs, and selects appropriate learning tasks for them to fulfill these needs. This structure is what the students are used to. Therefore, change can be difficult for them and they may be unwilling themselves to adapt. The Shocker High School teachers were reasonably clear about the students' perceptions even though their voices are not reflected in the study. The teachers conveyed that student perceptions were gathered through conversations and observations of the students. It is important for the traditional teachers not to dismiss alternative instructional approaches and methodologies just because they do not understand them. All teachers need to be respectful of others' instructional choices. They should be open to exploring and honing their knowledge of the art and science of teaching.

What is relevant to this study is the knowledge and understanding the students have different needs, as well as preferred learning styles and learning environments. Therefore, students and teachers both should be given the opportunity to match their preferred learning and teaching methodology with the compatible learning and teaching environments. By allowing the students to experience multiple tracks, students can customize their high school experience to meet their specific development and instructional preferences. This is not a new phenomenon to education; it is one that has challenged educators and education researchers for over 100 years. Although many researchers such as Caillier and Riordan (2009) commented that today's "Youth

are the ultimate social entrepreneurs and multitaskers; these skills are characteristic of the worlds they inhabit and the worlds of work they will enter” (p. 491). By offering students a choice as to how they learn, high schools could adequately connect the diverse needs of students with methodology that keeps them engaged and developing lifelong learning skills.

### **Summary**

My goal within this chapter was to present this case study’s conclusions and implications constructed from the findings of the case study conducted at Shocker High School. The conclusions were presented through the lens of Fullan’s characteristics of change, which are a part of Fullan’s theory of educational change. In addition, additional research was introduced to provide multiple viewpoints. Finally, I provided implications for the implementation of innovative constructivist pedagogical methodology. Ip and Fox (2004) emphasized, “No two organizations are identical and no two schools develop in exactly the same way as individual schools are embedded within unique contextual backgrounds, which exert a continuous influence on them” (p. 444). Therefore, implementation of constructivist pedagogical practices will vary depending upon a school’s unique educational culture, traditions, staff and student diversity, and readiness. It is my hope this case study will provide insight to other educational institutions that are preparing to implement large scale instructional pedagogy methodology initiatives.

From this case study, I now have a better understanding of the teacher’s perspectives regarding what conditions influenced their decision to either willingly implement or not implement student-led, project-based learning instruction methods. The knowledge I’ve gleaned can help other district and building leadership teams when implementing a constructivist pedagogical methodology within their school(s). Fullan (2009) surmised in the next decade,

“we will witness the growing professionalization of reform” (p. 112) as schools address changing demographics and diversity. Researchers have forecasted that educational leaders armed with data and a reprieve from No Child Left Behind will actively pursue alternative instructional methods (Barber & Mourshed, 2007; Hattie, 2009; Levin & Fullan, 2008). The reform will be aimed at generating improved student achievement and student preparedness for not only post-secondary education, but also entrance into the workforce. Fullan (2009) predicted “we will see a new emphasis on capacity building, especially with respect to ‘deep instructional practice,’ and in strategies for ‘raising the bar and closing the gap’ in student achievement” (p.110). Changes will need to arise from the teachers themselves. In order for this to happen policy makers and implementers will need to work collaboratively. PBL and other constructivist, student-centered, self-directed learning methodologies will be a dramatic change from teacher-centered instruction to student-centered instruction. This case study of Shocker High School exemplifies a school that has undertaken such a large-scale change.

## **REFERENCES**

## References

- Abrami, P. C., Bernard, R. M., Borokhovski, E., Wade, A., Surkes, M. A., Tamim, R., & Zhang, D. (2008). Instructional interventions affecting critical thinking skills and dispositions: A stage 1 meta-analysis. *Review of Educational Research, 78*(4), 1102-1134. doi: 10.3102/0034654308326084
- Adelman, N., Donnelly, M. B., Dove, T., Tiffany-Morales, J., Wayne, A., & Zucker, A. (2002). *The integrated studies of educational technology: Professional development and teachers' use of technology*. Arlington, VA: SRI International.
- Ashton, P. T. (1985). Motivation and the teacher's sense of efficacy. In R. E. Ames & C. Ames (Eds.), *Research on motivation in education: The classroom milieu* (Vol. 2, pp. 141-174). Orlando, FL: Academic Press.
- Bagby, J., & Sulak, T. (2009). Strategies for promoting problem solving and transfer: A qualitative study. *Montessori Life, 2009*(4), 38-42.
- Bandura, A. (1986). *Social foundations of thought and action: A social cognitive theory*. Englewood Cliff, NJ: Prentice Hall.
- Bandura, A. (1993). Perceived self-efficacy in cognitive development and functioning. *Educational Psychologist, 28*(2), 117-148.
- Bandura, A. (1997). *Self-efficacy: The exercise of control*. New York, NY: W. H. Freeman-Macmillan.
- Barber, M., & Mourshed, M. (2007). How the world's best performing school systems come out on top. (pp. 1-56). London, UK.
- Barron, B. J. S., & Darling-Hammond. (2008). How can we teach for meaningful learning? *Powerful learning: What we know about teaching for understanding* (pp. 11-70). San Francisco, CA: Jossey-Bass.



