Teachers' Perspectives of the Effects of Project-Based Learning on the Academic Performance, Socialization Skills, and Self-Concepts of Incarcerated Juveniles

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ABSTRACT

Teachers' Perspectives of the Effects of Project-Based Learning on the Academic Performance, Socialization Skills, and Self-Concepts of Incarcerated Juveniles

By Paulette Koss

The purpose of this qualitative study was to examine and describe the impact of the Buck Institute of Education's 8 components of project-based curriculum on high school juvenile offenders' academic achievement, socialization, and self-concepts as perceived by juvenile court school (JCS) teachers. A secondary purpose was to describe strategies used to implement the 8 components of project-based curriculum for high school juvenile offenders as perceived by JCS teachers using the project-based learning (PBL) approach. The participants in the study were 9 JCS teachers in 3 states. They answered interview questions about the impact of the 8 components of PBL on their students' academic performance, socialization, and self-concepts, and about effective strategies for implementation. The results were analyzed to identify themes. Overall, the participants noted that PBL improved the academic performance, socialization skills, and self-concepts of their students. Their answers also indicated some obstacles to implementing PBL, especially the lack of Internet access in JCS classrooms. The teachers also noted that their students lacked academic and experiential background knowledge and appropriate peer socialization skills. Building background knowledge and modeling peer interactions were identified as essential strategies in implementing PBL. The results of this study support the conclusion that PBL is effective at improving the academic performance, socialization skills, and self-concepts of incarcerated juveniles. Results indicated that the lack of Internet access limited the benefits of PBL for these students.

Building background knowledge and modeling appropriate peer interactions were crucial strategies to the success of PBL. The researcher recommends that more states implement initiatives for implementing PBL in their JCS classrooms and provide teachers with the necessary training and ongoing coaching necessary for implementation. Additionally, states should develop systems that would allow for Internet access in JCS classrooms without compromising the secure facility. Programs should be developed to encourage positive peer interactions in incarceration facilities.

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CHAPTER I: INTRODUCTION

Although juvenile institutions must provide compulsory education for incarcerated minors, there is a scarcity of research or data on the quality or effectiveness of these educational programs (Young, Phillips, & Nasir, 2010). In a report from Georgetown University's Center for Juvenile Justice Reform, Leone and Weinberg (2012) noted, "Education programs in juvenile corrections often do not meet state standards for the operation of public schools" (p. 21).

Historically, schools in juvenile facilities have had poor-quality instruction and limited curricula compared to public schools (Southern Education Foundation, 2014). Additionally, the social, emotional, mental health, and educational needs of incarcerated juveniles are not addressed (Martin, Martin, Dell, Davis, & Guerrieri, 2008; Puzzanchera, 2013). Juvenile offenders tend to have a unique set of educational needs. Leone and Weinberg (2012) noted the population of incarcerated juveniles averages 4 to 5 years below grade level in reading and math. Their traumatic experiences affect their ability to focus, learn, and develop self-control (Selph, Ast, & Dolan, 2014), and the majority have poor academic performance and little hope for their futures (Caldwell & Joseph, 2012).

Juvenile court schools (JCSs) tend to have a traditional lecture-type curriculum, relying predominantly on the use of skill-and-drill and packet work to teach basic subjects such as language arts and math (Leone & Weinberg, 2012). Educational programs in juvenile facilities tend to focus on preparing students for the General Equivalency Diploma (GED) instead of a traditional high school diploma, which often leaves the students prepared for only entry-level non-skilled jobs upon release and increases the risk of recidivism (Platt, Casey, & Faessel, 2006).

Since the passage of the Juvenile Justice and Delinquency Prevention (JJDP) Act, physical space at many juvenile detention facilities has been redesigned to meet gender-specific needs; however, educational programs have been slow to follow (Houchins, Puckett-Patterson, Crosby, Shippen, & Jolivette, 2009). Despite much higher incidences of posttraumatic stress disorder (PTSD), anxiety, and depression in girls than boys, few educational programs address the effects of these disorders (Garcia & Lane, 2009).

In order to improve the effectiveness of educational programs in juvenile facilities, a curriculum must be developed that is different from the traditional curriculum utilized in the public schools where most of these students experienced failure. A study of the specialized learning needs of juvenile offenders, conducted in 2006, noted that these students should experience success early on in a curriculum in order to improve their self-confidence and engagement (Sheridan & Steele-Dadzie, 2006). An effective approach for students who have experienced school failure is a hands-on approach that allows the students to be creative (Kearney & Thacker, 1994). Sheridan and Steele-Dadzie (2006) noted that the most effective programs for students who have experienced failure in traditional curricula are approaches that allow for collaboration and group work as well as incorporating experiential knowledge. With its emphasis on group problem solving and collaboration, project-based learning (PBL) would seem to be an ideal approach for these students (Robertson, 2013).

Background

Juvenile Incarceration Rates

Many nations around the world have developed juvenile justice systems to respond to crimes committed by youth. However, comparisons of international juvenile

justice systems are often inaccurate due to wide variations in the ages of those considered juveniles and the procedures for sentencing juveniles (Evans & Butts, n.d.). The juvenile incarceration rate in the United States is the highest in the world (Annie E. Casey Foundation, 2013; Southern Education Foundation, 2014; United Nations, 2011), despite a decrease of 31% since 2002 (Puzzanchera, 2013). Researchers at the John Jay College of Criminal Justice, who track international juvenile incarceration statistics, noted that South Africa, which was second to the United States in juvenile incarceration rates, confined less than one fifth the number of juveniles confined in the United States in 2011 (Evans & Butts, n.d.).

More than 60,000 juveniles were incarcerated in the United States in 2011, which was an 11% decrease from the year before, in which 66,600 were incarcerated (Puzzanchera, 2013; U.S. Departments of Education and Justice, 2014). Although the male population comprises the majority of these statistics, 29% of those detained during the same year were females (Puzzanchera, 2013). Of the female juveniles incarcerated, 78% were arrested for prostitution, which is often gang and drug related (Puzzanchera & Adams, 2011). Recently, increasing numbers have indicated a rise in other criminal activity, including assault, armed robbery, and arson (Foy, Ritchie, & Conway, 2012).

Law enforcement officers have historically detained girls for different types of crimes than boys. While boys are largely arrested for more violent property crimes and crimes against persons, researchers for the advocacy group Physicians for Human Rights (2012) noted that girls are far more likely than boys are to be incarcerated for nonviolent status offenses, which are offenses not considered crimes for adults, such as running

away. In addition, girls tend to receive longer sentences for status offenses than boys do (Physicians for Human Rights, 2012).

Juvenile crimes are largely the results of youths' reaction to poverty, familial violence, drug abuse, and gang affiliations. These factors, coupled with truancy and poor achievement in school, contribute to offending behaviors (Blomberg, Bales, Mann, Piquero, & Berk, 2011). Both familial and neighborhood violence and poverty tend to influence girls more than boys, which often results in their offending behaviors (Cauffman, 2008; Chauhan & Reppucci, 2008; Puzzanchera, 2013).

The Rationale for Juvenile Incarceration Systems

Legislators designed the juvenile justice system to help mitigate these factors among juvenile offenders to prevent recidivism and transition to adult crimes. The national juvenile justice system was developed to address the maturational needs of adolescents as distinctly different from those of adults. Juvenile facilities are less severe than adult prisons and focus primarily on support systems, skill remediation, and rehabilitation to prevent recidivism (Child Trends, 2013). Juvenile offenders have a relatively underdeveloped capacity to reason through the consequences of their decisions, are less able to judge risks accurately, and are far more easily influenced by peer pressure than adult offenders (Scott & Steinberg, 2008).

According to a United Nations (2011) study of juvenile justice systems, legislators often focus on punitive measures to prevent crime and fail to provide support systems to the juveniles to prevent future crimes. The earlier juvenile offenders have contact with support systems to counter the risk factors noted above, the greater the chance to prevent recidivism and adult incarcerations (United Nations, 2011).

Effects of Incarceration

Once incarcerated, juveniles have a 38% chance of being a repeat offender, a 39% greater chance of being rearrested than their peers, and a 29% higher risk of dropping out of high school; they also earn 40% less than those never detained (Lubow, 2012). These statistics indicate the impact that offending minors have on society.

In addition to the financial consequences, recent studies have indicated the detrimental social and emotional developmental effect that occurs during the detainment period. The authors of the National Juvenile Justice Network's (NJJN, 2013) latest policy paper referenced a recent study conducted by the Models for Change Initiative, which found that incarcerated youth had slower gains to their psychological and social maturity than non-incarcerated youth of the same ages.

Characteristics of Juveniles in Detention

A 2004 study from the Juvenile Justice Center (JJC) noted that the impact of physiological changes that occur in all adolescents are greatly exacerbated by traumas, poverty, and familial dysfunction that are highly prevalent in the lives of incarcerated juveniles (Ortiz, 2004). While both males and females tend to enter detention with social, emotional, and psychological deficiencies, there are some social and emotional differences in characteristics between incarcerated boys and girls (Blomberg et al., 2011).

The JJC study noted that boys have 10 times as much testosterone during adolescence, which can account for increased violence and aggression, making boys more likely to commit crimes that are physically violent. In addition, boys tend to reoffend more frequently than girls (Ortiz, 2004).

Childhood and adolescent trauma exposure is a predictor of juvenile offending. Up to 93% of incarcerated boys have experienced at least one traumatic or violent event in the past (Martin et al., 2008). This trauma often leads boys to depression and offending. Boys who are depressed tend to commit more violent crimes more frequently. In one study, male juvenile offenders who committed violent offenses were found to have poor anger management, difficulty with impulse control, anxiety, and low self-esteem (Martin et al., 2008).

In 2011, two thirds of incarcerated boys were found to have psychological disorders, including PTSD (Leone & Weinberg, 2012). A 2013 report on psychiatric disorders in juvenile offenders noted that the incidence of PTSD in boys ranged from 24-32%, caused mostly from witnessing or being involved in violence (Abram et al., 2013). The study found that incarcerated boys with PTSD were 10 times more likely to also have a concurrent psychological disorder, and 5 times more likely to have a substance abuse disorder (Abram et al., 2013).

An overwhelming majority of females arrested as juveniles have been victims of physical or sexual abuse, community violence, or a combination of these factors (American Civil Liberties Union [ACLU], 2006; Cauffman, 2008; Foy et al., 2012; Huizinga, Miller, & Conduct Problems Prevention Research Group, 2013; Tracy, Kempf-Leonard, & Abramoske-James, 2009). A 2013 Juvenile Justice Network study reported that 84% of juvenile girls arrested are victims of these traumatic events (Abram et al., 2013). Given these alarming rates of past victimization among female juvenile offenders, it is not surprising that the majority of them suffer from lasting emotional effects of trauma such as anxiety, depression, and PTSD. The reported number of female juvenile

offenders who suffer from PTSD varies widely in studies, from 30% to 65%, and girls are 50% more likely than boys are to suffer from PTSD (Foy et al., 2012).

Education in Juvenile Facilities in the United States

Detailed descriptive or analytical data on the educational programming and effectiveness of schools in juvenile facilities nationwide, and on the academic progress of students who attend them, are lacking (Dignity in Schools Campaign, 2008; Young et al., 2010). Although schooling is an essential part of the rehabilitation program, educational programs at juvenile detention facilities are not meeting the academic needs of incarcerated minors (Aizer & Doyle, 2013). The authors of the study *The Right to Education in Juvenile and Criminal Justice Systems in the United States* (Dignity in Schools Campaign, 2008), commissioned by the United Nations Human Rights Council, noted that there was no coordination between federal and state governments to ensure quality programs in juvenile facilities and that credits earned at schools in juvenile facilities are often not transferrable to any other institutions after students' release.

Educational programming in juvenile detention facilities is inadequate to meet the academic needs of the students. A review of programs in juvenile schools nationally revealed that they tended to focus on remedial and vocational training with little emphasis on rigor in core academic subjects such as language arts and math (Blomberg et al., 2011), which decreases the students' chances of success in public high schools when they leave a detention facility (Young et al., 2010).

The quality of staffing at schools in juvenile facilities is also a concern. Mathur, Clark, and Schoenfeld (2009) noted that teachers in these schools do not receive training to meet the unique needs of the specific population. In one study of programs in juvenile

justice schools, Flores (2012) noted that none of the teachers had received training on the characteristics of juvenile offenders or best practices for teaching them. Teachers are not therapists, but they need to have knowledge of the social and emotional needs of juvenile offenders so that they can establish rapport and teach problem-solving and decision-making skills (Scott & Steinberg, 2008).

Educational Programs for Juvenile Offenders

Educational space in juvenile facilities is often dictated by security needs, with living units doubling as makeshift classrooms. The lack of separate and distinct school buildings provides students with little sense of the importance and urgency of their education, stifles motivation, and engenders the feeling that the students do not attend a real school (Young et al., 2010). Students from different grade levels and with widely varying ability levels are usually grouped into the same classrooms, preventing teachers from effectively meeting their needs (Flores, 2012).

JCSs tend to have a traditional lecture-type curriculum, relying predominantly on the use of skill-and-drill and packet work to teach basic subjects such as language arts and math (Leone & Weinberg, 2012). Educational programs in juvenile facilities tend to focus on preparing students for the GED instead of a traditional high school diploma, which often leaves the students prepared for only entry-level nonskilled jobs upon release and increases the risk of recidivism (Platt et al., 2006).

The need for educational programming that was rigorous and relevant to students, that allowed them to interact with other juveniles, and that enabled them to develop a deeper understanding of problems led some JCSs to begin to use PBL. In his review of

research on PBL, Thomas (2000) noted the perceived successes in using PBL with at-risk students.

Project-Based Learning

PBL is a student-centered teaching approach in which students work collaboratively to develop skills and knowledge through the long-term inquiry process of answering authentic questions by producing an original product or solution. This long-term investigation can extend over several subject areas (Larmer & Mergendoller, 2010).

The roles of both teachers and students in the PBL model are different from those in traditional educational models, in which teachers impart knowledge to students. In PBL, teachers facilitate student learning by thoroughly explaining all tasks, providing some background knowledge and access to resources, facilitating the discovery process, and providing ongoing feedback. Students work in small groups to research and collectively produce a solution or product (Coffey, 2008).

Definitions of PBL differ slightly, but all describe a student-driven process of inquiry involving a driving question that is relevant and meaningful to the students. Based on the principles of social constructivism, the PBL method utilizes teachers as facilitators who guide students in working collaboratively with their peers to answer essential questions and create a unique product (Coffey, 2008). The final product is then publicly displayed or exhibited for an audience, bringing additional motivation and relevance for students (Robertson, 2013).

Thomas (2000) described PBL as comprising five essential components: centrality, driving question, investigation, autonomy, and realistic authentic projects. Centrality describes PBL's position as the vehicle through which learning occurs as the

foundation of the curriculum. The project is the result of answering a driving or essential question that requires the students to delve deep into the concepts. The exploration of the essential question occurs through constructive investigation, in which the students construct new meaning through the inquiry process. Autonomy is the idea that projects are student centered and student led; the teacher takes on a background role as a facilitator. The projects must be realistic and authentic to the students' world in order for them to construct meaning (Thomas, 2000).

According to the Buck Institute for Education (BIE), one of the most prominent organizations promoting PBL, there are eight components of PBL:

1. Significant content—content must be rigorous, standards based, and must have meaning for students.
2. A need to know—there must be a compelling, relevant reason why the students need to solve the problem. It must be a meaningful problem for the students.
3. A driving question—this is the main reason, the thesis statement for the project. It is the question that will motivate the students to want to discover an answer.
4. Student voice and choice—the students are given choices about what the end product should look like, within certain parameters. This motivates the students and allows for creativity and authenticity.
5. 21st-century skills—projects should require students to use 21st-century skills such as teamwork, effective communication, problem solving, and the use of technology such as computers and other devices in the final product. The use of 21st-century skills is motivating and allows students to improve skills they will need later in life.

6. Inquiry and innovation—students develop detailed questions and develop theories regarding the driving questions, and then seek to find answers to these questions.
7. Feedback and revision—students use a formal system of peer and teacher feedback throughout the project to monitor progress and improve quality. Review and reflection is an important part of this component.
8. Publicly presented product—the final product should be presented in a public forum for an audience. This provides additional meaning for the students other than just doing it for a grade. Presentations can be to the school or an invited audience of parents and community members. Students should present orally and have a written component with their projects, and they should be prepared to answer audience questions (Solis & Larmer, 2012).

PBL and Social Constructivism

PBL has social constructivism as its foundation, due to its emphasis on students' deriving meaning through collaboratively answering a driving question. The students are intrinsically motivated by the relevance of the guiding question to their experiences (Solis & Larmer, 2012). The PBL method requires a commitment to the importance of the students' deriving meaning from the curriculum, as per the social constructivist theory, instead of the students' just repeating back basic information. The emphasis is on a deeper understanding of a small number of concepts rather than little understanding of many concepts (Kemp, 2013).

The social context of learning is also present in PBL through students' working in small groups to assign roles, research the essential question, and come to a collective meaning resulting in an original product (Coffey, 2008). In addition to group problem

solving, the PBL model also encompasses the social context of learning through the public presentation of the final products. Students display their products in a public forum, with an oral and sometimes written presentation (Solis & Larmer, 2012).

Social constructivism and the PBL model espouse similar roles for teachers. Yilmaz (2008) noted that constructivist teachers need to identify and understand their students' backgrounds and be aware of their prior knowledge so that they can help students derive collective meanings from experiences. In PBL, as in social constructivism, teachers are not deliverers of knowledge but facilitators who provide students with resources, feedback, and technology to derive their own meanings (Coffey, 2008).

PBL utilizes the social constructivist theory of Lev Vygotsky's zone of proximal development (ZPD) by allowing students of various ability levels to work in the same groups, guiding each other to explore meanings (Kemp, 2013). The PBL model also lends itself well to scaffolding, allowing teachers to provide varying levels of support to students with different ability levels to explore equally complex concepts (Kemp, 2013).

One of the key components of PBL is the use of technology to enhance language, which is also a tenet of social constructivism. In PBL, technology is used for researching topics and for group communication such as e-mail, message boards, and online meetings. Technology is a resource for the oral and written pieces that must accompany projects (Chen, n.d.).

Problem Statement

Juveniles in U.S. detention facilities are usually years behind their peers in academic areas and face a variety of emotional and psychological problems that the

nation's juvenile justice education system is not prepared to address (Southern Education Foundation, 2014). While boys comprise the majority of offenders, 29% of juveniles incarcerated in the United States are girls (Puzzanchera, 2013). Studies have indicated that nearly all of these juveniles suffer from a psychiatric disorder such as PTSD (Abram et al., 2013; Gottesman & Schwarz, 2011; Martin et al., 2008). One 2012 study of the effects on female offenders found that incarcerated girls have much higher rates of PTSD than incarcerated boys do (Foy et al., 2012).

As part of their rehabilitation, incarcerated juveniles must attend school; however, they typically arrive with skills several grade levels below their grade placement. They are often severely deficient in credits toward graduation due to frequent absences and poor study habits (Aizer & Doyle, 2013). In addition, their impulsivity, anger issues, and poor social skills cause work completion and behavior issues in classrooms (Flores, 2012).

Schools in juvenile detention facilities are not well regulated. There is little research on the quality of educational programming in juvenile detention facilities (Aizer & Doyle, 2013). Many programs center on packet work, lack rigor, and are not motivating for students (Southern Education Foundation, 2014). In addition, teachers in these programs do not have strategies to manage the often defiant and aggressive behavior of these students (Platt et al., 2006).

PBL is a student-driven instructional approach based on the theory of social constructivism in which students utilize inquiry to explore an essential question and, collectively with peers, develop a unique product (Gratch, 2012). Through the collaborative process of PBL, students construct shared meaning of concepts and then

display their shared constructed meanings to a public audience (Solis & Larmer, 2012). PBL has been effective with students who are low achievers and is beginning to be used with larger at-risk populations (Thomas, 2000); however, its impact on the performance of juvenile offender students is unknown.

Research has indicated that there is very little regulation of JCSs in detention facilities. Very few educational programs in juvenile detention facilities have been evaluated, and none have been deemed "model programs" (Berkeley Center for Criminal Justice, 2010, p. 8; see also Aizer & Doyle, 2013). However, PBL has shown promising results with students in a variety of educational settings (Robertson, 2013).

Thomas (2000) noted several studies in which the use of PBL increased problem solving and subject-matter knowledge for students in both traditional school and alternative educational settings. However, no data exist as to the effectiveness of PBL in increasing the academic performance of students in juvenile facilities. The current study aimed to determine whether these same academic improvements are evident in the use of PBL with incarcerated students as well as what strategies are needed to implement PBL with this population.

Purpose Statement

The purpose of this qualitative, phenomenological study was to examine and describe the impact of the Buck Institute for Education's (BIE's) eight components of project-based curriculum (Solis & Larmer, 2012) on high school juvenile offenders' academic achievement and socialization as perceived by juvenile court school (JCS) teachers. A secondary purpose was to describe strategies used to implement the eight

components of project-based curriculum for high school juvenile offenders as perceived by JCS teachers using the project-based learning (PBL) approach.

Research Questions

1. To what extent are the eight components of PBL perceived to impact the academic performance of incarcerated juveniles?
2. What strategies do JCS teachers using a PBL curriculum perceive as effective for implementing the eight components of project-based curriculum for high school juvenile offenders?
3. How does utilizing a project-based curriculum for high school juvenile offenders impact peer socialization and self-concept as perceived by JCS teachers using a PBL curriculum?

Significance of the Study

Although there is no research currently on the use of PBL with incarcerated students, there are a few studies on the use of PBL with at-risk students in community day schools. Robertson (2013) noted that students in alternative school settings showed growth in their engagement with the curriculum, improved self-confidence, improved socialization, and a perceived sense of relevance for learning. This current study aimed to determine if these positive effects of PBL also occur with incarcerated students.

This study of teachers' perceptions of the effectiveness of PBL in JCSs provided valuable data that were used to determine the impact of the PBL teaching approach on the achievement and social skills of juvenile offenders, and the study provided a model for improving the quality of JCSs nationwide.

Definitions

Juvenile court school (JCS). Although JCSs vary by state, for the purpose of this study, JCS describes a school program run within the confines of a juvenile detention facility. Only the juveniles incarcerated at the facility attend JCSs. JCSs can be separate school buildings located in a detention facility or educational programs run in multiuse rooms in detention living units (Puzzanchera, 2013).

Juvenile incarceration. Juvenile incarceration is the incarceration of a person between the ages of 10 and 18 for committing a crime but does not include juveniles confined solely in drug or mental health treatment facilities (Child Trends, 2013). Juveniles are considered incarcerated if they are in a prison or jail, including federal, state, and county facilities or camps.

Project-based learning (PBL). PBL involves delving deeply into a problem using creativity and logical thinking to produce an original work to solve or answer a problem. The method, based on social constructivism, involves the use of technology in solving the problem or answering the driving questions and student choice in the presentation of the final product. PBL involves guiding students through the problem-solving process, including editing and revising their work. The end products, or projects, must then have an audience or a forum through which students can present their solution to others (Larmer, 2009).

Social constructivism. Social constructivism is a learning theory developed by Vygotsky that is student centered, in which students collaboratively interact with a problem and the environment to develop meanings and concepts (Chen, n.d.). This theory focuses heavily on the use of language to collaborate and to convey meaning

(University of California, Berkeley, School of Law, 2010). PBL utilizes many of the concepts of social constructivism as a teaching method (Kemp, 2013). The teacher's role in social constructivism is to provide structure and resources necessary to develop meaning, and to provide feedback (Chen, n.d.).

Delimitations

1. The study was delimited to JCS programs in which teachers had utilized PBL for at least one semester, with at least one class of students.
2. The study was delimited to high school juvenile offender education programs in the United States using PBL curricula.
3. The study was delimited to JCSs in three states, which have become forerunners in reforming educational programs in juvenile facilities.

Organization of the Study

This study includes a review of the literature in Chapter II describing education programs in juvenile facilities. Chapter III contains a review of the methodology determined to be the most appropriate method to answer the research questions. Chapter IV includes the results of the study and the themes that emerged in the interviews with school staff. Finally, Chapter V contains an analysis of the data presented in Chapter IV and the answers to the research questions.

CHAPTER II: LITERATURE REVIEW

International Juvenile Justice Systems

All nations are affected by the crimes committed by their youth. The United Nations (2011) noted that the growth of youth crime globally has increased with the rapid urban growth rates throughout the world and that much of this crime is perpetrated by youth in gangs. These crimes are often the youths' response to poverty, neighborhood violence, or a history of familial dysfunction (Child Trends, 2013).

The reactions to youth crime vary greatly by country. Most nations have structured systems for addressing youth crime differently from that of adults, although some countries lack a separate juvenile justice system (Steinhart & Butts, 2002). In countries without a juvenile justice system, primarily developing countries, youth are often confined in the same prisons as adults, in living conditions inappropriate for their levels of maturity. Even in those nations with separate juvenile facilities, programs for juvenile offenders are often designed to be punitive, not developmental or rehabilitative (United Nations, 2011).

One barrier to an accurate comparison of international youth justice systems is a lack of consistency among nations regarding the definition of youth crime. For example, the age of criminal responsibility, at which a child is considered mature enough to be held legally accountable for his or her actions, is as low as 6 years old in some nations and as high as 16 years old in others. Some countries consider criminals as "youth" up to age 18, others up to age 24. The United Nations Committee on the Rights of the Child recommended that children be held accountable for their actions no younger than age 12 and up to age 24 (United Nations, 2011).

The United States, which considers youth as juveniles from ages 12-18, has the highest juvenile incarceration rate in the world (Aizer & Doyle, 2013). The nations nearly tied for second place, South Africa and the Netherlands, incarcerate only one fifth as many youth as the United States, according to the John Jay College of Criminal Justice, which compares international juvenile justice systems (Evans & Butts, n.d.).

Prior to the 2009 passage of the Child Justice Act, which set 14 as the minimum age at which a youth can be held legally accountable for crimes, South Africa had no specific justice system for youth (Evans & Butts, n.d.). The Child Justice Act delineated pathways for juvenile offenders including community service, rehabilitative sentences, correctional supervision, and secure detention, depending on the youth's age and the severity of the crime. This has decreased the number of South African youth in secure detention facilities (Evans & Butts, n.d.).

In 1974, the Netherlands began to legally recognize two categories of youth as culpable for crimes. Youth between the ages of 10 and 12 were deemed to be "children" and could only be held legally responsible for the crimes of homicide and manslaughter (Evans & Butts, n.d.). Youth between the ages of 12 and 17, called "young offenders," were legally responsible for all crimes and could be sentenced to either rehabilitative treatment or secure detention. Sentences in the rehabilitative treatment program could be as long as 3 years, while youth in secure detention could serve a maximum of 1 year if under 15, or 2 years at age 16 or 17 (Smeets, 2014). These measures also helped the Netherlands to reduce its rate of juvenile incarceration.

Juvenile Justice in the United States

The Rise and Fall of Juvenile Crime

In the United States in the 1980s, the traditional face of crime changed due to a rising number of violent crimes, including murder, being committed by juveniles (Butts & Travis, 2002). Between 1980 and 1994, the number of juveniles arrested for crimes on the violent crimes index, including murder, rape, robbery, and aggravated assault, rose by 64%. During the same time period, the juvenile arrest rate for murder rose by almost 99% (Butts & Travis, 2002).

This increase in violent crime among juveniles was a result of the introduction of crack cocaine into American cities and the widespread entrance of juveniles into the drug trade (Nellis, 2012). The need for juvenile dealers to protect their supply of crack cocaine, and the large sums of cash they made selling it, resulted in more youth carrying handguns. The prevalence of handguns escalated even innocent encounters into possibly fatal ones. In fact, the dramatic increase in homicides after 1985 can be attributed almost solely to juveniles (Blumstein, 2002).

Policymakers reacted to the increase in prevalence and severity of juvenile crime by categorizing these new juvenile offenders as "super predators" who were beyond hope and who could only be controlled by harsh penalties (Butts & Travis, 2002). This public rhetoric led to most states passing legislation that allowed juveniles to be tried as adults in adult courts for certain crimes, such as murder. California's Proposition 21, for example, greatly increased the number of crimes for which juveniles could be tried as adults (Blumstein, 2002). This resulted in a dramatic increase in the juvenile

incarceration rate for all juvenile crimes in the decade from 1984 to 1994 (Butts & Travis, 2002).

By the end of the 1990s, all states had passed legislation allowing for life sentences without the possibility of parole for juveniles who committed murder, and 28 states had laws mandating these life sentences for murder (Nellis, 2012). This led to 2,500 juveniles being sentenced to life in prison without the possibility of parole, including almost 200 girls (Nellis, 2012).

By the late 1990s, a strengthening U.S. economy, combined with stricter gun laws and sentencing policies, caused a drop in the juvenile crime rate, with the number of violent crimes committed by juveniles falling by 43% (Butts & Travis, 2002). Yet the new millennium saw an unprecedented 108,802 juveniles locked up in the United States, many for nonviolent crimes (NJJN, 2013).

Juvenile Incarceration in the United States Today

The record-breaking number of juveniles incarcerated in the United States in 2000, and the expense of confining them, caused a shift in the paradigm of juvenile justice from punishment to rehabilitation, which led to a reexamination of juvenile crime and sentencing options. These alternatives to secure detention facilities included community-based services, residential treatment centers, and school-based early interventions (NJJN, 2013). The adoption of these alternative sentencing options by the states resulted in a 39% decrease in the number of juveniles incarcerated in secure facilities from 2001 to 2010 and an additional 11% decline the following year (Pew Charitable Trusts [PCT], 2013), resulting in a total of 61,423 juveniles incarcerated in the United States in that year (Child Trends, 2013).

The latest juvenile crime statistics available indicated that crimes on the violent crimes index—murder, forcible rape, robbery, and aggravated assault—continued to decline, falling by an additional 10% from 2011 to 2012 (Butts, 2013). This capped an overall 40% decline in violent crime committed by juveniles from 2009 to 2012 (Butts, 2013).

The U.S. Supreme Court banned mandatory life sentences for juveniles as "cruel and unusual punishment" and a violation of the Eighth Amendment to the U.S. Constitution in 2011 (Office of Juvenile Justice and Delinquency Prevention [OJJDP], 2012). However, states still have life sentences as an option. Thus, the United States continues to be the only civilized nation in the world in which youth can be sentenced to spend their entire lives in prison for crimes committed as juveniles (Nellis, 2012; OJJDP, 2012).

The Rationale for Juvenile Justice Systems

The juvenile justice system was established in the United States due to the recognition of maturational differences between adults and children (Nellis, 2012). The concept of less punitive, more rehabilitative programming for juvenile facilities is based on the unique maturational characteristics of youth. Studies have indicated that the physiological functioning of the adolescent brain is different from that of adults (NJJN, 2013).

Brain research has revealed that important developmental processes occur in the brain during adolescence that can cause youth to be more susceptible to offending behaviors. The development of the prefrontal cortex, the section of the brain responsible for judging risk, determining consequences, and controlling impulses, occurs slowly and

is often not complete until the mid-20s. However, the parts of the brain that control thrill seeking and emotional excitement mature much faster and earlier. Thus, an adolescent may have a powerful emotional desire for thrills, with little ability to determine consequences and control impulses (Bonnie & Scott, 2013). Adolescent brains are also far more likely to be influenced by peer pressure than those of adults, which greatly effects youth involvement in gangs and in group offenses (United Nations, 2011).

Another formative process occurring in the brain during adolescence is the development of character or identity. Well into early adulthood, youth seek to discover their values, beliefs, and identities, in effect, their character. This results in experimentation that often leads to offending behaviors. This delayed development of character is what limits legal culpability for crimes committed by minors (Scott & Steinberg, 2008). Factors such as trauma, being a victim of violence, or mental illness can exacerbate the effects of inconsistent adolescent brain development to make juveniles even more susceptible to violations (Foy et al., 2012).

The concept of a separate justice system for juveniles that is distinctly different from programs for adults hinges on the belief that the immature development of juveniles, as compared to adults, means that the earlier interventions occur, the more effective they will be at preventing offending behaviors as an adult (United Nations, 2011). In their review of how adolescent brain development affects juvenile law, Bonnie and Scott (2013) noted that studies in brain development have shown that "most adolescent crime is a product of developmental influences, and thus, most teenagers will mature out of their criminal tendencies" (p. 160). Yet a study by the National Center for Children in Poverty at Columbia University found that programming at many traditional

juvenile facilities does not meet the maturational or mental health needs of the youth incarcerated in them (Gottesman & Schwarz, 2011). The relatively recent belief that juveniles commit crimes largely due to developmental factors is a paradigm shift from the "super predator" mentality of the 1980s (Nellis, 2012).

Effects of Incarceration

Economic Costs to Society

Incarcerating juveniles has high economic costs for society. An extensive report on U.S. juvenile justice facilities from the child advocacy group the Annie E. Casey Foundation noted that the average cost of detaining one juvenile in a correctional facility for a year is between $88,000 and $100,000 (Mendel, 2011). The report noted that this is more than 1 year of tuition at a state university and cited the considerably lower costs of sentencing juveniles to community placements, suggesting a more constructive use of public funds (Mendel, 2011).

Despite the high costs of incarceration, numerous studies cast doubt on its effectiveness at preventing recidivism. An Annie E. Casey Foundation report cited studies showing that 58% of juveniles are convicted of new offenses within 2 years after release from initial detention, and 72% are rearrested within 3 years (Mendel, 2011). Aizer and Doyle (2013) found that previous juvenile detainees were 41% more likely to be incarcerated by age 25 than their peers. A research bulletin from the Office of Juvenile Justice and Delinquency Prevention (OJJDP) confirmed these data, noting that 60% of previous juvenile offenders later had at least one felony arrest as adults (Mulford, 2014).

Juvenile incarceration can also have a long-term economic impact on employment. The study *Collateral Costs: Incarceration's Effect on Economic Mobility*, commissioned by the Pew Charitable Trusts (PCT, 2010), stated unequivocally that "a history of incarceration itself impedes subsequent economic success" (p. 11). The report noted that, accounting for other factors such as education, age, and experience, those who had previous incarcerations made 11% less per hour and overall made 40% less money annually than their peers. The study also noted that juvenile incarceration starts a trend that can lead to a long-term lack of upward mobility. Two thirds of those formerly incarcerated as juveniles who started on the bottom rung of the wage distribution scale remained on the bottom rung up to 10 years later (PCT, 2010).

The Effect of Incarceration on Education

This lack of economic stability among those previously incarcerated as juveniles stems partially from the effects of incarceration on education. Numerous studies conducted in the last decade have confirmed these detrimental effects. A 2006 study by Sweeten determined that detention as a juvenile decreased the likelihood of high school graduation by half. The United Nations Human Rights Council reported in 2008 that 35% of adult inmates previously detained as juveniles did not have a high school diploma (Dignity in Schools Campaign, 2008). An extensive study of juvenile youth in Chicago found that incarceration greatly impacts a juvenile dropping out of high school (Kirk & Sampson, 2012). In fact, in the Chicago study, only 26% of juveniles who were incarcerated achieved a high school diploma, while 65% of their nonincarcerated peers graduated (Kirk & Sampson, 2012).

A later study noted that, as compared to their never-incarcerated peers, previously incarcerated juveniles were 39% less likely to earn a high school diploma (Aizer & Doyle, 2013). In fact, Aizer and Doyle (2013) concluded from their research that a primary reason for a high adult incarceration rate among former juvenile offenders is the lack of job skills caused by disruption of schooling and the lack of a high school diploma. Several studies noted that being incarcerated in a juvenile facility almost ensures that a student will not receive a high school diploma (Aizer & Doyle, 2013; Kirk & Sampson, 2012; Mendel, 2011; Smeets, 2014; Sweeten, 2006).

The Chicago study noted that former juvenile offenders who do graduate from high school often have difficulty getting accepted to college, noting that most universities ask about applicants' criminal histories, and 60% of them use criminal histories as a consideration when granting admission (Kirk & Sampson, 2012). The researchers noted that the distinction of a student as an "offender" can negatively impact the interactions between the student and the institution, thus decreasing the likelihood of the student earning a college degree (Kirk & Sampson, 2012).

Social/Emotional Effects of Juvenile Incarceration

Even greater and more harmful than the disruption of education are the social and emotional long-term effects of juvenile incarceration. Youth already suffering from delayed social and emotional skills, caused by troubled adolescences, find these delays worsened by the experience of incarceration (Martin et al., 2008).

The National Juvenile Justice Network (NJJN, 2013) reported the results of the Models for Change Initiative study, which found that incarcerated juveniles exhibited regression in psychosocial maturity that affected their impulse control and decision

making for up to a year, making them more susceptible to reoffending and rearrest upon release. One often-referenced 2008 study of how adolescent development affects crime noted, "If a youth's experience in the correctional system disrupts educational and social development severely, it may irreversibly undermine the prospects for gainful employment, successful family formation, and engaged citizenship—and directly or indirectly contribute to re-offending" (Scott & Steinberg, 2008, p. 27).

These psychosocial delays are often more severe and longer lasting in incarcerated girls than boys, since females entering the juvenile justice system tend to have more extensive histories of abuse than their male counterparts (Foy et al., 2012). Studies have indicated that the long-term effects of incarceration are more severe for girls (Armitage, 2013).

Youth in the Juvenile Justice System

Boys comprised about 70% of the nearly 1,500,000 juvenile arrests in America in 2011 and about 82% of the arrests for offenses on the violent crimes index (murder, forcible rape, robbery, and aggravated assault; Puzzanchera, 2013). About 90% of the juveniles arrested for carrying weapons and for sexual offenses were also males, indicating that boys are arrested and incarcerated for more violent crimes than girls. The majority of these violent crimes committed by males tended to be drug and gang related (Puzzanchera, 2013).