- Barron, B. J. S., Schwartz, D. L., Vye, N. J., Moore, A. L., Petrosino, A. J., & Bransford, J. D. (1998). Doing with understanding: Lessons from research on problem- and project-based learning. *The Journal of the Learning Sciences*, 7(3 & 4), 271-311.
- Bas, G. (2011). Investigating the effects of project-based learning on students' academic achievement and attitudes toward English lesson. *The Online Journal of New Horizons In Education*, 1(4), 1-15.
- Bell, S. (2010). Project-based learning for the 21st century: Skills for the future. *The Clearing House*, 83, 39-43.
- Berry, K. S., & Herrington, C. D. (2011). States and their struggles with NCLB: Does the Obama blueprint get it right? *Peabody Journal of Education*, 86(3), 272-290. doi: 10.1080/0161956X.2011.578982
- Bogdan, R. C., & Biklen, S. K. (2007). *Qualitative research for education: An introduction to theories and methods* (5th ed.). Boston, MA: Pearson Education.
- Bransford, J. D., Brown, A. L., & Cocking, R. R. (2000). *How people learn: Brain, mind, experience, and school* (Expanded ed.). Washington, DC: National Academy Press.
- Brooks, D. W., & Shell, D. F. (2006). Working memory, motivation, and teacher-initiated learning. *Journal of Science Education and Technology*, 15(1), 17-30. doi: 10.1007/s10956-006-0353-0
- Bruner, J. (1996). *The culture of education*. Cambridge, MA: Harvard University Press.
- Bryk, A. S., Bebring, P. B., Kerbow, D., Rollow, S., & Easton, J. Q. (1999). *Charting Chicago school reform: Democratic localism as a lever for change*. Boulder, CO: Westview Press.
- Bushnell, M. (2003). Teachers in the schoolhouse panopticon: Complicity and resistance. *Education and Urban Society*, 35(3), 251-272. doi: 10.1177/00131245032552284
- Caillier, S. L., & Riordan, R. C. (2009). Teacher education for the schools we need. *Journal of Teacher Education*, 60(5), 489-496. doi: 10.1177/0022487109348596

- Carr, T., & Jitendra, A. K. (2000). Using hypermedia and multimedia to promote project-based learning of at-risk high school students. *Intervention in School and Clinic, 36*(1), 40-44. doi: 10.1177/105345120003600106
- Chu, K. W. S. (2009). Inquiry project-based learning with a partnership of three types of teachers and the school librarian. *Journal of the American Society for Information Science and Technology, 60*(8), 1671-1686. doi: 10.1002/asi.21084
- Chubb, J. E., & Moe, T. M. (1990). *Politics, markets, and America's schools*. Washington, DC: Brookings Institution.
- Cochran-Smith, M., & Fries, M. K. (2001). Sticks, stones, and ideology: The discourse of reform in teacher education. *Educational Researcher, 30*(8), 3-15. doi: 10.3102/0013189x030008003
- Creswell, J. W. (2003). *Research design*. Thousand Oaks, CA: Sage Publications.
- Creswell, J. W. (2007). *Qualitative inquiry & research design: Choosing among five approaches*. (2nd ed.). Thousand Oaks, CA: Sage Publications.
- Cuban, L. (2012). Why so many structural changes in schools and so little reform in teaching practices? *Journal of Educational Administration, 51*(2), 109-125. doi: 10.1108/09578231311304661
- Cuban, L., Kirkpatrick, H., & Peck, C. (2001). High access and low use of technologies in high school classrooms: Explaining an apparent paradox. *American Educational Research Journal, 38*(4), 813-834. doi: 10.3102/00028312038004813
- Darling-Hammond, L. (2010). *The flat world and education: How America's commitment to equity will determine our future*. New York, NY: Teachers College Press.
- Darling-Hammond, L., Anness, J., & Ort, S. W. (2002). Reinventing high school: Outcomes of the coalition campus schools project. *American Educational Research Journal, 39*(3), 639-673. doi: 10.3102/00028312039003639

- Darling-Hammond, L., & Ball, D. L. (1999). What can policymakers do to support teaching to high standards? In C. f. P. R. i. Education (Ed.), *National Institute on Educational Governance, Finance, Policymaking and Management, Office of Educational Research and Improvement* (Vol. OERI-R308A6000, pp. 1-4): U. S. Department of Education.
- de Kock, A., Slegers, P., & Voeten, M. J. M. (2004). New learning and the classification of learning environments in secondary education. *Review of Educational Research*, 74(2), 141-170.
- Denzin, N. K., & Lincoln, Y. S. (2008). *Collecting and interpreting qualitative materials* (Vol. 3rd). Thousand Oaks, CA: Sage Publications.
- Dewey, J. (1938). *Experience & education*. New York, NY: Touchstone.
- Dieker, L. A., Rodriguez, J. A., Lignugaris/Kraft, B., Hynes, M. C., & Hughes, C. E. (2014). The potential of simulated environments in teacher education: Current and future possibilities. *Teacher Education and Special Education: The Journal of the Teacher Education Division of the Council for Exceptional Children*, 37(1), 21-33. doi: 10.1177/0888406413512683
- Donham, J., Kuhlthau, C. C., Oberg, D., & Bishop, K. (2001). *Inquiry-based learning: Lessons from library power*. Worthington, OH: Linworth Publishing.
- Doyle, W. (1983). Academic work. *Review of Educational Research*, 53(2), 159-199. doi: 10.3102/00346543053002159
- Dressman, M. (2008). *Using social theory in educational research: A practical guide*. New York, NY: Routledge Taylor & Francis Group.
- Duffy, G., & Roebler, L. (1986). Constraints on teacher change. *Journal of Teacher Education*, 37(1), 55-58. doi: 10.1177/0022487186903700112
- Dunlap, J. C. (2005). Changes in students' use of lifelong learning skills during a problem-based learning project. *Performance Improvement Quarterly*, 18(1), 5-33. doi: 10.1111/j.1937-8327.2005.tb00324.x

- Edelson, D., Gordin, D. N., & Pea, R. D. (1999). Addressing the challenges of inquiry-based learning through technology and curriculum design. *Journal of the Learning Sciences*, 8(3/4), 391-450.
- Eisenhart, M., & Howe, K. R. (1992). Validity in educational research. In M. KeCompte, W. Millroy & J. Preissle (Eds.), *The handbook of qualitative research in education* (pp. 642-680). San Diego, CA: Academic Press.
- Erford, B. T., Duncan, K., & Savin-Murphy, J. (2010). Brief psychometric analysis of the self-efficacy teacher report scale. *Measurement and Evaluation in Counseling and Development*, 43(2), 79-90. doi: 10.1177/0748175610373454
- Erickson, F. (1985). *Qualitative methods in research on teaching*: Institute for Research on Teaching, Michigan State University.
- Erickson, F. (2006). Definition and analysis of data from videotape: Some research procedures and their rationales. In J. Green, G. Camilli & P. Elmore (Eds.), *Handbook of complementary methods in education research* (3rd ed., pp. 177-192). Mahwah, NJ: Lawrence Erlbaum & Associates.
- Ertmer, P., & Ottenbreit-Leftwich, A. (2009). *Teacher technology change: How knowledge, beliefs, and culture intersect*. Paper presented at the American Educational Research Association, San Diego, CA.
- Ferretti, R. P., & Okolo, C. M. (1996). Authenticity in learning: Multimedia design projects in the social studies for students with disabilities. *Journal of Learning Disabilities*, 29(5), 450-460. doi: 10.1177/002221949602900501
- Freeman, M., deMarrais, K., Preissle, J., Roulston, K., & St. Pierre, E. A. (2007). Standards of evidence in qualitative research: An incitement to discourse. *Educational Researcher*, 36(1), 25-32. doi: 10.3102/0013189X06298009
- Freilich Hjelle, P. (2001). *Reading between the lines: Teacher resistance to change*. University of Pennsylvania.
- Freire, P. (2000). *Pedagogy of the oppressed*. (M. Bergnam Ramos, Trans.) (30th Anniversary ed.). New York, NY: Bloomsbury Academic.

- Fullan, M. (2001). *The new meaning of educational change*. (3rd Ed.). New York, NY: Teacher College Press.
- Fullan, M. (2007a). Change the terms for teacher learning. *Journal of Staff Development*, 28(3), 35-36.
- Fullan, M. (2007b). *The new meaning of educational change* (Fourth ed.). New York, NY: Teacher College Press.
- Fullan, M. (2008). *What's worth fighting for in the principalship*. (2nd ed.). New York, NY: Teachers College Press.
- Fullan, M. (2009). Large-scale reform comes of age. *Journal for Educational Change*, 10, 101-113. doi: 10.1007/s 10833-009-9108-z
- Fullan, M. (2010). The big ideas behind whole system reform. *Education Canada*, 50(3), 24-27.
- Galloway, C., & Lasley II, T. (2010). Effective urban teaching environments for the 21st century. *Education and Urban Society*, 42(3), 269-282. doi: 10.1177/0013124509357005
- Gatt, I. (2009). Changing perceptions, practice and pedagogy: Challenges for and ways into teacher change. *Journal of Transformative Education*, 7(2), 164-184. doi:10.1177/1541344609339024
- Geier, R., Blumenfeld, P., C., Marx, R. W., Krajcik, J., S., Fishman, B., Soloway, E., & Clay-Chambers, J. (2008). Standardized test outcomes for students engaged in inquiry-based science curricula in the context of urban reform. *Journal of Research in Science Teaching*, 45(8), 922-939. doi: 10.1002/tea.20248
- Geijsel, F., Slegers, P., van den Berg, R., & Kelchtermans, G. (2001). Conditions fostering the implementation of large-scale innovation programs in schools: Teachers' perspectives. *Educational Administration Quarterly*, 37(1), 130-166. doi: 10.1177/00131610121969262
- Gibson, S., & Dembo, M. H. (1984). Teacher efficacy: A construct validation. *Journal of Educational Psychology*, 76(4), 569-582. doi: 10.1037/0022-0663.76.4.569

- Gitlin, A., & Margonis, F. (1995). The political aspects of reform: Teacher resistance as good sense. *American Journal of Education*, 103(4), 377-405.
- Goddard, R. D., Hoy, W. K., & Woolfolk Hoy, A. (2004). Collective efficacy beliefs: Theoretical developments, empirical evidence, and future directions. *Educational Researcher*, 33(3), 3-13.
- Golafshani, N. (2003). Understanding reliability and validity in qualitative research. *The Qualitative Report*, 8(4), 597-607.
- Grant, M. M. (2009). *Understanding projects in project-based learning: A student's perspective*. Paper presented at the Annual Meeting of the American Educational Research Association, San Diego, CA.
- Guskey, T. R. (1986). Staff development and the process of teacher change. *Educational Researcher*, 15(5), 5-12.
- Guskey, T. R. (2002). Professional development and teacher change. *Teachers and Training: theory and practice*, 8(3/4), 381-392.
- Harada, V. H., Kirio, C. H., & Yamamoto, S. H. (2008). *Collaborating for project-based learning in grades 9-12*. Columbus, OH: Linworth Publishing.
- Harada, V. H., & Yoshina, J. M. (2004). Moving from rote to inquiry: Creating learning that counts. *Library Media Connection*, 23(2), 22-24.
- Hargreaves, A. (1994). *Changing teachers, changing times: Teachers' work and culture in the postmodern age*. New York, NY: Teachers College Press.
- Hargreaves, A. (2005). The emotions of teaching and educational change. In A. Hargreaves (Ed.), *Extending educational change: International handbook of educational change*. (pp. 278-295). Dordrecht, Netherlands: Springer.
- Hargreaves, A., & Fullan, M. (2012). *Professional capital: Transforming teaching in every school*. New York, NY: Teachers College Press.