While the overall juvenile detention rate is declining, the percentage of girls arrested has risen, comprising 29% of all juvenile arrests in 2011 (Puzzanchera, 2013). Girls are increasingly being arrested for more violent crimes; they comprised 36% of the arrests for simple assault, a quarter of the arrests for aggravated assault, and 9% of the

arrests for murder in 2011 (Puzzanchera, 2013). More than three quarters of the girls were arrested for prostitution and other sex crimes related to drug and gang involvement (Puzzanchera & Adams, 2011). An analysis of gender-specific data showed that 31% of arrests of girls less than 14 years old were for violent offenses (Tracy et al., 2009).

Research has shown that, historically, there are notable differences in the types of offenses for which boys and girls are arrested, particularly in regard to status offenses. According to the American Bar Association, status offenses are noncriminal acts that are illegal only due to the offender being a juvenile but would not be illegal for an adult (Kendall, 2007). Such acts include alcohol use, running away from home, loitering, curfew violations, consensual sexual behavior, truancy, and out-of-control behaviors (Kendall, 2007).

About a quarter of incarcerated boys suffer from posttraumatic stress disorder (PTSD), which makes them more susceptible to other mental health, behavioral, and health disorders, and more likely to form dysfunctional relationships than their peers (Martin et al., 2008). In one 2013 study, 90% of the incarcerated boys surveyed felt their PTSD originated from seeing someone else being killed or from having been threatened with a weapon, and some reported experiencing more than 15 traumatic events prior to incarceration (Abram et al., 2013). PTSD is a type of anxiety disorder brought about from witnessing or being the victim of traumatic events, usually those involving the possibility of harm or death. PTSD can be extremely disabling, causing flashbacks, emotional numbness, and avoidance. If left untreated, it can become permanently disabling (Abram et al., 2013). Martin et al. (2008) noted, “Social cognitive functioning in seriously delinquent youth is often deficient due to trauma experienced in childhood

and early adolescence" (p. 608). Overall, male juvenile offenders tend to commit more violent offenses and commit offenses more frequently than girls, who tend to commit more crimes involving manipulation (Cauffman, 2008).

Research has indicated that a large majority of incarcerated girls have traumatic histories of abuse, violence, or both (ACLU, 2006; Cauffman, 2008; Dixon, Howie, & Starling, 2004; Foy et al., 2012; Martin et al., 2008; Tracy et al., 2009). Studies have placed the number of girls who are victims of physical, emotional, or sexual abuse at 92% (Cauffman, 2008; Chauhan & Reppucci, 2008; Physicians for Human Rights, 2012; Selph et al., 2014).

Only within the last 10 years have researchers begun to recognize and study differences between male and female juvenile offenders. Due to the violence and trauma in their pasts, the girls are left with enduring emotional and mental health issues such as PTSD, anxiety, and depression. An estimate of the prevalence of PTSD in incarcerated girls varies from 49% (Abram et al., 2013) to 65-67% (Martin et al., 2008; Physicians for Human Rights, 2012). Researchers agree that incarcerated girls are twice as likely as boys to suffer from PTSD (Abram et al., 2013; Dorn, 2004; Physicians for Human Rights, 2012; Selph et al., 2014).

One study of the psychological characteristics of incarcerated girls found that, in addition to PTSD, 68% suffered from attention deficit hyperactivity disorder (ADHD), and 28% had anxiety disorders (Dixon et al., 2004). Incarcerated girls are also more likely to suffer from major depressive disorder and severe anxiety than their male peers (Zahn, Day, Mihalic, & Tichavsky, 2009). Female juvenile offenders were also found to have an 84% higher likelihood of a mental health disorder as compared to males (Martin

et al., 2008), and females were more likely to have that disorder compounded by drug use (Abram et al., 2013).

Education in Juvenile Justice Facilities

Despite the increased emphasis on data and accountability in public education in recent years, there is a relatively small amount of available data on the effectiveness of education in the juvenile justice system (Aizer & Doyle, 2013; Young et al., 2010). The passage of the No Child Left Behind Act (NCLB) in 2002 mandated that all public schools in the United States assess students in language arts and math yearly and report the results to the government. However, certain schools, including those in juvenile detention settings, were given optional exclusions to this mandate. The failure of juvenile court schools (JCSs) to test students and report the findings provided little accountability for quality programs (Gagnon, Haydon, & Maccini, 2010). A 2009 study concluded that education programs in juvenile facilities were substandard and lacking rigor (Houchins et al., 2009).

The report *Just Learning: The Imperative to Transform Juvenile Justice Systems Into Effective Educational Systems*, commissioned by the Southern Education Foundation (2014), noted that there is no federal or state database to record the academic functioning levels of students when they enter or leave juvenile facilities. However, the report referenced a recent government survey of juvenile offenders in which one fourth of the students reported failing at least one grade, and 21% reported dropping out of school (Southern Education Foundation, 2014). In addition to a history of school failure, many of these students also face mental health issues, drug abuse, gang involvement, early parenthood, and other obstacles to receiving an education (Mendel, 2011).

Just Learning noted that schools in juvenile facilities have inconsistent programs, which are overall inferior in quality to those in public schools (Southern Education Foundation, 2014). This inconsistency is evident in the reported focus of JCSs. A study by Platt et al. (2006) found that educational programs in correctional facilities did not focus on students' earning a high school diploma but the General Equivalency Diploma (GED). Although legally equivalent to a high school diploma, the GED often limits the holder's options for upward employment mobility, can limit the holder's ability to get into college programs, and can necessitate taking remedial courses in college (Dignity in Schools Campaign, 2008; Flores, 2012; Platt et al., 2006). The Dignity in Schools Campaign study, conducted in 2008, was critical of vocational education programs in these settings, stating, "Vocational programs in many states were quite limited; when available they were of questionable educational value" (p. 10).

A report published by the Center for Juvenile Justice Reform noted that few JCSs use state-adopted textbooks or evidence-based instructional practices (Leone & Weinberg, 2012). The report noted that instruction in these facilities is inferior and based primarily on worksheet packets and skill-and-drill instruction. This report also noted the extended time it takes for JCSs to request and receive student records as compared to public schools (Leone & Weinberg, 2012).

Juvenile detention facilities are designed for the control and safety of youth, so often the schools are administered using practices that enhance security but are not conducive to quality instruction (Dignity in Schools Campaign, 2008). In one study, researchers observing a class in a juvenile prison school noted that the classroom contained no computers or pencils, due to the possible use of these items as weapons

(Young et al., 2010). In fact, the Center for Juvenile Justice Reform report noted that facility administrators often use security concerns as an excuse for the substandard educational programs (Leone & Weinberg, 2012).

While conducting observations in the juvenile prison school, Young et al. (2010) noted that there were few whole-class direct instruction lessons and that the school's curriculum appeared to be stapled packets. The lack of rigor in the curriculum was not lost on the students themselves. One student told the researchers that she felt the school gave easy credits to students just for behaving and that she knew the school was not preparing her to be successful in a comprehensive high school upon her release (Young et al., 2010). Mozia (2011) conducted one case study of schools in juvenile facilities and found that even in those facilities that used the state standards, students were not progressing as expected due to the lack of motivation and juveniles' attitudes of disassociation with schools.

There is an overrepresentation of students with special needs in JCSs as compared to public schools. The number of juveniles with disabilities attending court schools is about 43%, but the number is closer to 15% in public schools (Blomberg et al., 2011). One study found that of these students with disabilities in the juvenile justice system, 48% had diagnosed emotional disturbances and 39% had learning disabilities, a much higher rate than youth in the average public schools (Leone & Weinberg, 2012).

As many as 45% of the students who enter JCSs with a previously diagnosed learning disability fail to receive services (Mendel, 2011; Platt, Bohac, & Wade, 2015). Since 2008, the federal government and the American Civil Liberties Union (ACLU) have filed suit against 22 states for failing to provide adequate special education services

(Dignity in Schools Campaign, 2008; Mendel, 2011). Since many JCSs have small populations of special needs students, they do not report scores of these students with disabilities to the state. Thus, there are few actual data depicting the progress of these students (Gagnon et al., 2010).

Staffing in Juvenile Education Programs

Administrators of many of the nation's JCSs are not credentialed as school administrators, as administrators of public schools must be. The resulting lack of knowledge of accountability and effective instructional practices sorely affects the quality of these programs (Gagnon et al., 2010).

Research has indicated that most of the teachers teaching in JCS settings received only traditional elementary or secondary experience, with no experience or training in the characteristics of incarcerated youth (Mathur et al., 2009; Platt et al., 2006). In one case study of instruction in a California JCS, teachers expressed the belief that they did not have the knowledge or skills to meet the needs of all their students (Mozia, 2011). Juvenile education teachers interviewed as part of an observational study stated unanimously that they had no special training in the characteristics of juvenile offenders or in instructional strategies that might be useful with this population. The teachers also expressed a desire for training in counseling or mentoring, as they strove to develop positive relationships with the students (Flores, 2012).

Due to the variety of ages and academic levels of students in JCS classrooms, teachers in Flores's (2012) study often taught several classes (e.g., American history, world history, and economics) at the same time in the same room. With no special training in how to integrate these curricular areas, teachers often resorted to giving

students rote book assignments or packets, resulting in a curriculum with limited rigor or depth (Young et al., 2010).

There are no consistent programs of staff development at these schools that would allow teachers to develop the knowledge and skills needed to provide quality academic instruction and social support to their students (Mathur et al., 2009; Platt et al., 2006; Young et al., 2010). This may be attributable to the lack of qualified administrators to oversee such training.

Educational Needs of Incarcerated Minors

Most juveniles enter the juvenile justice system years behind academically due to months, and possibly even years, of truancy (Foy et al., 2012). Poor school attendance, coupled with a familiarity with nontraditional cultural norms they experience on the streets of their communities, makes these students deficient in school skills such as asking appropriate questions, waiting for assistance, and following directions. In addition, many newly incarcerated juveniles may attend school while still detoxifying from a substance addiction, which further erodes their school skills (Platt et al., 2006).

Often, juveniles enter incarceration several years below grade level. Despite being high school aged, the typical juvenile offender is a poor reader, has only basic math computation skills, and can write only basic paragraphs. As curriculum becomes more difficult, these students give up easily and act out to avoid becoming frustrated, or refuse to participate altogether (Flores, 2012). Due to histories of dysfunctional relationships and poor social skills, these students are often unable to function in a group. Their emotional instability and lack of effective communication skills turn simple disagreements into arguments (Smeets, 2014). They often choose to work alone, even if

the task will be harder, rather than attempt to work constructively with a partner or group (Flores, 2012).

Reforms in Juvenile Justice Education Programs

The national juvenile justice system's overall policy of incarcerating minors regardless of the offense was the spearhead of the reforms in the juvenile justice system that have led to the large decreases in juvenile detention seen in the last 30 years (Mendel, 2011). Along with the realization that wholesale juvenile incarceration was not working came the realization that the educational programs in juvenile justice facilities were also failing.

As early as 1988, the Correctional Education Association (CEA) developed an accreditation system for educational programs in correctional facilities; however, it was not until 2004 that these standards were developed for juvenile facilities (Corwin, 2005). These standards required reforms and improvements in areas such as transfer of student records, increasing instructional minutes, and developing educational programs equal in quality to a juvenile's local public school. In addition, the standards stated that the primary goal of educational programs in juvenile facilities is not merely vocational education or a GED but the attainment of a high school diploma (Corwin, 2005).

In addition to the development of the CEA standards, JCS programs in many states are working to achieve the same regional accreditation that public schools achieve through one of six regional accreditation associations that visit and accredit high school and college programs throughout the United States (Accrediting Commission for Schools, Western Association of Schools and Colleges [ACS WASC], n.d.). The new focus on reforming juvenile correctional education programs to make them comparable in

quality to local public schools necessitated the study of the unique educational needs of this student population and the exploration of instructional practices based on learning theories.

In an attempt to reform the substandard educational programs in JCS schools nationwide, the U.S. Departments of Education and Justice collaborated on a report, released in December 2014, delineating principles for improving education in these facilities. The report, *Guiding Principles for Providing High-Quality Education in Juvenile Justice Secure Care Settings*, listed five guiding principles for improving education programs and activities for schools to implement. One of these principles stated that all juvenile justice schools should have "rigorous and relevant curricula aligned with state academic and career and technical education standards that utilize instructional methods, tools, materials, and practices that promote college and career readiness" (U.S. Departments of Education and Justice, 2014, p. 5).

Another principle in the joint U.S. Departments of Education and Justice (2014) report stated that recruitment and retention of qualified staff for JCS sites should be a major focus for agencies staffing JCSs. The report cited the lack of staff development for JCS teachers as a barrier to hiring and retaining well-qualified staff, who may be uncomfortable in this unfamiliar educational setting. The report called for agencies that staff JCSs to develop specific plans and budgets to recruit and provide staff development for teachers who service this unique population (U.S. Departments of Education and Justice, 2014).

Social Constructivist Learning Theory

According to the social constructivist learning theory, students actively construct meaning from social interactions with peers in solving an open-ended problem (Kim, 2001). Students engage in deeper learning through interaction with data and communication with their peers (Pelech, 2008). Social constructivist theory emerged from the theory of constructivism, which was influenced by the ideas of several theorists, including Jerome Bruner and Lev Vygotsky (Neff, 2010).

In his 1966 work, *Toward a Theory of Instruction*, Bruner described the constructivist theory of learning as an active, student-centered process in which learners construct new meaning based on previous experience or knowledge. Jennings (2012) agreed, stating that the learner draws on prior knowledge or experience to recognize patterns and make meaning out of new tasks or situations, modifying the old understandings to incorporate knowledge gained in the new situation. In constructivism, the students are given meaningful experiences "in which they look for patterns, construct their own questions, structure their own models, concepts, and strategies" (Yilmaz, 2008, p. 169).

Bruner (1966) believed that students of any age can learn any material if it is organized appropriately, whereas previous theorists believed that certain concepts could only be learned at certain developmental stages. McLeod (2012) noted that Bruner also believed in presenting ideas in an organized manner, in which more complex concepts are presented utilizing prior knowledge, and from a concrete (solid object or movement) to semiconcrete (picture) to abstract (language) representation, which is known as "scaffolding."

Later, Bruner, influenced by the work of Vygotsky, agreed that learning was a social concept (Jennings, 2012). Vygotsky's theory of social constructivism emphasized the impact of lived experiences and culture on the students' view of the world. Vygotsky defined learning as an active, student-centered process in which learners construct new meaning based on prior knowledge or experience through social interactions with peers and adults (Neff, 2010).

Vygotsky further supported Bruner's idea that students could learn concepts at any time given the appropriate organization and support through his concept of the zone of proximal development (ZPD; Jennings, 2012). The ZPD is the area between what the student is capable of learning independently and what the student can learn given the appropriate support (Jennings, 2012). Within the ZPD, through the use of supports and scaffolds such as social interaction with a more knowledgeable peer or an adult, or supports such as images, the student can learn far more complex concepts than he or she could independently (Kim, 2001).

Technology can be an important tool in using language to construct meaning, both as a research tool and to facilitate written language as a means of gathering meaning. In addition, the social aspect of learning can be enhanced through the use of e-mail and online communities (Chen, n.d.).

Project-Based Learning

Project-based learning (PBL) is an educational approach based on social constructivism in which students use investigation to answer a driving question and, working collaboratively with their peers, produce a creative answer or product (Coffey, 2008). PBL reflects social constructivism through its emphasis on active student

involvement in learning and the authentic expression of learning by creation of a unique product (Han & Bhattacharya, 2001). Additionally, PBL allows students to learn from interactions with peers and teacher concepts that would be too complex for the students to learn on their own, through the use of scaffolding. Scaffolding is providing background and support to allow students to learn. Scaffolding is a strategy replicating the ZPD (Kim, 2001).

PBL allows students to explore meaningful, real-life questions and derive a deeper understanding of concepts than would be possible through a traditional textbook curriculum. Unlike traditional curricula, in which a project is the culmination of a unit, PBL utilizes the project as central to the deeper learning (Robertson, 2013).

The Role of the Teacher in PBL

The role of the teacher in PBL is much different than in traditional instructional methods, in which teachers impart knowledge and meaning that students recall and repeat (Thomas, 2000). In PBL, the role of the teacher is as a guide, or facilitator, who provides resources and feedback as students discover meaning. Teachers utilizing PBL must plan effectively and often find themselves as learners with the students (Coffey, 2008). In one study of PBL in a traditional high school, the teachers interviewed described themselves as learners and facilitators, stating, "It's just working with kids to teach them how to go through a process . . . and we really want them to get there on their own" (Gratch, 2012, p. 58).

Frameworks for PBL

There are several frameworks for PBL, with varying numbers of elements, but they share the common theme of student-driven inquiry to solve an authentic problem

(Pelech, 2008). Thomas's (2000) classic model comprised five elements: the curriculum revolves around the problem, driving questions frame the projects, knowledge is constructed from inquiry, students drive choice, and the problem is authentic and reflects real-life situations (Coffey, 2008; Robertson, 2013).

Thomas's early definition of PBL also stressed the importance of cooperative learning, a culture of problem solving, and ongoing communication between students in groups and through feedback from their teachers (Ravitz, 2009). Zhao (2009) noted that Thomas's PBL model of designing the curriculum around projects results in deeper, more meaningful learning. Thomas, one of the founders of the Buck Institute for Education (BIE), developed one of the earliest models of PBL, upon which others later expanded.

Buck Institute for Education's Eight Components of PBL

The most widely accepted educational model of PBL from the BIE comprises eight essential components: significant content, a need to know, a driving question, student voice and choice, 21st-century skills, inquiry and innovation, feedback and revision, and a publicly presented product (Larmer & Mergendoller, 2010; Solis & Larmer, 2012). Each of these elements is essential for PBL to be truly effective, especially with special populations.

Significant content. BIE's component of *significant content* is reflected in various ways in most versions of PBL and describes projects as focused on and containing content based on curricular standards, often across academic disciplines (Larmer & Mergendoller, 2010). The necessity of having significant content in PBL projects has been recognized for years. Projects in PBL are the center of the curriculum, around which the content revolves (Robertson, 2013). Thomas's 2000 review of PBL

research noted PBL as more effective than traditional instructional models at improving both lower and higher level cognitive and academic skills in subject areas. Projects must be based on curricular standards and have clear goals for demonstrating mastery of these standards (Han & Bhattacharya, 2001). Pelech (2008) cited research in which projects that were content and standards based demonstrated that students had a greater understanding of content-area curriculum.

Deviating from traditional instructional approaches designed to cover a large scope of curriculum, PBL, especially the significant content component, is designed to encourage a deeper understanding of essential curricular concepts, often across disciplines. Significant content means that fewer curricular topics will be explored, but the depth of understanding of the content will be greater (Kemp, 2013).

It is this element of PBL in which teachers have the most impact, by providing background information about the curricular topic, providing resources, and scaffolding for students who have less academic ability. Teachers can scaffold either by providing struggling students with more resources or by grouping more able students with less able ones to provide support (Yilmaz, 2008). It is the ability to use the PBL framework to scaffold instruction that makes this teaching approach promising for students in alternative educational settings (Robertson, 2013).

Need to know. The *need to know*, the second component of the BIE (2010) PBL model, provides the students with an authentic reason to want to solve the problem or research the content. It is this element of PBL that provides the most motivation for students, because they note a real need to find solutions (Grant, 2002). The need to know is often called the *authentic task* and signifies a real-world application for the concepts

that the learner is about to discover. It provides students with a meaningful reason for the inquiry and an understanding of how the final product relates to them rather than simply completing a teacher-given task (Han & Bhattacharya, 2001).

It is this need-to-know factor that is the motivating factor in students' wanting to find a solution to the problem. Research into PBL classrooms has noted that there is an increased motivation and drive to solve the problem when students feel that it has relevance to their own lives or futures (Gratch, 2012). If the need-to-know element is effectively utilized, the PBL approach could be effective in improving achievement among incarcerated juveniles, who report feeling that the traditional curricula provided in most JCSs have no relevance to them or their lives (Young et al., 2010).

Driving question. Integral to every project in the BIE's PBL model is an open-ended *driving question*, which provides a focus for the project and a clear rationale for why students are engaging in the inquiry process (BIE, 2010). Robertson (2013) described the driving question as open ended and challenging, requiring complex problem-solving strategies, and the force behind the creation of an original end product.

Seeking to answer an open-ended driving question challenges the students to think in new and creative ways and to construct meanings from new perspectives (Kemp, 2013). For example, the driving question, "How would you design a city park to make it useable for bicyclists, skateboarders, walkers, and pets?" would cause students to examine the question from a different perspective, such as that of a biker or walker, which the students may not have examined through traditional curricular strategies (Han & Bhattacharya, 2001).

Thomas's (2000) review of the research on PBL noted a study from Vanderbilt University in which students who were given a driving question in architecture and design showed improvement not only in their ability to problem solve but also in their motivation. The students who had utilized the driving-question approach indicated they experienced a "reduction in anxiety towards mathematics, and a greater willingness to see mathematics as a part of everyday life, and increased willingness to approach mathematical challenges with a positive attitude" (Thomas, 2000, p. 17).

Student voice and choice. One of the key concepts of the BIE's (2010) PBL model is *student voice and choice*, which gives the students ownership and choice in the final product they construct to demonstrate their understanding of concepts. Also known as *student choice* (Thomas, 2000) and *multiple expression modes* (Han & Bhattacharya, 2001), voice and choice allows students to select the type of product they will create for their assessment. In one study (Tanner, 2011), student choice of the final output not only increased motivation for the entire project, but it gave them ownership of the project and allowed students to capitalize on their strengths and learning styles. This is especially important for students who have experienced failure on traditional paper-and-pencil assessments (Tanner, 2011).

Twenty-first-century skills. One of the most powerful and defining elements of PBL in the BIE's (2010) model and other models is the use of 21st-century skills. While *21st-century skills* do include the ability to utilize technology, they also include skills that are necessary to be effective in the 21st-century workplace, such as collaboration, communication, critical thinking, and oral presentation skills (Partnership for 21st Century Skills, n.d.). The open-ended assessment products in PBL allow for students to

develop and refine skills that are authentic to the real world and will be meaningful to them in their adult lives (Robertson, 2013; Tanner, 2011).

Technology has impacted both the process and the output of PBL. As Gratch (2012) noted, technology allows students to access a wealth of information and research via the Internet that in previous decades would have been unavailable. This allows students to research essential questions as they never could have before.

In addition to aiding the inquiry process, technology has also bolstered the possibilities for student project outcomes to new heights. Instead of simply writing an essay about a solution to a problem, students can choose from a plethora of options such as computer-generated music, PowerPoint presentations, Excel graphs, graphics, and design programs as their final project outputs (Partnership for 21st Century Skills, n.d.). Using technology such as laptops, iPads, and so forth in projects allows students to develop these skills for the work world.

Twenty-first-century skills also encompass such workplace skills as critical thinking, collaboration, communication, and time management, all of which are also essential elements to PBL (Larmer & Mergendoller, 2010; Robertson, 2013). The concept of constructing meaning through collaboration is what relates PBL to social constructivism and separates it from traditional instruction. In PBL, students work in collaborative groups to complete parts of their end product, engaging in activities such as sharing of resources, joint research, group brainstorming or feedback sessions, and peer reviews of work (Grant, 2002).

The group work of PBL enables students to learn group roles, equal distribution of tasks, and how group members are interdependent and individually accountable for the

progress of the group. In addition, working in groups necessitates increased communication and fosters improvements in communication skills (Tanner, 2011). Students construct deeper meanings through the shared understanding of the concepts (Jennings, 2012).

Inquiry and innovation. The sixth component of the BIE PBL model is *inquiry and innovation*. The inquiry process is a cycle that starts with the essential questions, brainstorming, and developing and testing hypotheses until a creative solution is formulated (Larmer & Mergendoller, 2010). This is an area where the roles of the teacher and student differ from the traditional models. In the PBL model, the teacher acts as a facilitator and guide, providing resources and enabling the students to continue through the inquiry process. The teacher does not answer students' questions but provides resources that the students can use to find answers (Coffey, 2008).

Navigating the inquiry process may be cyclical, when answering a question leads to more questions, and involves students' collaboratively using higher order thinking skills to analyze and synthesize data to derive relevant meanings (Grant, 2002). In the inquiry process, students investigate problems and evaluate possibilities, and then work collaboratively to develop the original product that answers the driving question (Robertson, 2013).

Feedback and revision. One common component of PBL found in several models is that of *feedback and revision*, through self-reflection, peer review, and teacher feedback (Larmer & Mergendoller, 2010). Students should work with their groups and the teacher to develop formal methods of providing feedback and should practice giving constructive feedback to their peers (Larmer & Mergendoller, 2010).

Ongoing self-reflection is an important skill for PBL so that students can determine which skills or aspects of the project they have mastered and which they have not, and can begin to build a plan for mastery (Tanner, 2011). Peer review is an additional tool to aid students in staying focused on developing relevant answers to the essential questions. Rubrics or other evaluative scales are useful for both self-reflection and peer review (Larmer, 2009). Providing constructive feedback to peers, in addition to assisting in completing the project, also allows the students to develop interpersonal communication skills that are essential in the 21st-century job market (Robertson, 2013). Deciding if a peer's feedback is valid and should be incorporated into the project is another valuable skill (Coffey, 2008).

Publicly presented product. An important aspect of the BIE's (2010) PBL model, *publicly presenting the product*, gives purpose and authenticity to the project and provides additional motivation for students. With many projects, the public presentation may be only to the class or a school assembly (Grant, 2002). However, technology allows for worldwide public exhibition via Facebook, webpages, Instagram, or a school website (Gratch, 2012).

Face-to-face public exhibitions with invited guests or community members can often yield the best results by giving students a meaningful audience for whom to present their projects. These events can lead to networking and exposure of the end product to a larger audience. Face-to-face interactions at public exhibitions or showcases can provide students with real and meaningful feedback on ways they can improve their projects, and can help build relationships with community members and experts (Boss, 2014).

The presentation component allows students to practice essential 21st-century skills such as public speaking, communicating effectively, and making public presentations in front of a supportive and authentic audience (Larmer, 2009). Feedback about the presentation can help guide future projects and exhibitions (Boss, 2014).

Use of PBL With Special Student Populations

There is currently a very small amount of available data on the use of PBL with incarcerated juveniles. One article detailing the use of a PBL approach in a thematic curriculum noted that the incarcerated students responded well to the PBL curriculum and had begun to show improvements in their interpersonal skills and their willingness to attend their classes in order to complete their projects (Beltran, 2012).

The 2014 collaborative report from the U.S. Departments of Education and Justice did not mention PBL by name but stated that agencies responsible for JCSs should "institute 21st century educational practices to develop students' skills that develop collaboration, digital literacy, critical thinking, and problem solving" (p. 16). The components listed in the report are also components of PBL.

A slightly larger body of research exists about the use of PBL in alternative school settings such as community day schools, whose students share many similar characteristics with incarcerated juveniles, such as severe academic deficits. Robertson's (2013) study of the implementation of PBL in an alternative school setting showed that students' response to PBL was affected by their previous school experiences but was overall positive. The students showed increased engagement in the PBL curriculum, and they responded well to the overall atmosphere of collaboration and the increased emphasis on authenticity in the projects (Robertson, 2013). The paradigm shift of PBL

from traditional teacher-generated paper-and-pencil assessments to student-chosen assessments may show the greatest benefit with students in alternative settings, who tend to have nontraditional learning styles and deficits in writing skills (Mathur et al., 2009; Tanner, 2011).

Studies of learning styles of incarcerated juveniles have indicated that the educational programs in those facilities do not account for differing learning styles among the offenders, indicating that implementing PBL in these settings may have an impact on students' success. A 2006 study by Sheridan and Steele-Dadzie regarding learning styles of incarcerated juveniles indicated that their areas of greatest strength were creativity and memory. In addition, the students scored very high overall on semantic ability (i.e., understanding the concepts of language) and verbal ability and scored poorly on symbolism (i.e., written representations of language; Sheridan & Steele-Dadzie, 2006).

Such a profile would make the students failures in the traditional school curriculum but successful in a curriculum involving open-ended questions and assessments and student involvement, such as PBL (Sheridan & Steele-Dadzie, 2006). A student who fits the above profile would fail a paper-and-pencil assessment of learning, but with PBL's component of voice and choice, the student could demonstrate deep understanding of concepts through building a hands-on project, writing a song, creating a PowerPoint presentation, or completing another method of assessment (Tanner, 2011).

The collaborative atmosphere in PBL settings allows for the development of trusting relationships among group mates and an atmosphere of safety and acceptance that is necessary for at-risk students to feel successful. Research with male juvenile

offenders has indicated they feel little to no attachment to school due to a lack of successful relationship formation (Sheridan & Steele-Dadzie, 2006). Robertson's (2013) study showed that the collaborative relationships and trust built in a PBL environment can enable students in alternative programs to develop more positive relationships.

Summary

The United States continues to incarcerate more juveniles than any other country in the world, despite a large body of evidence that juvenile incarceration has high economic and social costs for both the nation and the individuals (Aizer & Doyle, 2013; Pew Charitable Trusts, 2010). Although the rate of juvenile detention has declined dramatically over the last 30 years, the number of incarcerated girls has risen (Puzzanchera, 2013). Studies have shown that the social and academic effects of juvenile incarceration last even longer for girls than boys (Cauffman, 2008).

Both boys and girls enter the juvenile justice system with severe social/emotional issues, mental health disorders, and severe academic deficits caused by histories of abuse, trauma, and dysfunctional relationships. However, the educational programs in the nation's juvenile detention facilities are not equipped to handle these students' needs. Schools in these facilities provide mostly basic skill remediation and packet work, with little emphasis on rigor (Southern Education Foundation, 2014). Student progress in these programs is not well monitored, and there is little accountability (Annie E. Casey Foundation, 2013).

PBL, based on the social constructivist learning theory, has become increasingly popular in public schools and is beginning to be used in a few educational programs in juvenile facilities in the United States (Center for Educational Excellence in Alternative

Settings [CEEAS], 2014). The BIE's eight-component model is the most widely accepted PBL model in education (Larmer, 2009). PBL is a student-driven approach in which learning takes the form of inquiry into a specific driving question. Students work collaboratively with peers to investigate possible solutions and create an original product that answers the essential question. The product is then presented publicly for feedback (Larmer & Mergendoller, 2010).

There are no available studies on the effectiveness of the use of PBL with the incarcerated juvenile student population, although there has been some success noted at one facility where PBL has been utilized (Beltran, 2012). Studies of learning styles of incarcerated minors have suggested that PBL may be successful with this population (Sheridan & Steele-Dadzie, 2006); however, research is needed on the effectiveness of PBL with this population.

CHAPTER III: METHODOLOGY

Overview

This chapter begins with a restatement of the purpose of this study and identifies the research questions that were used to elicit data. A thorough description of the qualitative, phenomenological research design follows. A description of the target population and the rationale for the purposeful sampling method are also included. A detailed explanation of the selection and development of the instrument, a semistructured interview, is given, and concerns regarding validity and reliability are discussed. The process for data collection and methods of data analysis are also discussed. Finally, the limitations of the study are presented.

Purpose Statement

The purpose of this qualitative, phenomenological study was to examine and describe the impact of the Buck Institute for Education's (BIE's) eight components of project-based curriculum (Solis & Larmer, 2012) on high school juvenile offenders' academic achievement and socialization as perceived by juvenile court school (JCS) teachers. A secondary purpose was to describe strategies used to implement the eight components of project-based curriculum for high school juvenile offenders as perceived by JCS teachers using the project-based learning (PBL) approach.

Research Questions

1. To what extent are the eight components of PBL perceived to impact the academic performance of incarcerated juveniles?

2. What strategies do JCS teachers using a PBL curriculum perceive as effective for implementing the eight components of project-based curriculum for high school juvenile offenders?
3. How does utilizing a project-based curriculum for high school juvenile offenders impact peer socialization and self-concept as perceived by JCS teachers using a PBL curriculum?

Research Design

This was a qualitative study of the JCS teachers' perceptions of the impact of the eight components of PBL on the academic achievement, peer socialization, and self-concept of juvenile offenders, and effective strategies for implementing PBL. Qualitative research, according to Creswell (2007), is undertaken in order to understand the meanings that the participants place on a particular issue, in this case, the use of the PBL approach with incarcerated juveniles. In order to achieve a deeper, more thorough understanding of the meaning of the issue, researchers must speak directly to the participants.

Creswell (2007) noted that qualitative research is also beneficial when there is an incomplete theory about an issue that does not necessarily examine the uniqueness of the problem or population the researcher is studying. Patten (2012) concurred, noting that qualitative research is preferred when a topic or its application is new, such as a "new educational technique" (p. 21). These explanations applied to the current study, as there are many studies regarding the effectiveness of PBL in various public school settings but very few regarding PBL's effectiveness in alternative educational settings. The researcher did not locate a single study on the effectiveness of PBL in a JCS setting, making this phenomenon an appropriate subject for a qualitative study. The study was

designed to capture the perceptions of the teachers in JCSs about the effectiveness of the PBL instructional approach with their students.

Although qualitative studies are useful in probing more deeply into a research topic, they also have disadvantages, particularly the inability to generalize results due to small sample sizes. In *The Qualitative Report*, Myers (2000) argued that the results of qualitative studies with small sample sizes may be generalizable to very similar populations. She noted that generalizations made from a research study can be aggregated with results of similar studies to increase the generalizability of the findings and that the depth and breadth of the data from a qualitative study provide meaningful information that is impossible to get with larger sample sizes, making the results of qualitative studies more valuable to researchers than simply numerical values (Myers, 2000).

The current study utilized the phenomenological approach. McMillan and Schumacher (2010) described phenomenology as a method that "collects data on how individuals make sense out of a particular experience or situation" (p. 24). Phenomenology allows the researcher to discover how people derive meaning from experiences, which leads to a deeper understanding of the subjects' perceptions (Patton, 2002), making it an appropriate theoretical approach for this study. This study investigated the PBL curricular approach, which fit Patton's (2002) criteria of a "critical incident, stage in the life of a person or program, or anything that can be described as a specific, unique, bounded system" (p. 447). The sample for this study included teachers who had completed the process of utilizing PBL in their JCS classrooms and were appropriate sources of information on its impact on their juvenile offender students.

Population

The population of a study, the group to whom the results of the study can be generalized, must have similar qualities, characteristics, or experiences to those selected as the sample in the study (McMillan & Schumacher, 2010). The population to whom the results of this study can best be generalized comprises teachers in JCSs who utilize PBL with their students. One way to achieve specificity in determining the population is through the use of delimiting variables, or specific characteristics that must apply to all members of the population (McMillan & Schumacher, 2010). In this study, the delimitations were that the participants had to be JCS teachers who had utilized PBL with incarcerated students nationwide. This is a highly specialized population, distinct from just public school teachers or alternative education teachers who use PBL.

Sample

The sample size for this study was small but an appropriate size to adequately answer the research questions, which is a hallmark of the qualitative study (Marshall, 1996). The sample for this study was selected using purposeful sampling, a method common in qualitative research, in which members of the population who are believed to be good sources of information about the topic are deliberately chosen (Patten, 2012). Although not readily generalizable to a large population, studies with small sample sizes provide valuable information in their own right on the chosen topic (Myers, 2000). The importance of the sample is in the depth of the knowledge that can be provided by the individual members, not in the total number of sample participants (McMillan & Schumacher, 2010).

There are a relatively small number of JCSs in the United States, and the number of those schools utilizing PBL is even smaller. A publicly available advocacy group that coaches JCS teachers in the use of PBL, the Center for Educational Excellence in Alternative Settings (CEEAS, 2014), estimated that there are a handful of JCSs utilizing PBL, spread through several states.

Since the use of PBL in JCSs is a relatively new phenomenon, there are not yet many programs utilizing it. Despite the relatively small sample size of this study, each member had in-depth knowledge of utilizing PBL and experience with the population. This is essential according to Patton's (2002) description of purposeful sampling, in which samples are selected using "information-rich cases whose study will illuminate the questions under study" (p. 230).

The teachers comprising the sample for this study were identified by the principals of their JCSs after a recommendation by CEEAS. The purposeful sample for this study was small, consisting of nine teachers who used the PBL approach in eight different juvenile high school facilities in three different states. Three of the participants were in a southern state, two in a southeastern state, and four in a western state. In two of these states, there were only two sites utilizing PBL, one with only two teachers. In one state, the teacher worked at two different court school sites and utilized PBL at both. This teacher was counted as one participant, although her answers reflected her experiences at both of her sites.

One of the teachers taught a program for girls and boys, while the rest of the study participants taught programs only for boys. This small sample representing girls in the study reflects the relatively small number of incarcerated girls as compared to boys.

Each of the members of the sample met the following criteria:

1. Each teacher was credentialed as a public school teacher according to the requirements of his or her state.
2. Each teacher taught a class of incarcerated juveniles at a juvenile hall or camp in his or her state.
3. Each teacher in the sample had received some coaching or training in utilizing the BIE's eight components of PBL model and had utilized this training in completing at least one project with the students.

The members of the sample group were selected through the researcher's outreach to a nationwide nonprofit organization that champions reform in the juvenile justice education system, including PBL, which encouraged the states to participate. The results of this study provided data regarding the impact of PBL in reforming education in juvenile justice facilities nationwide.

Instrumentation

The researcher used semistructured interviews to elicit data from the participants. In-depth interviews are crucial to the phenomenological study (McMillan & Schumacher, 2010; Patton, 2002). In particular, semistructured interviews follow predetermined questions, which keeps both parties from straying off topic and aids in validity of the questions. However, semistructured interviews allow the interviewer to ask follow-up or clarifying questions, to vary the words, and to explore new ideas relevant to the topic that might not have been considered prior to the interview (Doody & Noonan, 2013).