- Harrison, J., MacGibbon, L., & Morton, M. (2001). Regimes of trustworthiness in qualitative research: The rigor of reciprocity. *Qualitative Inquiry*, 7(3), 323-345.
- Hattie, J. A. C. (2009). *Visible learning: A synthesis of over 800 meta-analyses relating to achievement*. New York, NY: Routledge.
- Hawkins, B. D. (2013). Teaching failure? hbcu education deans say new standards could jeopardize future for generation of students. *Diverse: Issues in Higher Education*, 30(10), 14-15.
- Hess, F., M. (1998). Reconsidering the promise of systemwide innovation for urban districts. *Educational Forum*, 62(3), 249-256. doi: 10.1080/00131729808984351
- Hess, F., M., Maranto, R., & Milliman, S. (2000). Resistance in the trenches: What shapes teachers' attitudes toward school choice? *Educational Policy*, 14(2), 195-213. doi: 10.1177/0895904800014002001
- Hew, K. F., & Brush, T. (2007). Integrating technology into k-12 teaching and learning: Current knowledge gaps and recommendations for future research. *Education Tech Research and Development*, 55(3), 223-252. doi: 10.1007/s11423-0096-9022-5
- Hoban, G. F. (2004). Seeking quality in teacher education design: A four-dimensional approach. *Australian Journal of Education*, 48(2), 117-133. doi: 10.1177/000494410404800203
- Hoy, W. K., & Woolfolk, A. E. (1993). Teachers' sense of efficacy and the organizational health of schools. *The Elementary School Journal*, 93(4), 355-372.
- Hu, S., Kuh, G. D., & Li, S. (2008). The effects of engagement in inquiry-oriented activities on student learning and personal development. *Innovative Higher Education*, 33(2), 71-81. doi: 10.1007/s10755-008-9066-z
- Ip, P. S., & Fox, R. (2004, 5-8 December). *Changing schools through exploring innovative pedagogical practices using ICTs*. Paper presented at the Beyond the comfort zone: Proceedings of the 21st ASCILITE Conference, Perth.

- Johnson, J. A., Musial, D. L., Hall, G. E., Gollnick, D. M., & Dupuis, V. L. (2008). *Foundations of American education: Perspectives on education in a changing world*. (14th ed.). Boston, MA: Pearson/Allyn & Bacon.
- Joyce, B. R., & Showers, B. (2002). *Student achievement through staff development* (3rd ed.). Alexandria, VA: Association for Supervision and Curriculum Development.
- Katz, E. H., Dalton, S., & Glacuinta, J. B. (1994). Status risk taking and receptivity of home economics teachers to a statewide curriculum innovation. *Home Economics Research Journal*, 22(4), 401-421. doi: DOI:10.1177/0046777494224003
- Keller, J. M. (1979). Motivation and instructional design: A theoretical perspective. *Journal of Instructional Development*, 2(4), 26-34.
- Kicken, W., Brand-Gruwel, S., vanMerriënboer, J., & Slot, W. (2009). Design and evaluation of a development portfolio: How to improve students' self-directed learning skills. *Instructional Science: An International Journal of the Learning Sciences*, 37(5), 453-473. doi: 10.1007/s11251-008-9058-5
- Kilpatrick, W. H. (1918). The project method (Vol. 19, pp. 319-334). Columbia University: Teachers College.
- Konings, K. D., Brand-Gruwel, S., & van Merriënboer, J. J. G. (2011). Participatory instructional redesign by students and teachers in secondary education: Effects on perceptions of instruction. *Instructional Science*, 39(5), 737-762. doi: 10.1007/s11251-010-9152-3
- Krathwohl, D. R. (2002). A revision of Bloom's taxonomy: An overview. *Theory Into Practice*, 41(4), 211-218.
- Kwakman, K. (1998). Professional learning on the job of Dutch secondary teachers: In search of relevant factors. *Journal of In-Service Education*, 24(1), 57-71. doi: 10.1080/13674589800200031
- Lambros, A. (2004). *Problem-based learning in middle and high school classrooms: A teacher's guide to implementation*. Thousand Oaks, CA: Corwin Press.



- Langhout, R. D., Rappaport, J., & Simmons, D. (2002). Community into the classroom: Community involvement, and project-based learning. *Urban Education, 37*, 323-349. doi: 10.1177/00485902037003002
- Lawless, K. A., & Pellegrino, J. W. (2007). Professional development in integrating technology into teaching and learning: Knowns, unknowns, and ways to pursue better questions and answers. *Review of Educational Research, 77*(4), 575-614. doi: 10.3102/0034654307309921
- Levin, B., & Fullan, M. (2008). Learning about system renewal. *Educational Management Administration & Leadership, 36*(2), 289-303. doi: 10.1177/1741143207087778
- Louis, K. S., & Marks, H. M. (1998). Does professional community affect the classroom? Teachers' work and student experiences in restructuring schools. *American Journal of Education, 106*(4), 532-575. doi: 0195-6744/98/0604-000
- Marx, R. W., Blumenfeld, P. C., Krajcik, J. S., & Soloway, E. (1997). Enacting project-based science: Challenges for practice and policy. *The Elementary School Journal, 97*(4), 341-358.
- Mayer, R. E. (2002). Rote versus meaningful learning. *Theory Into Practice, 41*(4), 226-232.
- McLaughlin, M. W., & Talbert, J. E. (2001). *Professional communities and the work of high school teaching* (2nd ed.). Chicago, IL: University of Chicago Press.
- Mergendoller, J. R., Maxwell, N. L., & Bellisimo, Y. (2000). Comparing problem-based learning and traditional instruction in high school economics. *The Journal of Educational Research, 93*(6), 374-382.
- Merriam, S. B. (1998). *Qualitative research and case study applications in education*. San Francisco, CA: Jossey-Bass.
- Merriam, S. B. (2009). *Qualitative research: A guide to design and implementation*. San Francisco, CA: Jossey-Bass.