The interview questions were developed from the review of the literature, which enabled the researcher to ask relevant questions that had not already been answered

(Jacob & Furgerson, 2012). The questions were developed to specifically answer the research questions and were open ended, allowing the interviewer to veer away from predetermined questions to explore new ideas brought on by interviewee comments (Doody & Noonan, 2013).

The researcher developed the interview protocol, which included not only the interview questions themselves but also the pre- and postinterview scripts and prompts, after a review of the research and study questions. Jacob and Furgerson (2012) suggested writing open-ended questions, which allow the interviewees to answer the questions in a more open direction that may yield unexpected insights into the subject.

The best types of questions for semistructured interviews allow the respondents to elaborate on the topic, thus providing valuable information, but keep them focused on the topic. These questions are what Leech (2002) called "grand tour questions" because they allow the interviewees to give a "verbal tour of something they know well" (p. 667).

Validity

Validity of qualitative research refers to the extent to which the data elicited from the study match reality (McMillan & Schumacher, 2010). There are several types of validity in qualitative studies. Content validity is defined as how well the instrument items adequately measure what they are designed to measure (Kimberlin & Winterstein, 2008). One way to ensure content validity is to have the interview questions reviewed by experts prior to the interview (Patten, 2012). For this study, the interview questions were reviewed by two experts in the area of JCSs and PBL. The interview questions and protocol were reviewed by the director of CEEAS and a principal of a JCS that utilizes PBL that was not a part of the study. These experts were given drafts of the interview

questions and asked to determine the relevance of the questions to the research questions. The interview questions and protocol were then revised based on the feedback from these experts.

Descriptive validity for interviews is a measure of how well the interview reflects what the participant said (Thomson, 2011). Descriptive validity was ensured through a transcription of the digitally recorded interviews (Doody & Noonan, 2013). Another strategy to ensure validity of data is participant review, in which interviewees are given copies of their transcribed interviews to confirm accuracy and clarity (McMillan & Schumacher, 2010). All participants in this study were given a written copy of the transcript of their interview, which included the interviewer's notes on voice, tone, and body language, and were told to clarify as to accuracy.

Interpretive validity is the degree to which the researcher captures the meanings of data, from the participant's perspective. After each response, the researcher restated what the interviewee had just said in order to ensure clarity of meaning, which also allowed the interviewee to correct any misunderstandings of what was said (Leech, 2002). Ensuring that the interpretation or meaning of the interview is correct according to the interviewee and not the researcher establishes good interpretive validity (Thomson, 2011). By taking good notes regarding body language, facial expressions, and so forth, this researcher helped evaluate meaning. These notes on meaning were provided with the transcripts of interviews for participant review (Thomson, 2011) to ensure clarity of meaning between researcher and participant.

Reliability

Reliability of interviews refers to the consistency of answers over time (Kimberlin & Winterstein, 2008). One way to ensure reliability of interview questions is to develop and use an interview protocol, which is a script of what will be said to the interviewee before the interview, the questions to be asked, any prompts that may be used, and the script for closing the interview (Jacob & Furgerson, 2012). The use of an interview protocol ensures that all interviewees will be given standard information presented in an unbiased way.

Leech (2002) noted that the use of semistructured interview questions allows for the interviewee to expand on answers without veering off topic, ensuring the interview data are reliable across interviews. The interview questions for this study were written to be clearly worded and as unbiased as possible, which increased the reliability of the study (Doody & Noonan, 2013). Probes were also neutral and unbiased.

Data Collection

The participants for the study were recruited using e-mail. The researcher, after receiving contact information from the nonprofit advocacy group CEEAS for states utilizing PBL in their JCSs, e-mailed the probation education directors and JCS principals in these states to explain the study and request participants. Once the principals had obtained permission from their states for participation, they sent the researcher names of individual teachers who met the criteria and were interested in participating. The researcher then contacted each individual teacher directly via e-mail to explain the study and recruit him or her as a participant. The potential participants were assured of the

confidentiality of their answers, that they would be identified in the study only as "a JCS teacher," and that their sites would not be identified.

Prior to interviewing the individuals in the sample, the researcher gained approval from the Brandman University Institutional Review Board (IRB). The interview questions were piloted by interviewing two JCS teachers who were not involved in the study. Based on the expert review and the pilot study, the interview questions were revised for validity and reliability.

Ethical Considerations

After completion of the IRB process (Appendix A), the researcher contacted the participants to schedule the interviews, providing each participant with the Participants' Bill of Rights document and the informed consent document (Appendix B), which they signed electronically and returned via e-mail. The participants received the interview questions via e-mail prior to the interview so that they could refer to the questions as needed. All interviews were conducted via telephone and were digitally recorded for accuracy and validity, after obtaining participant consent to record (Doody & Noonan, 2013), and transcribed by the researcher. The interviews were conducted at the date and time of the participants' choosing, outside of work hours for both parties, allowing for time zone differences between geographical locations.

In order to put participants at ease during the interview, they were given the questions in advance. The researcher adopted a demeanor in line with Leech's (2002) recommendation that "the interviewer should seem professional and generally knowledgeable, but less knowledgeable than the respondent on the particular topic of the

interview" (p. 665). As a small token of appreciation for his or her time, each participant received a $10 Starbucks gift card via e-mail after the interview was completed.

Data Analysis

Data from recorded interviews were transcribed by the researcher and reviewed by the participants for accuracy of meaning. The interview transcriptions, as well as behavioral notations, were entered into NVivo software and coded for any recurring ideas or themes. According to its publisher, QSR International (2013), NVivo software enables researchers to analyze and code data for common themes.

Interview transcripts were analyzed for similar ideas, which were coded with a specific code. As the data were reviewed, codes continued to be evaluated for their adherence to themes and categories. Repeated notation of particular ideas in the data was indicative of themes, which were separately noted (Patten, 2012).

After analyzing the data, common themes may emerge that may necessitate further exploration through follow-up interviews. If this is the case, the participants will be contacted via e-mail to schedule an additional interview. Any additional information gleaned from the new interviews will be similarly coded.

The process of coding allowed the researcher to organize ideas gleaned from the research. According to Patton (2002), coding allows the researcher to determine similarities and differences in the data, and draw conclusions and develop theories to answer research questions based on the data.

Limitations

1. The study used a purposeful, specific targeted sample, as is common with many qualitative studies (Patton, 2002).

2. The results from this qualitative study were limited to the perceptional responses of a small sample of experienced PBL teachers working with high school juvenile offenders in small programs from three different states (Creswell, 2007; Krathwohl, 2004).

Summary

There is currently little research on the quality of educational programs in JCSs nationwide, but data that are available indicate that these programs are of poor quality and ineffective in meeting these students' needs (Aizer & Doyle, 2013). This qualitative, phenomenological study explored the impact of the PBL approach on the academic achievement, socialization skills, and self-concepts of incarcerated juveniles attending court schools in three states, through the perceptions of the teachers. In addition, it determined what strategies are useful in implementing PBL with this unique population of students. Results of this study could help to improve the quality of instruction for juvenile offenders throughout the nation.

CHAPTER IV: RESEARCH, DATA COLLECTION, AND FINDINGS

An overwhelming majority of juveniles incarcerated in the United States have severe emotional and mental health issues and academic deficits that impair their ability to learn (Platt et al., 2015). However, schools in juvenile facilities have traditionally not addressed the needs of these students, historically providing inferior educational programs that often relied on traditional packet work (Southern Education Foundation, 2014). Recently, many states have begun reform movements to improve the quality of their schools for incarcerated minors. These reform movements include the use of project-based learning (PBL) with this population (CEEAS, 2014).

This chapter describes the responses of nine juvenile court school (JCS) teachers in three states interviewed to determine their perceptions of the use of PBL with incarcerated students. The purpose of the study, research questions, methodology, and population of the study are reviewed. Then, the data are presented from each interviewee by research question and then by overall themes to answer the research questions.

Purpose Statement

The purpose of this qualitative, phenomenological study was to examine and describe the impact of the Buck Institute for Education's (BIE's) eight components of project-based curriculum (Solis & Larmer, 2012) on high school juvenile offenders' academic achievement and socialization as perceived by juvenile court school (JCS) teachers. A secondary purpose was to describe strategies used to implement the eight components of project-based curriculum for high school juvenile offenders as perceived by JCS teachers using the project-based learning (PBL) approach.

Research Questions

This study was designed to answer the following research questions:

1. To what extent are the eight components of PBL perceived to impact the academic performance of incarcerated juveniles?
2. What strategies do JCS teachers using a PBL curriculum perceive as effective for implementing the eight components of project-based curriculum for high school juvenile offenders?
3. How does utilizing a project-based curriculum for high school juvenile offenders impact peer socialization and self-concept as perceived by JCS teachers using a PBL curriculum?

Methodology

This qualitative, phenomenological study used open-ended interview questions to determine the perceptions of JCS teachers regarding the impact of PBL on the achievement, socialization, and self-concepts of their incarcerated juvenile students. PBL has become very popular in public school and alternative educational settings, but there are currently no studies available on its use with the incarcerated juvenile population. Thus, this subject met Patten's (2012) requirement for phenomenological studies as a technique that is new to a particular educational setting.

The interviews consisted of five demographic questions and 10 open-ended questions that were developed to determine the answers to the three research questions. Interview Questions 1-6 were designed to answer Research Question 1 regarding PBL's effect on academic achievement. Interview Questions 1, 2, 7, and 10 were designed to

answer Research Question 2 regarding strategies for implementing PBL. Interview Questions 3, 8, and 9 were designed to answer Research Question 3 (see Table 1).

Table 1

Alignment of Interview Questions With Research Questions

Research question	Corresponding interview questions
1. To what extent are the eight components of PBL perceived to impact the academic performance of incarcerated juveniles?	Questions 1, 2, 3, 4, 5, 6
2. What strategies do JCS teachers using a PBL curriculum perceive as effective for implementing the eight components of project-based curriculum for high school juvenile offenders?	Questions 1, 2, 7, 10
3. How does utilizing a project-based curriculum for high school juvenile offenders impact peer socialization and self-concept as perceived by JCS teachers using a PBL curriculum?	Questions 3, 8, 9

The participants received the questions in advance of the interviews, which were conducted either in person or by phone. The interviews were audiotaped for validity and transcribed. The transcriptions were returned to each participant to check for accuracy and clarity of meaning.

The corrected transcriptions were entered into NVivo software and coded. Coding, used with qualitative data, is the process of analyzing qualitative interview data for commonalities in meanings and themes (Gorden, 1992). Saldana (2009) noted that coding helps the researcher to organize data into categories based on similarities. It is a multilevel process in which the data become increasingly defined and developed into theories (Saldana, 2009).

Population and Sample

The population for this study was the group of JCS teachers who utilize PBL with incarcerated students. Although PBL is widely utilized in some alternative educational settings, the population for this study was specifically those teachers utilizing PBL in court school settings. There were several states in which PBL was being utilized with juvenile offenders; however, PBL is fairly new to the JCS setting (CEEAS, 2014).

This study used a purposeful sample, in which the participants were deliberately selected because they were considered knowledgeable about the topic studied. The participants were all teachers who had utilized PBL with incarcerated minors and who were therefore rich sources of information (Patton, 2002).

In selecting the sample for this study, the researcher contacted the Center for Educational Excellence in Alternative Settings (CEEAS), an advocacy group that trains teachers in PBL in alternative settings in a handful of states. CEEAS facilitated referrals to principals of JCSs in three states, who recommended nine teachers to participate in the study. Table 2 provides a breakdown of the participants in this study.

The participants were all credentialed public school teachers according to the requirements of the state in which they taught, and all had training and experience utilizing PBL with incarcerated minors. All participants had received formal training in utilizing the BIE's eight components of PBL. In addition, participants had used the BIE model to complete PBL projects with incarcerated students for varying time periods, from 5 months to 3 years.

Table 2

Breakdown of Participants in This Study

Participant	State	Students	JCS teaching exp.	PBL experience
Participant A	Western state	Boys	12 years	5 months
Participant B	Southeastern state	Boys	7 years	3 years
Participant C	Southern state	Boys	2.5 years	2.5 years
Participant D	Southern state	Boys	9 months	9 months
Participant E	Southern state	Boys & girls	5 years	3 years
Participant F	Western state	Boys	2 years	1 year
Participant G	Southeastern state	Boys	5.5 years	1.5 years
Participant H	Western state	Boys	3 years	1.5 years
Participant I	Western state	Boys	5 years	1 year

Data Analysis

The data from this study were analyzed in two ways. First, data from each participant were analyzed for each research question to determine the prominent themes in the responses. The participants were given alphabetic designations for anonymity. The sequence of participants is not important but merely reflects the order in which they were interviewed. After the responses from all participants were analyzed for important themes, the collective data were analyzed by research question to determine themes common in participants' responses, in order to develop concepts and theories (Saldana, 2009).

Data Analysis by Participant

Participant A. Participant A had been teaching in a JCS in a western state for 12 years and had utilized PBL with incarcerated juveniles for about 5 months. Table 3 represents a summary of the themes and patterns in Participant A's responses related to the three research questions.

Table 3

Participant A: Themes in Responses to Research Questions

Research question	Themes in responses
1. To what extent are the eight components of PBL perceived to impact the academic performance of incarcerated juveniles?	• Students are more engaged • In-depth inquiry, relevant question • Researching • Learn the content on a deeper level • Improved public speaking skills • Decrease in behavior referrals • Greater technology use
2. What strategies do JCS teachers using a PBL curriculum perceive as effective for implementing the eight components of project-based curriculum for high school juvenile offenders?	• Relate driving question to students • Technology utilization (challenge due to security issues) • Teachers wikis for research • Project contracts • Graphic organizers • Practice deeper questioning • Practice public presentation of project
3. How does utilizing a project-based curriculum for high school juvenile offenders impact peer socialization and self-concept as perceived by JCS teachers using a PBL curriculum?	• Greater motivation/engagement • Increased collaboration • Constructive feedback/criticism • Compliments • Improved self-confidence • Greater accountability/ownership • "Light bulb has come on"

Research Question 1. The first research question was, "To what extent are the eight components of PBL perceived to impact the academic performance of incarcerated juveniles?"

Component 1: Significant content. Participant A noted that the PBL projects she had done necessitated in-depth comprehension of rigorous content in order to solve the essential question, with much more rigorous content than students mastered prior to implementing PBL. Students also comprehended the content on a much deeper level

across curricular areas due to the process of PBL. All of Participant A's projects utilized the state and Common Core standards.

Component 2: Need to know. Participant A noted that PBL is successful when students want to answer the essential question. It has to be meaningful and relevant to them. The need to know is what keeps the students engaged, and Participant A noted increased student engagement since beginning PBL. That need to know motivated the students to go through the inquiry process to find solutions. Since implementing PBL as an ongoing part of her students' curriculum, Participant A noted that behavior referrals and suspensions had decreased. Her students wanted to stay in class so they could discover the answer to the question, and their behavior reflected this.

Component 3: Driving question. According to Participant A, the driving question must be relevant to the students' lives or experiences in order for them to want to solve it. Her staff designed driving questions organized around central themes so that they fit in seamlessly and became more essential to solve. She noted that the driving question must be in-depth enough that students will need to use inquiry to solve it, and focused enough that it remains on topic.

Component 4: Student voice and choice. Participant A stated that she felt voice and choice was one of the three most important components of PBL. Students' having some choice in the output of the project allowed them to choose the form of the final product, enabled them to develop ownership of the project, and let them become more deeply engaged in the product. It also contributed to a decrease in suspensions.

Component 5: 21st-century skills. According to Participant A, her students were very gang involved and usually liked to isolate themselves and work alone. However,

since implementing PBL, she had noticed that the students would collaborate more in pairs and groups. Students who were previously "enemy" members of rival gangs were starting to interact more positively with each other.

The ability to use technology effectively is a critical skill for the 21st-century learner. While most of Participant A's students were proficient at using technology such as cell phones, they did not know how to use technology for research or to create things. She noted that with PBL the students were using technology more for research.

Due to the need for increased Internet security in a juvenile incarceration facility, computer access is limited for students and the Internet is highly restricted, which impacted project completion. The teachers often had to provide the printed resources that the students could use to solve the problem. Participant A cited the severe limits on computer use as the single biggest obstacle in implementing PBL.

Component 6: Inquiry and innovation. Participant A noted that driving questions need to be formulated to stimulate inquiry. Teachers in her school encouraged inquiry and innovation and encouraged students to ask questions and to be persistent and innovative in solving them. The essential question had to be relevant for the students in order for them to use their inquiry skills.

Component 7: Peer feedback and revision. Participant A stated that the students in her class were practicing giving positive feedback and phrasing criticisms respectfully. She noted that students were becoming more reflective of their work and made changes suggested by their peers. They were beginning to learn to communicate respectfully and efficiently. Many of the students did incorporate the feedback from their peers in the final product.

Component 8: Publicly presented product. Participant A believed publicly presented products to be the most motivating component of PBL. Students do their best work because they know it will be presented to a real audience. This student population traditionally has not had the opportunity to show off their work, so they rise to the occasion. Participant A noted that the public presentation held the students accountable for completing projects.

Additionally, Participant A noted that the project exhibitions at her school had motivated the students to improve their public speaking skills. Many reluctant students had come out of their shells and were eager to present to an audience.

Research Question 2. The second research question was, "What strategies do JCS teachers using a PBL curriculum perceive as effective for implementing the eight components of project-based curriculum for high school juvenile offenders?"

Participant A named student voice and choice and a public exhibition of the projects as two strategies crucial to implementing PBL. She and her colleagues developed relevant essential questions based on the interests of the students. She also modeled the inquiry process and had her students practice deeper questioning. She also modeled the use of graphic organizers, and students were beginning to use graphic organizers independently.

Participant A explained that students were held accountable for project completion through the use of a project contract. This contract specified the criteria required for the project and contained a grading rubric. Her students could use the contracts to monitor their progress and for peer and teacher review. Contracts allowed her students to have deeper ownership and more accountability for the project.

Technology motivates the students, so Participant A facilitated her students' using computers for research and work production. To overcome the Internet security barrier, she assisted the students in getting resources. All the teachers at Participant A's school had a wiki page on an internal server. Students could go to the page to find secure links to sites with information about the project. This enabled students to develop their technology skills without jeopardizing Internet security.

Research Question 3. The third research question was, "How does utilizing a project-based curriculum for high school juvenile offenders impact peer socialization and self-concept as perceived by JCS teachers using a PBL curriculum?"

Participant A had noticed more confidence and increased motivation in her students since implementing PBL. They were beginning to use constructive feedback and to give and receive compliments about their work. She noted more positive interactions and collaboration.

Participant A described PBL as a "game changer in education" for incarcerated youth: "Since we've implemented this [PBL], the lightbulb has come on, and we see a spark that was not there before."

Participant B. Participant B taught moderate-risk juvenile offenders at a JCS in a southeastern state for the last 7 years and had utilized PBL with them for 3 years. Table 4 represents a summary of the themes and patterns of her responses to the research questions.

Research Question 1. The first research question was, "To what extent are the eight components of PBL perceived to impact the academic performance of incarcerated juveniles?"

Table 4

Participant B: Summary of Themes in Responses to Research Questions

Research question	Themes in responses
1. To what extent are the eight components of PBL perceived to impact the academic performance of incarcerated juveniles?	• Voice and choice motivating • Allows for differing learning styles • Relevant driving question • Increased motivation to do their best • Deeper inquiry • Increased collaboration, communication • Public presentation of product most crucial
2. What strategies do JCS teachers using a PBL curriculum perceive as effective for implementing the eight components of project-based curriculum for high school juvenile offenders?	• Deeper questioning skills • Positive public attention at presentation • Gradually increase the difficulty of content • Build background knowledge • Use of visuals, PowerPoints • Practice deeper questioning skills • Practice presentation/communication skills • Practice giving/receiving constructive feedback • Provide materials for research (due to lack of Internet)
3. How does utilizing a project-based curriculum for high school juvenile offenders impact peer socialization and self-concept as perceived by JCS teachers using a PBL curriculum?	• Increased collaboration • Students more open to giving/receiving feedback • Attitude of "I can do it if I collaborate" • Increased self-esteem • Ownership of work

Component 1: Significant content. Participant B noted that her students were at first resistant to PBL because it was different from what they were used to in traditional programs. In order to overcome this resistance, she did her first PBL projects with simpler driving questions to get the students motivated. She gradually built the rigor of the content and the complexity of the driving question. Now, her projects are rigorous because she incorporates her state's content standards and some Common Core standards.

Component 2: Need to know. Participant B stated, "This is crucial to PBL, because there has to be a reason to answer to the essential driving question, a reason to solve it that motivates the students." She noted that there has to be an authentic reason why the students would want to inquire about the topic in how it relates to their lives.

Component 3: Driving question. Participant B believed it was very important that the driving question be relevant to the students for them to want to solve it. She described one of her earliest projects that had a driving question that was not relevant to the students, so they did not work to solve it. Since Participant B had implemented PBL, her students had been more motivated and eager to work so they could solve the problem.

Component 4: Voice and choice. Participant B noted that voice and choice was one of the most important components of PBL since the choice gives students ownership and autonomy in expressing themselves. She noted that her students came up with the list of choices for project output, such as a poster, oral presentation, or even a song to solve the driving question. The voice and choice also made the students accountable for project completion and quality since they helped develop the choices for output and criteria.

Participant B credited this component with helping to decrease her behavior referrals and suspensions, because the students were motivated to complete the project they chose. She noted that giving the students voice and choice in the finished project allowed them to choose a final product that suited their learning style and talents.

Component 5: 21st-century skills. Participant B noted that her students, who previously had never collaborated, began to collaborate and help each other more since using PBL. They had developed a better sense of what they called teamwork.

Although Participant B realized that 21st-century skills involve the use of technology, she lamented that her students could not go on the Internet because of the security issues stemming from being incarcerated. She noted that this impeded her ability to fully implement PBL with her students. Their ability to research was limited to the materials she found for them, which also limited their choices of topic. Participant B stated that she found this factor to be the most daunting in implementing PBL with this population.

Component 6: Inquiry and innovation. Participant B noted that her students, who at first were resistant to PBL, quickly began to inquire to discover answers to questions. Her students were naturally curious and wanted to find not a single answer to a problem but the best answer. That led them to deeper inquiry, the development of deeper questioning skills, and the desire to make the final project better. They were able to answer questions about their projects because of the deeper inquiry they had done.

Component 7: Peer feedback and revision. Participant B's students gave and received peer feedback during the project and during the public presentation at the end. Although at first they bristled, her students started to become open to constructive feedback and sometimes would alter their projects based on that feedback. By the third project, they were comfortable with giving and receiving constructive feedback.

Component 8: Publicly presented product. Participant B's students were very motivated by the knowledge that people from outside their facility were coming to see their projects, and they spent a lot of time practicing how they would present. Few of her students had ever received positive attention for a school accomplishment, so they thrived on the attention at the public presentation. The praise they received for their projects at

their first presentation motivated them to do their best on subsequent projects. Participant B believed that public presentation is the most crucial component of PBL.

Research Question 2. The second research question was, "What strategies do JCS teachers using a PBL curriculum perceive as effective for implementing the eight components of project-based curriculum for high school juvenile offenders?"

Because her students were initially resistant to PBL because it was new to them, Participant B started with a less in-depth driving question and then gradually deepened the complexity. She believed this early success with an easier question helped motivate her students later to work harder on more complex questions. She spent time building background knowledge using PowerPoints and a lot of visuals, and she kept a wide variety of materials that her students could use for research.

Participant B's students had no experience with giving positive feedback or asking complex questions, so they spent time practicing both of these skills as a class and in groups. They also practiced public speaking skills so that their presentations would come out sounding natural.

Research Question 3. The third research question was, "How does utilizing a project-based curriculum for high school juvenile offenders impact peer socialization and self-concept as perceived by JCS teachers using a PBL curriculum?"

Participant B noticed a gradual increase in her students' desire and ability to collaborate and even to receive constructive criticism without getting angry. They displayed increased ownership and pride in their work and greater accountability for finishing the projects.

There was an increase in the students' confidence. Participant B's students began to work hard on projects because they wanted to receive positive attention, which was a new attitude. She stated, "I think that is the most important lesson that they learned from PBL. It boosted their self-esteem."

Participant C. Participant C taught in a juvenile facility for 14- to 19-year-old boys located in a southern state. He had taught this population for 2.5 years, and his school had been implementing PBL for the same amount of time. Table 5 represents a summary of the themes and patterns in his responses to the research questions.

Table 5

Participant C: Summary of Themes in Responses to Research Questions

Research question	Themes in responses
1. To what extent are the eight components of PBL perceived to impact the academic performance of incarcerated juveniles?	• Mastery of content empowers • Flexible, relevant driving question must be relevant to curriculum • Use of technology limited • Public presentation motivating • Understanding of the "outside" world
2. What strategies do JCS teachers using a PBL curriculum perceive as effective for implementing the eight components of project-based curriculum for high school juvenile offenders?	• Relate to previous experience • Lots of materials for research • Have authentic audience for presentation
3. How does utilizing a project-based curriculum for high school juvenile offenders impact peer socialization and self-concept as perceived by JCS teachers using a PBL curriculum?	• Improved ability to communicate and collaborate • More confidence in themselves • Motivated by positive feedback and authenticity and relevance of project

Research Question 1. The first research question was, "To what extent are the eight components of PBL perceived to impact the academic performance of incarcerated juveniles?"

Component 1: Significant content. Participant C described his experience with PBL as hit or miss, but he was sure that the students had mastered significant content and rigor in the projects. His students had a project where they had the driving question, "How can we make our facility a better community?" and he was surprised the depth of the students' inquiry. Some of the students' ideas were actually implemented by the facility administrators, which made the students feel empowered and motivated them to work harder on the next project.

Component 2: Need to know. Participant C stated that posing questions that are relevant to the students, something they care about, is crucial. This was a challenge in dealing with his students, many of whom had fairly long penal sentences. Getting them to care and want to know about the world outside their facility could be difficult since they would not be there for a while. So the question had to generate a need to know for them—a relevance to their world as well as the outside world.

Component 3: Driving question. Participant C noted that a flexible driving question that is relevant to the students and the curriculum is crucial for the students to achieve maximum benefit from PBL. This participant noted that sometimes in his agency, all the schools might do the same PBL project at the same time, and it might not relate to what the students have been studying in a particular classroom. He felt these projects were much less effective than those built on the relevant curriculum. He believed that a good driving question must be "flexible enough to relate to the students' current world inside the facility but also enable them to learn more about the outside world they will someday reenter."

Component 4: Voice and choice. This component was huge for Participant C, who felt that giving the students a choice in the end product empowered them and made them accountable for finishing it. It allowed the students to choose a product that best suited their talents, so they were more willing to take it on. For one project, his students chose final products as diverse as writing and performing a rap song and creating a brochure. Participant C believed this component is what makes PBL successful, as students have a say in what they do.

Component 5: 21st-century skills. Participant C stated that implementing this component was very difficult since the students could not use computers for research due to Internet security issues. The facility has a library, but it has limited resources, so the teacher often winds up doing the research for the students and giving them materials. This is very time consuming for the teacher, and it limits the amount of choice students have. This issue also limited the research skills Participant C could teach his students. He believed that this lack of Internet access for research was a major impediment to implementing PBL in this setting.

Participant C did believe that his students had improved in the 21st-century skills of communication and collaboration, especially in giving constructive feedback. He noted that prior gang allegiances often prohibited his students from working with certain other students with differing gang allegiances, but some of that was beginning to ease due to PBL.

Component 6: Inquiry and innovation. Participant C noted that when his students found that the driving question was relevant to them and their circumstances, they were much more likely to delve deeply and go through the inquiry process. This was why he

believed projects based on the relevant curriculum were much more effective than just a standard project throughout the agency's schools.

Component 7: Peer feedback and revision. According to Participant C, peer feedback could get very involved, such as when his students did a debate for a project. He had to make sure the feedback was focused, or it would get out of hand. For the debate, the peer feedback started to get into debating over the meanings of words instead of the issue. So Participant C had to facilitate and keep the students focused. He explained that peer feedback can actually go very well if the students remain focused and have practiced giving and receiving it constructively.

Component 8: Publicly presented product. Participant C believed that the public presentation of the finished products to an authentic audience was very motivating for the students, and it made them want to put more effort into projects. For one presentation, the audience came from the agency's main office in the capital city, and the students were pleased to have an audience that was more than just their teachers and classmates. Participant C found that the students got excited about this, and it brought out their hidden talents and increased their confidence.

Research Question 2. The second research question was, "What strategies do JCS teachers using a PBL curriculum perceive as effective for implementing the eight components of project-based curriculum for high school juvenile offenders?"

Participant C noted that teachers have to relate the driving question to the students' prior experiences to make it meaningful to them while also relating it to the world inside and outside the facility. He found that this could be difficult since some of

his students had very limited experiences prior to incarceration and little knowledge of the world beyond their immediate neighborhoods.

Participant C also stated that having an authentic audience was a very important strategy, since students worked harder on the project when they knew their audience for the presentation comprised people who could make their projects a reality. His students knew while they were working on the project to improve their facility that some of their ideas might be implemented, and that was very motivating.

In a correctional facility, where computer use is very limited, it is crucial that the teachers have many books, videos, and so forth that the students can use to research the driving questions. A good library at the facility is also helpful.

Research Question 3. The third research question was, "How does utilizing a project-based curriculum for high school juvenile offenders impact peer socialization and self-concept as perceived by JCS teachers using a PBL curriculum?"

Participant C noted that improving socialization skills was hard because students' socializing was dictated by prior gang allegiances. But PBL had helped that somewhat. Students were now able to give and receive positive and constructive negative feedback appropriately, without anger or fighting. The students had a greater sense of identity and a better understanding of the outside world.

The positive recognition the students received from publicly presenting projects had increased their self-confidence and motivated them to continue their efforts. They were more empowered by having some of their ideas used in the facility, and that had improved their confidence.

Participant D. Participant D was a geography teacher in an all-male juvenile correctional facility in a southern state. He had taught this population for 9 months and had utilized PBL for that same amount of time. Table 6 represents the themes and patterns in his responses to the research questions.

Table 6

Participant D: Themes and Patterns in Responses to Research Questions

Research question	Themes in responses
1. To what extent are the eight components of PBL perceived to impact the academic performance of incarcerated juveniles?	• Successful or not depending on lead time • Improved performance in reading • Making connections with outside world • Significant content must be embedded well • Broad driving question with divergent answers • 21st-century skills increase performance
2. What strategies do JCS teachers using a PBL curriculum perceive as effective for implementing the eight components of project-based curriculum for high school juvenile offenders?	• Deeper questioning • Improve inquiry • Public presentation keeps them accountable and motivated • Difficulty with peer interaction
3. How does utilizing a project-based curriculum for high school juvenile offenders impact peer socialization and self-concept as perceived by JCS teachers using a PBL curriculum?	• Build background knowledge • Modeling (debates) • Embed content and questions well • Provide materials and research (no Internet for students) • Authentic audience for presentation • Encourage peer interaction • Hard to get them to interact outside of gang alliances (worried about survival in penal culture) • Students' socialization improving • More self-aware of themselves and their place in the world • Focused on what is relevant to their futures

Research Question 1. The first research question was, "To what extent are the eight components of PBL perceived to impact the academic performance of incarcerated juveniles?"

Component 1: Significant content. According to Participant D, when significant content is well embedded into the curriculum, instead of on a separate topic, it works "seamlessly." Embedding significant content for projects into the curriculum requires that teachers have some lead time. If they do not, he noted, the rigor falls short.

In Participant D's experience, meaningful, well-embedded significant content allows students to make connections between the curriculum and the real world. However, he believed that poorly embedded content is detrimental to the projects.

Participant D had also noticed that his students, who entered the facility with reading scores 3-5 years below grade level, had made marked improvement in their reading due to the process of PBL.

Component 2: Need to know. Participant D felt that the students needed to know how the content they were learning would affect them outside the facility in their futures. Successful projects compelled the students to want to find out the answers because the answers were relevant to them. Participant D did see connections being made through PBL.

Component 3: Driving question. According to Participant D, the driving question is one that the students want to solve and is broad enough to have divergent answers. He noted, "The driving question, they may not answer it the way I think it should be answered. But what ends up happening is the organic growth of new questions and answers." He quoted one of his students as saying, "I never saw the world that way

before. Now I get it, and I want to know more about it." Participant D saw this as the power of a good driving question.

Component 4: Voice and choice. Participant D believed that voice and choice helped the students stay motivated and instilled ownership of the product. It kept them accountable because they had a say in the actual product.

Component 5: 21st-century skills. As a geography teacher, Participant D realized that students had to be exposed to 21st-century skills so they would understand the global economy and how it would affect them. He did a project about economics, and the students really understood the concepts and interactions between economic factors.

Participant D's students had difficulty with the skill of collaboration due to their fear of crossing gang alliances. They might have wanted to work with someone else, but they were hesitant because they knew it may affect them outside of school. He noted that collaboration was slowly improving.

Participant D noted that the lack of access to the Internet severely hampered his ability to teach research skills and the students' ability to research questions. He had to provide the resources, which limited the students. He said this hindered his ability to implement PBL the way he knew it should be implemented.

Component 6: Inquiry and innovation. In the words of Participant D, "The inquiry is definitely there. They start asking questions that I didn't even think of." The students used inquiry to become more aware of how they fit into the world around them.

Component 7: Peer feedback and revision. This was a component of PBL that Participant D was still developing with his students. There was little spontaneous interaction between peers, so he sometimes grouped them to encourage interaction. He

noted that the students did sometimes interact with others, but it was rare that the walls broke down.

Component 8: Publicly presented product. Participant D was adamant that the public display of the final product is one of the most crucial elements of PBL because it motivates the students and keeps them accountable for quality work. He cited a recent project, a debate on whether violence or compassion had a greater impact on society. The students knew that it would be done in front of an audience and videotaped for other audiences, and their performance exceeded his expectations. He believed that having a product that the students can show proudly is the motivating force for PBL.

Research Question 2. The second research question was, "What strategies do JCS teachers using a PBL curriculum perceive as effective for implementing the eight components of project-based curriculum for high school juvenile offenders?"

Because his students were so far behind academically, Participant D had to build a lot of background knowledge for them and scaffold concepts. He noted that he started at the elementary level and supported the students in working up to grade level. Modeling was important for specific things, like the debate.

Due to the lack of Internet access, Participant D had a wide variety of research and resources available for students to do research. He used these to teach basic research skills.

Research Question 3. The third research question was, "How does utilizing a project-based curriculum for high school juvenile offenders impact peer socialization and self-concept as perceived by JCS teachers using a PBL curriculum?"

Participant D noted that some of his students had improved socialization skills due to PBL, but most were hesitant to interact with each other due to fears of crossing gang affiliations. He tried to encourage increased collaboration.

Participant D noted that PBL had definitely impacted the students' self-concepts, particularly their greater sense of identity and connection with the outside world. They were much more focused on how to learn skills that would help them succeed in the future.

Participant E. At the time of the study, Participant E oversaw PBL in several facilities in a southern state and had worked with incarcerated juveniles for 5 years. She had implemented PBL for the last 3 years. She served both male and female juvenile offenders. Table 7 represents the themes and patterns in Participant E's answers to the research questions.

Research Question 1. The first research question was, "To what extent are the eight components of PBL perceived to impact the academic performance of incarcerated juveniles?"

Component 1: Significant content. Participant E noted that, unlike traditional school curricula, PBL embeds the rigor of the state content standards in a relevant, meaningful driving question. Most of her students were not successful in traditional curricula, but PBL put the high level of rigor into relevant, hands-on projects that fit the students' learning styles. The students learned concepts and content at a deeper level.

Table 7

Participant E: Themes and Patterns in Responses to the Research Questions

Research question	Themes in responses
1. To what extent are the eight components of PBL perceived to impact the academic performance of incarcerated juveniles?	• Buy-in for end product • Increased student engagement • Projects hands on • Academic scores increased • State standards formed into relevant driving question • Fits students' learning styles • Voice and choice most crucial • Authentic audience for presentation • 21st-century skills challenging
2. What strategies do JCS teachers using a PBL curriculum perceive as effective for implementing the eight components of project-based curriculum for high school juvenile offenders?	• Peer feedback difficult for them • Training and staff development • Scaffolding • Modeling • Encouraging peer interaction
3. How does utilizing a project-based curriculum for high school juvenile offenders impact peer socialization and self-concept as perceived by JCS teachers using a PBL curriculum?	• Changed entire culture—feels like a school, not a prison • Builds confidence • Students volunteer to do things • PBL empowering for kids • PBL helps students feel they can be successful at school

Component 2: Need to know. Participant E described that the students were typically 4-5 years below grade level compared to their nonincarcerated peers, largely due to histories of truancy. They did not find traditional curricula relevant to their lives or their futures. PBL delivered driving questions to which the students wanted to know the answers because they had meaning for them. The students were more engaged in school because finding the answers to the driving questions was important to them; it was motivating. The academic indicators for the school had increased since the

implementation of PBL because the students were completing projects because they wanted to discover solutions.

Component 3: Driving question. PBL enabled the teachers to take the state standards that may have no relevance to the students and embed them in an essential question that the students wanted to inquire about. It made it relevant to them. Participant E's district had implemented several driving questions districtwide, but she felt that the driving question was most effective when it was embedded into the curriculum students were already studying. Her students took the driving question and designed the end product, and that motivated them to want to discover the answer.

Component 4: Voice and choice. Participant E cited voice and choice as the component that had the biggest impact on the students. She noted one project last year in which the driving question was, "How do we build a better community inside our facility?" The end products varied and included community service projects, a model of an energy-efficient facility, and a redesign of student government. The choice aspect gave the students the ability to be creative and maximize their learning styles. They had buy-in to the final project because they helped to design it, so it helped with their motivation and accountability.