- Mohrman, S. A., & Lawler, E. E. (1996). Motivation for school reform: Creating educational incentives that work. In S. H. Fuhrman & J. A. O'Day (Eds.), *Rewards and reform* (pp. 115-143). San Francisco, CA: Jossey-Bass.
- Mokhtar, I. A., Majid, S., & Foo, S. (2008). Teaching information literacy through learning styles: The application of Gardner's multiple intelligences. *Journal of Librarianship and Information Science*, *40*(2), 93-109. doi: 10.1177/0961000608089345
- Mueller, J., Wood, E., Willoughby, T., Craig, R., & Specht, J. (2008). Identifying discriminating variables between teachers who fully integrate computers and teachers with limited integration. *Computer and Education*, *51*(4), 1523-1537. doi: 10.1016/j.compedu.2008.02.003
- National Advisory Committee on Creative and Cultural Education. (1998). All our futures: Creativity, culture & education. In K. Robinson (Ed.), (pp. 243). London, UK: Department of Education Great Britain.
- Newell, R. J. (2003). *Passion for learning: How project-based learning meets the needs of 21st century students*. Lanham, MD: Scarecrow Press.
- Nicaise, M., Gibney, T., & Crane, M. (2000). Toward an understanding of authentic learning: Student perceptions of an authentic classroom. *Journal of Science Education and Technology*, *9*(1), 79-94.
- O'Brien, D. G., Stewart, R. A., & Moje, E. B. (1995). Why content literacy is difficult to infuse into the secondary school: Complexities of curriculum, pedagogy, and school culture. *Reading Research Quarterly*, *30*(3), 442-463.
- Paglis, L. L., & Green, S. G. (2002). Leadership self-efficacy and managers' motivation for leading change. *Journal of Organizational Behavior*, *23*(2), 215-235. doi: 10.1002/job.137
- Patton, M. (2002). *Qualitative research and evaluation methods* (3rd ed.). Thousand Oaks, CA: Sage Publications.

- Pedersen, S., & Liu, M. (2003). Teachers' beliefs about issues in the implementation of a student-centered learning environment. *Educational Technology Research and Development*, 51(2), 57-76.
- Peshkin, A. (1988). In search of subjectivity. One's own. *Educational Research*, 17(7), 17-21.
- Petrosino, A. J. (2004). Intergrating curriculum, instruction, and assessments in project-based instruction: A case study of an experienced teacher. *Journal of Science Education and Technology*, 13(4), 447-460.
- Piantanida, M., & Garman, N. B. (2009). *The qualitative dissertation: A guide for students and faculty*. Thousand Oaks, CA: Corwin.
- Ponticell, J. A. (2003). Enhancers and inhibitors of teacher risk taking: A case study. *Peabody Journal of Education*, 78(3), 5-24.
- Porter, B. (1999). *Grappling with accountability: Tools for organizing and assessing technology for student results*. Oro Valley, AZ: Education Technology Planners, Inc.
- Powell, A. B., Francisco, J. M., & Maher, C. A. (2003). An analytical model for studying the development of learners' mathematical ideas and reasoning using videotape data. *Journal of Mathematical Behaviors*, 22, 405-435. doi: 10.1016
- Ravitch, D. (2010). Stop the madness. *Education Review*, 23(1), 27-34.
- Ravitz, J. (2008). *Project-based learning as a catalyst in reforming high schools*. Paper presented at the Annual Meetings of the American Educational Research Association, New York, NY.
- Ravitz, J., Hixson, N., English, M., & Mergendoller, J. R. (2012). Using project based learning to teach 21st century skills: Findings from a statewide initiative (pp. 10). Vancouver, BC.
- Reeves, D. B. (2009). *Leading change in your school: How to conquer myths, build commitment, and get results*. Alexandria, VA: Association for Supervision and Curriculum Development.

- Reio Jr., T. G. (2005). Emotions as a lens to explore teacher identity and change: A commentary. *Teaching and Teacher Education, 21*, 985-993. doi:10.1016/j.tate.2005.06.008
- Roehrig, G. H., Kruse, R. A., & Kern, A. (2007). Teacher and school characteristics and their influence on curriculum implementation. *Journal of Research in Science Teaching, 44*(7), 883-907. doi: 10.1002/tea.20180
- Rogers-Dillon, R. H. (2005). Hierarchical qualitative research teams: Refining the methodology. *Qualitative Research, 5*(4), 437-454. doi: 10.1177/1468794105056922
- Rosenholtz, S. J. (1989). *Teachers' workplace: The social organization of schools*. New York, NY: Longman.
- Rubin, H. J., & Rubin, I. S. (2005). *Qualitative interviewing: The art of hearing data*. Thousand Oaks, CA: Sage Publications, Inc.
- Sandelowski, M., & Barroso, J. (2003). Writing the proposal for a qualitative research methodology project. *Qualitative Health Research, 13*(6), 781-820. doi: 10.1177/1049732303255474
- Schlechty, P. C. (1990). *Schools for the 21st century: Leadership imperatives for educational reform* (1st ed.). San Francisco, CA: Jossey-Bass.
- Sebring, P. A., & Camburn, E. M. (1992). *How teachers are engaging reform in Chicago: Differences among schools*. Paper presented at the Annual Meeting of the American Educational Research Association, San Francisco, CA.
- Senge, P. (1990). The leader's new work: Building learning organizations. *Sloan Management Review, 32*(1), 7-22.
- Sharma, M., Petrosa, R., & Heaney, C. A. (1999). Evaluation of a brief intervention based on social cognitive theory to develop problem-solving skills among sixth-grade children. *Health Education and Behavior, 26*(4), 465-477. doi: 10.1177/1090198199022600406
- Shenton, A. K. (2004). Strategies for ensuring trustworthiness in qualitative research projects. *Education for Information, 22*, 63-75.