Component 5: 21st-century skills. Participant E acknowledged that this was the hardest component to implement due to the Internet lockdown necessary in a secure facility. She noted that it was challenging to teach research skills for the 21st century without the Internet but that her agency was working on an internal student Wi-Fi. Her students did learn limited research skills.

Participant E had also seen a change in the students' socialization skills at school since implementing PBL. The students became focused on the project and collaborated, so they did not think about the gang affiliation issues when working on a project. The students collaborated and communicated.

Component 6: Inquiry and innovation. In Participant E's experience, if the students find the driving question relevant to them, they will use deep inquiry to find the answers. She noted that students asked questions and even helped to develop some of the lesson plans for the projects. For the project about building a better community inside the facility, the students questioned and delved into a lot of different areas because they were motivated by the question.

Component 7: Peer feedback and revision. Although the students' interaction and collaboration skills had improved, Participant E stated that the students did not really do peer revision yet. Some of the students and teachers were hesitant to have the students interact because they were concerned they might do something bad. Participant E noted that sometimes the students did interact badly in her facility, but she believed this happened no more often than at other schools. One of the next steps she said she needed to take was to help model and allow the students to practice peer revision in a structured way.

Component 8: Publicly presented product. Participant E stated that the public presentation of the product in front of an authentic audience is one of the most motivating factors in PBL. If students know that someone other than their teacher will see their work, it has more of a purpose and is more motivating.

For example, for the project on building a better community inside the facility, the audience was a group of the agency's architects, coordinators, and so forth. The students presented their projects to an audience composed of people with the resources to implement the projects. As Participant E stated,

> These kids were actually presenting their ideas about how to build a better community inside the fence . . . to people who had the power and resources to make it happen. I can't tell you how many of those projects are underway now.

Research Question 2. The second research question was, "What strategies do JCS teachers using a PBL curriculum perceive as effective for implementing the eight components of project-based curriculum for high school juvenile offenders?"

Participant E felt that in order for PBL to be successful, there must be ongoing training and professional development in PBL, as the process is a complete paradigm shift for some teachers. Even for teachers experienced in PBL, it is a lot of work and requires ongoing support.

Participant E noted that collaboration between students and between teachers is essential to making PBL work. Teachers in her facility utilized professional learning communities (PLCs) and the shared computer drive for ideas.

Participant E stated that it would be necessary to model peer feedback for the students and give the structured opportunities to practice it, because they were hesitant to interact spontaneously in this setting. They would also need to develop strategies for giving and receiving feedback.

Research Question 3. The third research question was, "How does utilizing a project-based curriculum for high school juvenile offenders impact peer socialization and self-concept as perceived by JCS teachers using a PBL curriculum?"

PBL, especially the public presentation component, had helped the students improve their confidence in themselves, according to Participant E. She noted that the students initially acted overly tough prior to public exhibitions to hide their anxiety that they would not do well. After they had successfully completed their presentations, the students' confidence soared. Participant E said now they were more confident and even volunteered to do things. She noted that the students had become more comfortable with working in groups because they were so focused on solving the problem.

The successful implementation of PBL had changed the students' attitudes about learning and the culture of the facility. As Participant E noted, "A lot of conversations at school are about school. When I came, it wasn't that way. They talked like a prison. It feels more like a place where learning happens. PBL had a big part in changing that."

Participant F. Participant F worked with incarcerated boys at two juvenile camps in a western state. He had taught incarcerated juveniles for 2 years and had utilized PBL with this population for 1 year. Table 8 represents the important themes and patterns in Participant F's responses to the research questions.

Research Question 1. The first research question was, "To what extent are the eight components of PBL perceived to impact the academic performance of incarcerated juveniles?"

Table 8

Participant F: Themes and Patterns in Responses to the Research Questions

Research question	Themes in responses
1. To what extent are the eight components of PBL perceived to impact the academic performance of incarcerated juveniles?	• Increased student engagement • Fewer behavior referrals, less suspensions • Students involved in learning process • Significant content uses state and Common Core standards • Driving question must be relevant and divergent • Voice and choice empowers, accountability • Students design final product creatively, to their strengths
2. What strategies do JCS teachers using a PBL curriculum perceive as effective for implementing the eight components of project-based curriculum for high school juvenile offenders?	• Use of rubrics and peer editing • Technology limited • Improved presentation/public speaking skills • Given strategies from the Buck Institute • Driving question embedded in curricular themes • Build background knowledge • Scaffold • Authentic audience for presentations builds motivation
3. How does utilizing a project-based curriculum for high school juvenile offenders impact peer socialization and self-concept as perceived by JCS teachers using a PBL curriculum?	• Students collaborate and communicate more effectively • Students have become self-reflective and self-evaluate • Increased confidence

Component 1: Significant content. Participant F noted that the projects must have significant content embedded within them if they are to motivate the students. At his school, the projects were developed using state and Common Core standards and were embedded into curricular focus areas and themes. Thus, the project fit into the curriculum and was not outside of it, which made it flow more naturally.

Component 2: Need to know. Participant F noted that the students must make the connection that the content is relevant and important for them to learn either now or for

the future. That was the issue for them in some traditional programs: They did not see what they were learning as important to them, so there was no need to know it. A good PBL project will stimulate the need to know in the students and keep them more engaged and focused, as it had for Participant F. This had caused the number of behavior referrals and suspensions to decrease because the students wanted to be in class.

Component 3: Driving question. Participant F had learned that a relevant driving question would keep the students engaged and focused on finding the solutions. Driving questions should be focused yet allow for a variety of divergent answers. The question also has to be relevant to the students; otherwise, they will not care about finding the answer. It also helps if the driving question has some type of experiential or emotional draw that will enable the students to make a connection from the question to their lives.

Component 4: Voice and choice. Voice and choice allows students to be in control of their learning and to develop the end product in a creative way, noted Participant F. For example, his students could do a PowerPoint presentation, write and deliver a speech, or write a song. "The students aren't limited to doing the same old thing or the same thing as everyone else. They can help design output that is creative and suits their talents," stated Participant F.

The voice and choice component built accountability since the students helped to decide what the final output would be and even some of the criteria for receiving certain grades, such as a rubric. This empowered the students to take responsibility for their own learning.

Component 5: 21st-century skills. Participant F noted that, due to the school's location in a secure detention facility, there was no outside Internet access for students,

which made researching difficult. The teachers used wikis to give students resources for research, but this was limited and very time consuming for the teachers.

As part of 21st-century skills, students were learning how to use presentation tools to express their end products creatively. Participant F's students had used an iMovie, PowerPoints, and programs such as Pages for a newsletter, which they enjoyed. They were also using technology to edit and revise their written work.

Component 6: Inquiry and innovation. Participant F stated that his students were questioning more deeply and asking better questions than before, and they cared more about the answers. The driving question should spur the students to want to inquire about possible solutions, often creative and different solutions.

Component 7: Peer feedback and revision. Participant F's students used peer editing and rubrics for feedback. Each project had a rubric for the students to self-evaluate. Then a peer would evaluate and provide feedback on the project based on the rubric. The students had gotten better at giving constructive feedback in a respectful way, although there were still some students who would not interact with others due to gang affiliations.

Component 8: Publicly presented product. The public exhibition is what gives meaning to the process and gives a purpose to the project, Participant F noted. The students were more motivated because they knew people from outside the facility would see their presentation and their product. It gave them determination to do a good job.

Participant F noted that public presentations had improved the students' public speaking and presentation skills, which are also essential for students in future careers. They used to be nervous, but now they really enjoyed showing what they had designed.

Research Question 2. The second research question was, "What strategies do JCS teachers using a PBL curriculum perceive as effective for implementing the eight components of project-based curriculum for high school juvenile offenders?"

Participant F had attended several PBL trainings where he learned the BIE strategies for implementing PBL. One of these was the strategy of embedding the driving question into the curriculum to ensure relevancy to the curriculum and to the students. The PBL project should be part of the curriculum, not completely different.

Because Participant F's students had histories of truancy and school failure, many of them did not have the background knowledge needed to complete a project. So, teachers had to build this background knowledge by scaffolding up from what the students knew to where they needed to be to begin the inquiry process. As the teachers built background knowledge, the students began to make connections to the curriculum and see relevance to their lives, and they went from there.

Research Question 3. The third research question was, "How does utilizing a project-based curriculum for high school juvenile offenders impact peer socialization and self-concept as perceived by JCS teachers using a PBL curriculum?"

Participant F reported that the students were beginning to collaborate more effectively and have more constructive communication in school. They were more open to and accepting of peer feedback, and they did not get angry as they did prior to PBL.

Participant F noted that his students had become more self-reflective and able to evaluate themselves and identify the areas in which they struggled. They had more confidence in their communication skills and their ability to succeed.

Participant G. Participant G taught Level 6 minimum-risk offenders at an all-male juvenile facility in a southeastern state. He had been teaching this population for 5.5 years. He had utilized PBL, according to the criteria for PBL given to him by CEEAS, for 1.5 years. He reported that prior to working with CEEAS, he did thematic projects with students, but those did not fit the criteria for actual PBL. Table 9 represents the themes and patterns in Participant G's responses regarding the research questions.

Table 9

Participant G: Themes and Pattern in Responses to Research Questions

Research question	Themes and patterns in responses
1. To what extent are the eight components of PBL perceived to impact the academic performance of incarcerated juveniles?	• PBL has higher interest • Fewer behavior referrals, less acting out • Driving question gives a focused target • Voice and choice gives variety • Inquiry requires high level of thought/ questioning • Peer feedback part of editing process • Public presentation has high impact on performance • Significant content crucial element for meaningful student engagement • Voice and choice allows for learning styles and interests • Technology restricted and limited
2. What strategies do JCS teachers using a PBL curriculum perceive as effective for implementing the eight components of project-based curriculum for high school juvenile offenders?	• Relevant driving questions • Specificity about requirements • Has contests for the students • Practice peer feedback
3. How does utilizing a project-based curriculum for high school juvenile offenders impact peer socialization and self-concept as perceived by JCS teachers using a PBL curriculum?	• PBL creates "positive atmospheric influence" • Improved self-concepts • Students can demonstrate knowledge • Students finding they can do things they didn't think they could

Research Question 1. The first research question was, "To what extent are the eight components of PBL perceived to impact the academic performance of incarcerated juveniles?"

Component 1: Significant content. Significant content creates higher interest and more student engagement overall, according to Participant G. In fact, this component most illustrated the difference between PBL and the "projects" he had done prior to working with CEEAS. The prior projects were thematic but lacked rigorous content or focus. For example, if the project was focused on Black History Month, the project in some classrooms might be just decorating or reading about it.

With PBL, the projects were embedded with content that reflected the standards and had objectives based on content standards. Participant G described the project he was doing at the time of the interview for Black History Month, which was for students to create a persuasive piece determining which African American historical figure had the greatest impact on America. Participant G noted that this was a much more in-depth project and required research and analysis.

Component 2: Need to know. Although most of Participant G's students had school histories of truancy and failure, they still wanted to learn about topics that were interesting to them. The need to know is the "Do I really care?" part of PBL. If there is a strong need to know, the students will care about finding answers.

Creating a need to know can be difficult when students have shut off, because they pretend that they do not really care about finding the answer, but they do care. PBL is a way for them to show that they care about finding answers.

Component 3: Driving question. A good driving question is relevant and motivating to the students and is flexible enough to have a variety of solutions yet focused enough so that students stay on target, Participant G stated. He described the driving question as "the specific thing or target that you are trying to hit. If you keep your aim on the target, eventually you are going to hit it."

Relevant driving questions motivate the students and make them want to find the answers. Participant G noted that his school had fewer behavior referrals because the students were so engaged in the projects. They did not want to miss class. That was very different from how it was before the implementation of the PBL model.

Component 4: Voice and choice. Participant G noted that in his previous attempts to do projects, there would be one correct finished product. With the eight-component model of PBL, every project can have a variety of outputs. Students can choose the finished product that they like or that fits their learning style or plays to their strengths. This component is what allows the students to take ownership of their learning by determining the form of the final product or output.

For example, as end products for their projects on Black History Month, students could choose to do a poster, poem, essay, or rap song about the African American historical figure who had the most impact on America. Participant G's students could pick the form of product they were most interested in. This also held the students accountable for finishing the product, since they were the ones who determined what form their finished product would take. This was very highly motivating for his students.

Component 5: 21st-century skills. Participant G acknowledged that technology and computer skills are crucial skills for the 21st-century learner but admitted that there

was constant controversy at his school over the extent to which students could use computers. The students were able to do limited research on computers, but they could not access the Internet and were severely restricted due to security issues caused by being incarcerated.

Participant G's students used computers a lot for editing and revising work and for display of products, for example, making a PowerPoint presentation, but very little for research. Teachers at his school provided students with materials they could use to research their topic, which limited the amount of choice and depth the students had.

Component 6: Inquiry and innovation. Since implementing the eight-component PBL model, Participant G had noticed that the students' projects displayed a much deeper level of thought and a higher order of questioning and inquiry. The more relevant the driving question was to the students, the more in-depth the inquiry and innovation would be.

Participant G had noticed that finding solutions to the driving question was motivating to the students and kept them positively engaged with school. The students came up with differing solutions to the same driving question, which did not happen in the old project model Participant G used.

Component 7: Peer feedback and revision. Prior to the implementation of PBL, Participant G's projects did not include peer revision or any peer interaction. Participant G stated that peer revision was now a natural part of the editing process. The students had to practice giving peer feedback in a constructive manner and giving thoughtful feedback. Now, his students were open to taking suggestions and sometimes included

those suggestions in the finished product. Peer feedback was a positive communication skill that had become a routine part of finishing projects.

Component 8: Publicly presented products. Participant G believed that the public presentation was a strong motivator for his students to complete projects. This component was not a part of his prior implementations of PBL, and he had noticed a difference in students' engagement and motivation since adding this component. The students wanted to do a good job and have people from outside the facility come to see their work. None of them ever really got positive feedback from schools outside the penal system, so having a group of people who were not their teachers see and praise their work was motivating for them and made them want to keep going. It built their self-confidence.

Research Question 2. The second research question was, "What strategies do JCS teachers using a PBL curriculum perceive as effective for implementing the eight components of project-based curriculum for high school juvenile offenders?"

One of the most important strategies, according to Participant G, is to ensure that the driving question is meaningful and relevant to the students. If the students do not find meaning in the question and cannot connect it to their lives, they will not care about learning the answer or making a product, and the project will be a failure.

It is also necessary to be specific about the topic and the requirements of the project so that students will know what is expected of them and what they need to do to get a good grade. Specificity will also prevent frustration and decrease acting-out behaviors.

Participant G noted that he often made his projects into contests and offered small incentives for certain criteria. This motivated his students and made them want to do their best.

***Research Question 3*.** The third research question was, "How does utilizing a project-based curriculum for high school juvenile offenders impact peer socialization and self-concept as perceived by JCS teachers using a PBL curriculum?"

PBL had created what Participant G called a "positive atmospheric influence" in his classroom and the school. The students were able to interact more appropriately, and there were fewer behavior problems.

Most of Participant G's students had never had the experience of excelling in the traditional academic environment, he explained, which was part of the reason for their truancy. With PBL, the students were finally having the experience of excelling at something, which increased their self-esteem. The projects gave them a new way to demonstrate the depth of their learning.

Participant G had noted an increase in the motivation and self-concepts of his students when they experienced success with the PBL components. As he stated, "It may be something they didn't know or believe that they could do, and they find out that they can."

Participant H. Participant H had 3 years of experience teaching male juvenile offenders in a western state and had utilized PBL with them for 1.5 years. Table 10 represents a summary of the themes and patterns in her responses to the research questions.

Table 10

Participant H: Themes and Patterns in Responses to Research Questions

Research question	Themes in responses
1. To what extent are the eight components of PBL perceived to impact the academic performance of incarcerated juveniles?	• Changed the culture of the school • Decrease in suspensions • Driving question motivates students • Standards in significant content • Technology used in product format • Voice and choice is motivating, • PBL fosters deeper inquiry and questioning/ divergent thinking • Relevant driving question/thematic
2. What strategies do JCS teachers using a PBL curriculum perceive as effective for implementing the eight components of project-based curriculum for high school juvenile offenders?	• Relate to prior knowledge • Contract for project completion • Rubric • Authentic audience • Practice questioning/feedback skills
3. How does utilizing a project-based curriculum for high school juvenile offenders impact peer socialization and self-concept as perceived by JCS teachers using a PBL curriculum?	• Students feel smart • Peer feedback developing • Culture of school changed • Increased confidence and motivation

Research Question 1. The first research question was, "To what extent are the eight components of PBL perceived to impact the academic performance of incarcerated juveniles?"

Component 1: Significant content. Participant H noted that the significant content component includes the content standards and ensures that the students are actually learning content, instead of just doing fun activities. The Common Core standards lend themselves to PBL because they utilize both deeper understanding and higher order thinking. The rigorous content was what the students failed at in traditional programs, but with PBL they were successful because the content was motivating and relevant.

Component 2: Need to know. According to Participant H, the "need to know" component is what is missing in traditional curricula, where students learn about facts and concepts that they do not care to learn about. With PBL, the driving question should stimulate a need to know, challenging and motivating students to explore answers. The motivation to solve the question comes from the students' desire to know the answer. Since the implementation of PBL, the inherent need to know was what had motivated Participant H's students to want to participate and had led to fewer behavior issues.

Component 3: Driving question. Participant H explained that the driving question is the problem that the students need to solve and for which they need to generate a final product. It has to be open ended and motivating to the students, but also something to which they can make personal connections. For example, a driving question like, "What does it mean to be a good citizen?" is compelling and has room for a variety of answers.

Component 4: Voice and choice. In Participant H's experience, voice and choice is one of the factors that has the greatest impact on successful PBL projects. Many of her students disliked authority and liked to have control over what they did. Voice and choice allowed them to develop a product to answer the driving question in the way they saw fit, which increased their motivation to complete the project.

Participant H noted that many assignments in traditional school curricula usually involve a lot of writing, and students who are poor writers refuse to do the assignments because they know they will fail. They act out to avoid the task. With PBL, they can choose the way they want to respond to the question. One student who was a poor writer but excelled at art designed a billboard explaining how to be a good citizen, while another student did a public service announcement (PSA) iMovie. Participant H explained,

> Our projects all still involve a writing component but also other means of output so students can be successful in their learning style. Because students have chosen the method of project completion, they are more motivated and also more accountable for completing it.

Component 5: 21st-century skills. According to Participant H, one of the advantages of utilizing PBL is that it incorporates the 21st-century skills of teamwork, collaboration, and communication. Her students had little practice with communicating effectively or with people outside their small neighborhoods. PBL utilizes effective communication and communicating with people who have differing viewpoints. While her students had improved their communication skills and now worked in groups, they would not interact with certain students due to gang affiliations.

The utilization of technology is an important 21st-century skill that Participant H was not fully able to teach her students due to restrictions on Internet use. Her students were unable to Google or research online, so she had to provide research materials such as books, videos, and printouts of online articles. She noted that the students were frustrated by this and that it limited the effectiveness of PBL. Her students had varying levels of technological knowledge, but they had used computers for projects to construct newsletters, edit their essays, and make iMovies.