- Shepard, L. (2000). The role of assessment in a learning culture. *Educational Researcher*, 29(7), 4-14. doi: 10.3102/0013189X029007004
- Smith, B., & Dodds, B. (1997). *Developing managers through project-based learning*. Brookfield, VT: Gower.
- Sparks, D. (2002). *Designing powerful professional development for teachers and principals*. Oxford, OH: National Staff Development Council.
- Spencer, D. A. (Ed.). (2000). *Teachers' work: Yesterday, today, and tomorrow*. (99th Yearbook ed.). Chicago, IL: National Society for the Study of Education.
- Stake, R. E. (2010). *Qualitative research: Studying how things work*. New York, NY: The Guilford Press.
- Stetsenko, A., & Arievidt, I. (2002). Teaching, learning, and development: A post-Vygotskian perspective. In G. Wells & G. Claxton (Eds.), *Learning for life in the 21st century: Sociocultural perspectives on the future of education*. (pp. 84-96). Malden, MA: Blackwell Publishing.
- Strauss, A., & Corbin, J. M. (1998). *Basics of qualitative research: Grounded theory procedures and techniques* (2 ed.). Thousand Oaks, CA: Sage Publications.
- Thoonen, E. E. J., Slegers, P. J. C., Oort, F. J., Peetsma, T. T. D., & Geijsel, F. P. (2011). How to improve teaching practices: The role of teacher motivation, organizational factors, and leadership practices. *Educational Administration Quarterly*, 47(3), 496-536. doi: 10.1177/0013161X11400185
- Thurlow, M. L., Lazarus, S. S., & Bechard, S. (2013). *Lessons learned in federally funded projects that can improve the instruction and assessment of low performing students with disabilities*. Minneapolis, MN: University of Minnesota. National Center on Educational Outcomes.
- Timperley, H. S. (2011). *Realizing the power of professional learning*. New York, NY: Mc Graw Hill Open University Press.

- Torff, B., & Warburton, E. C. (2005). Assessment of teachers' beliefs about classroom use of critical-thinking activities. *Educational and Psychological Measurement*, 65(1), 155-179. doi: 10.1177/0013164404267281
- Townsend, D. (1978). The aesthetic object as a phenomenologically neutral object. *Southwestern Journal of Philosophy*, 9(1), 97-103. doi: 10.5840/swjphil19789112
- Tschannen-Moran, M., & McMaster, P. (2009). Sources of self-efficacy: Four professional development formats and their relationship to self-efficacy and implementation of a new teaching strategy. *The Elementary School Journal*, 110(2), 228-245. doi: 0013-5984/2009/11002-0006
- Tschannen-Moran, M., & Woolfolk Hoy, A. (2001). Teacher efficacy: Capturing an elusive construct. *Teaching and Teacher Education*, 17, 783-805. doi: S0742-051X(01) 00036-1
- Twigg, V. V. (2010). Teachers' practices, values and beliefs for successful inquiry-based teaching in the International Baccalaureate Primary Years Programme. *Journal of Research in International Education*, 9(1), 40-65. doi: 10.1177/1475240909356947
- Vygotsky, L. S. (1978). *Mind in society: The development of higher psychological processes*. Cambridge, MA: Harvard University Press.
- Wagner, T. (2008). *The global achievement gap: Why even our best schools don't teach the new survival skills our children need . . . and what we can do about it*. New York, NY: Basic Books.
- Wallace, C. S., & Kang, N.-H. (2004). An investigation of experienced secondary science teachers' beliefs about inquiry: An examination of competing belief sets. *Journal of Research in Science Teaching*, 41(9), 936-960. doi:10.1002/tea.20032
- Ward, J. D., & Lee, C. L. (2004). Teaching strategies for fcs: Student achievement in problem-based learning versus lecture-based instruction. *Journal of Family and Consumer Science*, 96(1), 76.
- Wasserstein-Warnet, M. M., & Klein, Y. (2010). Principals' cognitive strategies for changes of perspective in schools innovation. *School Leadership & Management*, 20(4), 435-457. doi: 10.1080/71369664

- Wehmeyer, M. L., Agran, M., & Hughes, C. (2000). A national survey of teachers' promotion of self-determination and student-directed learning. *Journal of Special Education, 34*(2), 58-68.
- Welner, K. (2010). Education rights and classroom-based litigation: Shifting the boundaries of evidence. *Review of Research in Education, 34*(1), 85-112. doi: DOI: 10.3102/0091732X09349795
- Windschitl, M. (2002). Framing constructivism in practice as the negotiation of dilemmas: An analysis of conceptual, pedagogical, cultural, and political challenges facing teachers. *Review of Educational Research, 72*(2), 131-175. doi: 10.3102/0346543072002131
- Wise, J. B. (2007). Testing a theory that explains how self-efficacy beliefs are formed: Predicting self-efficacy appraisals across recreation activities. *Journal of Social and Clinical Psychology, 26*(7), 841-848. doi: 10.1521/jscp.2007.26.7.841
- Wiseman, D. J. (2012). The intersection of policy, reform, and teacher education. *Journal of Teacher Education, 63*(2), 87-91. doi: 10-1177/0022487111429128
- Wolk, R. (2010). Education: The case for making it personal. *Educational Leadership, 67*(7), 16-21.
- Woolfolk Hoy, A. (2000). *Changes in teacher efficacy during the early years of teaching*. Paper presented at the Qualitative and Quantitative Approaches to Examining Efficacy in Teaching and Learning, New Orleans, LA.
- Wurdinger, S., Haar, J., Hugg, R., & Bezon, J. (2007). A qualitative study using project-based learning in a mainstream middle school. *Improving Schools, 10*(2), 150-161. doi: 10.1177/1365480207078048
- Wurdinger, S., & Rudolph, J. (2009). A different type of success: Teaching important life skills through project based learning. *Improving Schools, 12*(2), 115-129. doi: 10.1177/1365480209105576
- Yin, R. K. (2006). Case study methods. In J. Green, G. Camilli & P. Elmore (Eds.), *Handbook of complementary methods in education research*. (pp. 111-122). Mahwah, NJ: American Educational Research Association.

York-Barr, J., & Duke, K. (2004). What Do We Know About Teacher Leadership? Findings From Two Decades of Scholarship. *Review of Educational Research, 74*(3), 255-316. doi: 10.3102/00346543074003255

Young, M. R. (2005). The motivation effects of the classroom environment in facilitating self-regulated learning. *Journal of Marketing Education, 27*(25), 25-40. doi: 10.1177/0273475304273346

Zimmerman, B. J. (2002). Becoming a self-regulated learner: An overview. *Theory Into Practice, 41*(2), 64-70. doi: 0210500374002

Zimmerman, B. J., Bandura, A., & Martinez-Pons, M. (1992). Self-motivation for academic attainment: The role of self-efficacy beliefs and personal goal setting. *American Educational Research Journal, 29*(3), 663-676.

Zimmerman, J. (2006). Why some teachers resist change and what principals can do about it. *NASSP Bulletin, 90*(3), 238-249. doi:10.1177/0192636506291521



## **APPENDIXES**

## APPENDIX A

### Teacher Efficacy Scale: Short Form

**Directions:** Indicate your degree of agreement to each of the following statements using the 1 to 5 scale below:

**1 = Strongly Disagree      2 = Disagree      3 = Neither Agree nor Disagree**  
**4 = Agree                      5 = Strongly Agree**

Survey ID: _____	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
1. The amount a student can learn is primarily related to family background	1	2	3	4	5
2. If students are not disciplined at home, they aren't likely to accept any discipline.	1	2	3	4	5
3. When I really try, I can get through to most difficult students.	1	2	3	4	5
4. A teacher is very limited in what he/she can achieve because a student's home environment is a large influence on his/her achievement.	1	2	3	4	5
5. If parents would do more for their children, I could do more.	1	2	3	4	5
6. If a student did not remember information I gave in a previous lesson, I would know how to increase his/her retention in the next lesson.	1	2	3	4	5
7. If a student in my class becomes disruptive and noisy, I feel assured that I know some techniques to redirect him/her quickly.	1	2	3	4	5
8. If one of my students could not do a class assignment, I would be able to accurately assess whether the assignment was at the correct level of difficulty.	1	2	3	4	5
9. If I really try hard, I can get through to even the most difficult or unmotivated students.	1	2	3	4	5
10. When it comes right down to it, a teacher really cannot do much because most of a student's motivation and performance depends on his or her home environment.	1	2	3	4	5

**APPENDIX B**

**Classroom Observation Report**

Grade Level(s) Observed \_\_\_\_\_ Teacher Code \_\_\_\_\_ Date \_\_\_\_\_

Number of students in attendance \_\_\_\_\_ Student Engagement percentage \_\_\_\_\_

Gender Ratio \_\_\_\_ B \_\_\_\_ G

1. The instructional methodology being used by the teacher . . .

2. The content being covered . . .

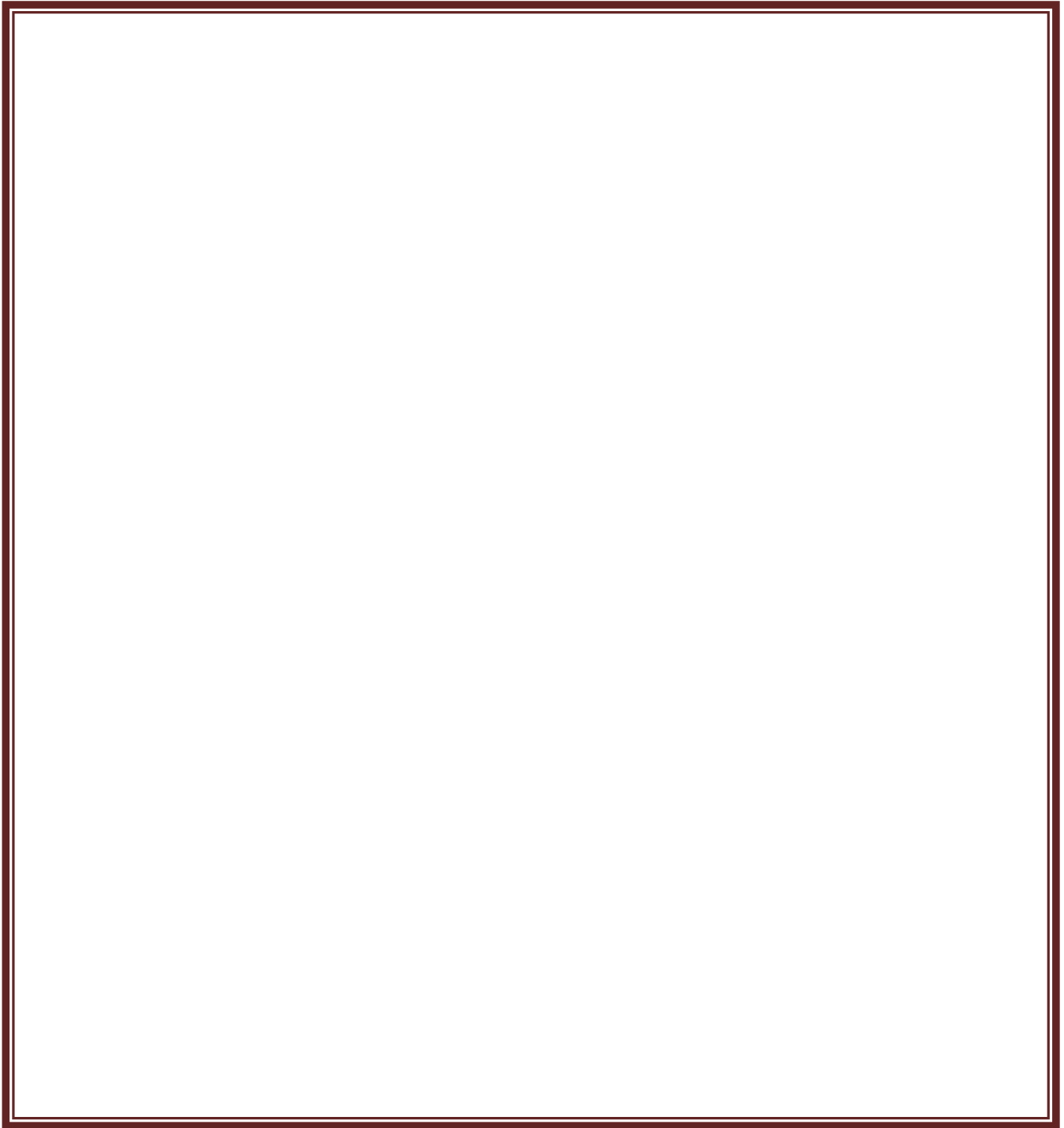
3. The form and extent of student engagement/participation can be described as . . .

4. The student learning level of Bloom's Taxonomy observed can be described as . . .

5. The teacher, student interaction consisted of . . .

6. Additional Observations:

7. The physical setting of the classroom . . .



## APPENDIX C

### Interview Protocol and Sample Questions

Hello, my name is Penny Hargrove. I represent Wichita State University as a doctoral student conducting my dissertation research. I appreciate your willingness to assist me in my doctoral study. This study is to examine why some teachers use student-lead, project-based learning instruction, while some teachers use traditional teacher-led, knowledge-based instruction. You have been selected because of your position and knowledge of secondary instructional pedagogy. Please keep in mind this study regarding change is to understand why or why not teachers choose to implement student-lead, project-based learning instruction methods into their classroom.

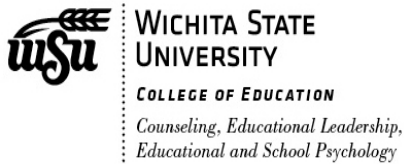
Before we begin, I would like to share a few procedures for our conversation. Although we will be on a first name basis, no names will be used when I report the results of this session. You can be assured of complete confidentiality. With your permission, I would like to audio record our conversation for response clarity as I review our conversation and for the purpose of note taking to report findings. I assure this audio recording will be destroyed after the completion of this study. This session will last approximately 90 minutes.

#### Interview Questions:

- Please tell me your name;
  - Position with the high school;
  - Grade level(s);
  - Years teaching the assigned grade level(s);
  - Content(s) taught; and
  - Years teaching assigned content(s).
1. How would you describe your pedagogical philosophy?

2. What does effective teaching look like?
  
3. What instructional pedagogy/methods do you perceive to be most effective with your student population?
  
4. Can you give examples of the benefits of your preferred instructional methodology?
  
5. Are you willing to implement student-led, project-based learning into your classroom?
  
6. Please explain why or why not.
  
7. Questions will be added specific to events observed in each classroom.

## APPENDIX D



### Consent Form

**Purpose:** You are invited to participate in a study to examine why some teachers use student-led, project-based learning instruction, while some teachers continue to use traditional teacher-led, knowledge-based instruction.

**Participant Selection:** You were selected as a possible participant in this study because of your teaching assignment and teaching experience. All participants for this study will be members of the Shocker High School traditional instruction and student-led, project-based instruction classrooms. The Teacher Efficacy survey will be completed by 18-22 teachers. The survey will be used to purposefully select 5-8 teachers for the observation and interview phases of the study. Half of the teachers selected for the observations and interviews will come from the group that primarily teacher using a traditional teachers-led methodology and half will be selected from the group using student-led, project-based instruction methods.

**Explanation of Procedures:** Your participation will consist of at least one individual interview that will take approximately 90 to 120 minutes and/or one classroom observation that will last up to one class period. The interview will take place in a location that is mutually agreeable to both of us, is convenient for you, and is conducive for conducting a personal interview. The classroom observation will take place in your classroom at your convenience. With your permission, I will audio record the interview and video record the classroom observation along with taking field notes. You will be invited to check your audio transcription and/or video recording transcript for accuracy and provide feedback to me.

**Discomfort/Risks:** During data collection, participants will be encouraged to be open in their responses. I will keep all responses confidential. There are no anticipated risks to the participants. All participation will be voluntary and participants will be apprised of the research purpose and their rights as research subjects.

**Benefits:** The research study is being conducted to meet the requirements of a dissertation for Wichita State University. Results of the study will be provided to the dissertation committee. If you participate, you may benefit from a deeper understanding of teacher perception regarding the implementation of non-traditional pedagogy methodologies such as student-led, project-based learning instruction. So that I might share what I learn from the study with others, results could be published in journals and presented at conferences.

**Confidentiality:** Any information obtained in this study in which you can be identified will remain confidential and will be disclosed only with your permission. Raw data will be maintained in a secure location and no identifying information will be used in the final dissertation or subsequent publications. No one, other than my advisor, will have access to the



raw data. All audio recordings, video recordings, and other documents, with the exception of the consent forms will be completely destroyed at the conclusion of this dissertation study.

**Refusal/Withdrawal:** Participation in this study is entirely voluntary. Your decision, whether or not to participate, will not affect your future relations with Wichita State University. If you agree to participate in this study, you are free to withdraw from the study at any time without penalty.

**Contact:** If you have any questions about this, you can contact me, Penny Hargrove, (785) 288-8280 (cell phone), or at [phargrove@usd415.org](mailto:phargrove@usd415.org), or my advisor, Dr. Jean Patterson at (316) 978-6392 or [jean.patterson@wichita.edu](mailto:jean.patterson@wichita.edu). If you have questions pertaining to your rights as a subject, or about -related injury, you can contact the Office of Administration at Wichita State University, Wichita, KS 67260-0007 at (316) 978-3285.

You are under no obligation to participate in this study. Your signature indicates that you have read the information provided above and have voluntarily decided to participate.

You will be provided with a copy of this consent form for your records.

\_\_\_\_\_ Teacher Efficacy Survey  
\_\_\_\_\_ Observation Participation  
\_\_\_\_\_ Interview Participation

\_\_\_\_\_  
Signature of Subject

\_\_\_\_\_  
Date

\_\_\_\_\_  
Print Name

\_\_\_\_\_  
Content Area Taught

\_\_\_\_\_  
Witness

\_\_\_\_\_  
Date

\_\_\_\_\_  
Grade Level Taught

\_\_\_\_\_  
Years in Content Area

\_\_\_\_\_  
Total Years Teaching