Component 6: Inquiry and innovation. Since the implementation of PBL, Participant H had noted that students were reaching a deeper level of inquiry into questions and inquiring into new areas. This will be a paradigm shift for teachers, who have traditionally considered themselves the bearers of the right answers. As Participant H noted,

> With PBL, there is not one right answer, there are several, and some of the right answers may be solutions that are unexpected or nonconventional. That is the exciting thing about PBL: It allows our students to be divergent thinkers.

Component 7: Peer feedback and revision. According to Participant H, this was one of the hardest components to implement because her students were reluctant to interact with others outside their gang affiliations. They had done structured practice in constructive feedback using the project rubric and were developing their ability to provide meaningful feedback. This was the area of PBL that Participant H felt she had utilized the least thus far.

Component 8: Publicly presented product. Participant H felt that presenting projects to an authentic audience was a major factor in the success of PBL, because it gave students a legitimate purpose for completing their projects. Knowing they would be presenting their finished products to people from the community motivated them to do high-quality work. They really cared that people from outside the facility who were not their teachers would see their work.

Participant H explained that public presentations were also a way to build resources for the students and show their talents, which were often unrecognized, to the world. She recalled one presentation with some community members in the audience. One audience member, a small businessman, was so impressed with one of the students' projects that he gave the student his business card. When the student was released, the businessman offered him a job as a clerk. The public presentation also motivated students to improve their public speaking and presentation skills and built confidence.

Research Question 2. The second research question was, "What strategies do JCS teachers using a PBL curriculum perceive as effective for implementing the eight components of project-based curriculum for high school juvenile offenders?"

Participant H believed that it was essential to have a driving question that was relevant to the students and could be connected to their lives. Because her students had limited life experiences, she related the topic to their prior knowledge and built background. Because her students were several years behind grade level and had large gaps in their knowledge, she had to scaffold instruction from their level up.

Participant H suggested that teachers work with students to develop a contract for project completion that specifies the requirements for completion and the criteria for grading. She also used rubrics for grading projects. The rubrics allowed students to reflect and self-evaluate their progress and provided a good foundation for peer feedback.

Additionally, districts with JCSs need to work collaboratively with the operators of the secure facilities to develop technology systems that allow students to do research without compromising security. As long as access to the Internet is prohibited, teachers must find ways such as internal servers and wikis to teach students to research.

Research Question 3. The third research question was, "How does utilizing a project-based curriculum for high school juvenile offenders impact peer socialization and self-concept as perceived by JCS teachers using a PBL curriculum?"

Participant H reported that her students had made comments that they "feel smart" in a PBL curriculum when they never did before. They were also more confident and willing to work harder because they had experienced success. The most obvious result of utilizing PBL for Participant H was a change in school culture. There was less conflict at

school because the students were there to learn. Students were starting to see it as a "real school" and to see themselves as real learners.

Participant I. Participant I had taught incarcerated boys in a western state for 5 years and had utilized PBL with this population for a year. Table 11 represents a summary of the themes and patterns in his responses to the research questions.

Table 11

Participant I: Themes and Patterns in Responses to Research Questions

Research question	Themes and patterns in responses
1. To what extent are the eight components of PBL perceived to impact the academic performance of incarcerated juveniles?	• Significant content shows deep understanding of content • Driving question must be both broad and focused and motivate students • PBL has decreased behavior issues • Voice and choice has huge impact on motivation • 21st-century skills—limited computer use • Improved communication • Peer feedback is better, developing • Public presentation for authentic audience gives purpose
2. What strategies do JCS teachers using a PBL curriculum perceive as effective for implementing the eight components of project-based curriculum for high school juvenile offenders?	• Relate to background knowledge • Model giving feedback • Grouping for collaboration • Ongoing training for teachers • Authentic audience
3. How does utilizing a project-based curriculum for high school juvenile offenders impact peer socialization and self-concept as perceived by JCS teachers using a PBL curriculum?	• Builds self-esteem and confidence • Students can show their knowledge • Students' undiscovered talents discovered

Research Question 1. The first research question was, "To what extent are the eight components of PBL perceived to impact the academic performance of incarcerated juveniles?"

Component 1: Significant content. Participant I noted that significant content is the component that ensures that the project covers content standards and gives the students the opportunity to show the depth of their knowledge. Most of his students had never been able to show mastery in content in traditional curricula as they could with PBL.

Participant I noted that the content must be motivating and perceived by the students as important to learn. His students realized the depth of the content they were learning, and that was motivating them to learn more.

Component 2: Need to know. Participant I felt that if the driving question is meaningful to the students, they will have a compelling need to answer it, because the answer will be relevant to them. His students were focused on their own survival and had little experience with the world outside their neighborhoods. So, in order to motivate them, he had to help them make the connection to the topic and give them a reason or need to discover the answer. This was a challenge but was easier with PBL than with traditional curricula.

Component 3: Driving question. According to Participant I, developing a good driving question presents a dichotomy because it must be both broad and focused at the same time. It has to be broad enough that students can relate it to their experiences and to allow for a variety of different solutions. However, it has to be focused enough that it keeps the students from straying off topic and that it is focused on the content standards.

Participant I said when a teacher can strike that balance and make the driving question relevant to students, the students will be motivated to delve deeply to solve it. He said he personally would like more training in developing good driving questions.

Component 4: 21st-century skills. Skills of collaboration and communication had improved because of PBL, although Participant I had to provide structured practice in collaboration and positive communication for his class. Now, they were better at collaborating, and the communication was tougher but developing.

Although access to technology was restricted, Participant I utilized computers with his class for editing projects and for some limited research. Most of his students were computer literate but did not use computers constructively. He had to provide resources for his students to do research.

Component 5: Voice and choice. Participant I credited voice and choice with having a big impact on the students' motivation to complete projects and their ownership of the projects. The students got to choose how they wanted to show their solution to the driving question. Since the students could choose a product that fit their interests or learning style, they actually wanted to do it. So for the same project, one student could do a song, another could do a brochure, and yet another could do a speech. The ability to choose how they displayed their knowledge was empowering for the students and allowed them to be successful, some for the first time.

Voice and choice had also helped decrease referrals because the students did not want to be sent out of the classroom; they wanted to stay so they could complete the product that they chose. It also held the students accountable for finishing their projects because they chose them.

Component 6: Inquiry and innovation. Participant I noted that this was one of the components, along with voice and choice, that let students show their often hidden talents. If the students were interested, they would use deeper inquiry to explore all

aspects of the problem. Sometimes they would come up with creative or unconventional answers that still answered the question.

Participant I's students had a hard time with this at first, as they were afraid to not have the right answer. He had to make them comfortable with coming up with different answers to the same question.

Component 7: Peer feedback and revision. Participant I had to model giving and receiving peer feedback for his students. This skill was improving but developing slowly. Although the students were beginning to give surface-level feedback, he wanted them to develop the ability to give more meaningful, thoughtful feedback. Some of the students ignored the feedback, but some had used it to improve their projects.

Component 8: Publicly presented product. According to Participant I, this component is one of the most valuable in PBL because it provides the purpose for the project and the motivation for doing quality work. The opportunity to present their projects to an authentic audience motivated his students to try new things and excel.

In preparation for the public display, students practiced their presentation skills. Sometimes, noted Participant I, "the motivation of an authentic audience allows hidden talents, such as public speaking or artistic skills, to emerge."

Research Question 2. The second research question was, "What strategies do JCS teachers using a PBL curriculum perceive as effective for implementing the eight components of project-based curriculum for high school juvenile offenders?"

Participant I believed several strategies are effective for the successful implementation of PBL. For teachers, he believed ongoing training in perfecting the

components of PBL is essential, and he felt he needed additional training in developing driving questions.

It is essential that teachers build the background knowledge for the PBL project. Participant I called this "setting the stage." Students cannot even begin to search for solutions to driving questions if they do not understand the question or its context.

Modeling is an effective strategy for helping students learn to give constructive feedback. Participant I also initially chose the collaborative groups for projects to maximize collaboration, but now the collaboration was becoming more spontaneous.

***Research Question 3*.** The third research question was, "How does utilizing a project-based curriculum for high school juvenile offenders impact peer socialization and self-concept as perceived by JCS teachers using a PBL curriculum?"

According to Participant I, the students' socialization skills had slowly begun to improve since the implementation of PBL. Most of the students would work with each other on projects, but peer feedback was developing slowly.

PBL had a positive impact on the students' confidence and self-esteem because it empowered the students to take control of their learning and allowed them to be successful when they never had before. PBL also uncovered hidden talents that the students had not been able to use before. This was motivating and built their self-esteem, according to Participant I.

Data Analysis by Common Themes in Research Questions

Research Question 1. The first research question was, "To what extent are the eight components of PBL perceived to impact the academic performance of incarcerated

juveniles?" The participants' responses were analyzed collectively for common themes and patterns. Table 12 represents the common themes in the responses.

Table 12

Common Patterns in Participants' Responses to PBL Components 1-3

PBL component	Common theme	Number of respondents indicating theme
Significant content	• Causes deeper learning	9
	• Utilizes Common Core and state standards	3
	• Must be well embedded into curriculum	4
	• Projects start with minimum content to get students used to projects	1
Need to know	• Students must want to find answers to essential question	9
	• Motivates students	9
	• Relevance to their world	8
	• Keeps them in class	5
	• Fewer behavior referrals/suspensions	4
	• Difficult to have students with long sentences "need to know" about topics of the outside world	1
Driving question	• Motivating	9
	• Relevant to students	9
	• Embedded in curriculum	4
	• Broad/divergent solutions	5
	• Focused	3
	• In-depth	3
	• Standards embedded	3

Component 1: Significant content. All nine of the respondents felt that the significant content component caused students to experience deeper learning of the content material. Four respondents noted that the content must be smoothly embedded into the curriculum in order for students to get the maximum benefit of PBL. Two participants gave examples of how a project had come from their central office, and the content did not match the classroom instruction, so the PBL project seemed disconnected

from what students learned every day. Those teachers felt that the students would have had deeper learning if the project had covered content studied in the classroom.

Three of the respondents noted that the projects should be embedded in state content standards and the Common Core standards to give the projects the significant content and rigor. They believed that since the standards are taught daily in the classroom, embedding a PBL project in the standards ensures that it will reflect the classroom curriculum.

Although all respondents noted that significant content causes the deeper learning of PBL, one respondent admitted that her early projects did not have rigorous content. Her students were very resistant to PBL because it was so different from what they were used to doing. In an effort to get them motivated to try PBL, she made her first few projects mostly fun and with less rigor. She stated that now that her students felt more comfortable with PBL, she would start to include more in-depth content in the students' next projects.

Component 2: Need to know. All respondents agreed that instilling a project with a need to know the answer motivates the students to want to discover solutions. The need to know is what motivates them to solve the problem.

Eight of the nine respondents mentioned that relevance is crucial when developing the "need to know." If the question is not one the students would care about or feel is relevant to their lives, they will not put forth effort to discover answers.

More than half of the respondents identified this component of PBL as responsible for a decrease in students' being sent out of class, noting that their students

wanted to stay in class because they wanted to discover the answer. Four respondents noted that the "need to know" was responsible for a decrease in suspensions.

One respondent explained that it was sometimes difficult to get his students, some of whom were facing long jail sentences, to have a "need to know" about the outside world. Since they would not be in the outside world for a long time, they did not always care about solving real-world problems. However, he felt that if the driving question was flexible enough to apply to either the prison or the real world, the students would feel the need to know.

***Component 3: Driving question*.** This component appeared to be closely tied to the need to know for all respondents, who agreed that the driving question motivates the students to want to find the answers. There was also unanimous agreement that the students must perceive the driving question to be relevant to their lives or their futures.

Four of the respondents commented that the driving question needs to be embedded in the daily classroom curriculum. They described how they had done PBL projects that did not fit what they were doing in their daily curriculum, and those projects did not go well. As one participant stated, "If you can make the driving question flexible enough . . . and do your PBL project over the same curriculum you are going over at the time, it works really well."

Five respondents agreed that the driving question must be broad enough to have a variety of diverse solutions. Three stated that the driving question needs to be focused so that the students will not stray off topic. One teacher stated that a driving question must have the right balance of breadth and focus in order to achieve the maximum effect.

The next two components of PBL, student voice and choice and 21st-century skills, are similar due to their motivating effects on the students. Table 13 displays common themes in the participants' responses to these elements.

Table 13

Themes in Participants' Responses to PBL Components 4 and 5

PBL component	Common theme	Number of respondents indicating theme
Student voice and choice	• Most crucial PBL component	3
	• One of the most crucial PBL components	3
	• Allows for diverse learning styles	7
	• Motivating/engaging	6
	• Gives students ownership	5
	• Increases accountability	7
	• Empowers students	3
	• Decrease discipline issues	2
	• Creativity/diversity in final product	2
	• Limited Internet precludes student research	8
	• Teacher does research for students	7
	• Lack of technology biggest obstacle to PBL	3
	• Internal wiki/Wi-Fi for research	3
21st-century skills	• Computers to edit/revise	4
	• Technology for product output (iMovie, etc.)	2
	• Students collaborate more	5
	• Improved communication	3
	• Teachers hesitant to have students collaborate	1

Component 4: Student voice and choice. Two thirds of the respondents identified voice and choice as either the most important element of PBL or one of the most important elements. They noted that voice and choice is motivating for the students because they get to choose the final form of the output for the project.

One of the advantages of voice and choice, noted seven of the respondents, is that it accommodates the students' diverse learning styles, because students can choose the

form of project that fits their interests and talents. One interviewee noted that for one of his projects, the students chose brochures, speeches, and a billboard as diverse outputs for the same project.

Seven respondents noted that the increased choice students have in PBL also calls for increased accountability. The students could not say they did not want to finish the project, because they chose what form it took. Two respondents felt that because students were working on what they chose to work on, there were fewer discipline issues in their classrooms. Teachers used the words *empowering* and *giving ownership* when describing voice and choice.

Component 5: 21st-century skills. Although the term *21st-century skills* refers to more than just the use of technology, that was the first thing every respondent mentioned. Every teacher recognized the importance of the students' learning technology skills; however, all but one of the respondents noted that due to being in a secure detention facility, the students had almost no Internet access. Seven of the teachers noted that due to this lack of Internet access, they were doing the research for the students and allowing the students to choose from materials they provided. This limited the amount of voice and choice given to the students and was a lot of work for the teachers. In fact, the lack of Internet access created so much difficulty for the teachers that three of the teachers identified it as the single biggest obstacle to fully implementing PBL in the setting.

In an effort to counteract this problem, sites are developing creative solutions. Two teachers mentioned using a wiki on a protected, internal server where teachers could post resources for students to access for research. Another teacher mentioned that her

district was planning an "internal Wi-Fi" system that the students could use to research for projects.

Although Internet use was restricted, half of the teachers mentioned that their students could use computers to edit and revise their projects. Two teachers noted that their students used technology for the output for their products, making PowerPoint presentations or iMovies as products. This enabled the students to learn to use these presentation tools, another 21st-century skill.

Twenty-first century skills also involve the skills of collaboration and communication. Five teachers noted a marked improvement in their students' abilities to collaborate since the implementation of PBL.

Several teachers noted that the students were often reluctant to communicate with each other due to prior gang affiliations and their concerns about survival in the prison system. So, these teachers had to set up structured opportunities for positive communication. Three teachers noted that the students' ability to communicate productively with their peers was developing, albeit slowly.

One teacher noted that she and some of her colleagues were hesitant to have the students collaborate because they were concerned that the interactions may become inappropriate or that physical altercations may occur. For this reason, she had not implemented this part of PBL.

The next components of PBL, Components 6 and 7, are inquiry and innovation and peer feedback and revision. The common themes in participants' responses about Components 6 and 7 are displayed in Table 14.

Table 14

Common Themes in Participants' Responses to PBL Components 6 and 7

PBL component	Common theme	Number of respondents indicating theme
Inquiry and innovation	• Deeper inquiry	7
	• Higher level questioning	4
	• Make connections to the world	2
	• Divergent questions/ideas	5
	• Creative answers	1
Peer feedback and revision	• Practice giving/receiving feedback constructively	8
	• Students open to feedback	2
	• Need to give more thoughtful feedback	3
	• Communicate respectfully	2
	• Incorporate feedback into projects	4
	• Feedback must be focused	1
	• Rubrics used for feedback	2
	• Little student interaction due to gang affiliations	3
	• Teachers hesitant to let peers interact	1
	• Least utilized component of PBL	2

Component 6: Inquiry and innovation. According to one participant, "One of the hallmarks of PBL is the deeper level inquiry that is stimulated by the driving question." Seven of the nine respondents had seen their students exhibiting deeper inquiry and discovering creative solutions to driving questions.

Four of the seven respondents noted that their students were experiencing deeper inquiry because they were asking higher order questions. Instead of asking surface-level rote recall questions, the students began to ask more thoughtful questions, which led to more creative and diverse solutions. These teachers had practiced higher order questioning with their students, and the students were using that skill to delve deeply into questions.

Two teachers noted that the inquiry component is what led their students to make connections between the driving questions, their lives, and the outside world. One participant noted, "I know there is deeper inquiry happening, the students are making the connections."

Deeper inquiry leads to more divergent, creative solutions to problems, as noted by five of the participants. "Before," one teacher noted, "you helped the students come up with the one correct answer. Now, there might be five equally correct answers."

Component 7: Peer feedback and revision. The diversity of responses to this question indicates a wide variety of thoughts and practices for this PBL component. Many of the participants noted that their students had histories of gang involvement and did not communicate outside of their gangs. One teacher mentioned that some of his students were hesitant to interact with each other because they were worried about retribution from their peers elsewhere in the facility. Others just had no experience communicating in a positive, respectful way.

Eight of the nine teachers modeled giving and receiving constructive feedback and set up structured situations in which their students could practice. The aggregate data from the teachers grouped their students at various levels for peer feedback. The students in three of the classes had little to no interaction with their peers due to their unwillingness to cross gang affiliations. Two teachers described their students as "open" to feedback from their peers. Two teachers noted that their students were beginning to communicate feedback respectfully to each other.

Some of the students had progressed further than others regarding giving and accepting peer feedback. Three teachers said that their students were giving peer

feedback, but it was very surface level, not the thoughtful feedback that they would like students to develop. Four teachers stated that the students were getting constructive feedback and incorporating it into their projects. Two teachers stated that their students were using a project rubric to give and receive peer feedback. One teacher did not allow her students to interact at all because she was worried that there would be negative interactions.

Overall, the teachers seemed to have the least amount of success implementing this component with their incarcerated students. In fact, two teachers admitted that this was the component of PBL that they had utilized the least.

The eighth component of PBL, publicly presented product, was deemed by many respondents to be the most motivating for students. Common themes for publicly presented product are displayed in Table 15.

Table 15

Common Themes in Participants' Responses to PBL Component 8

PBL component	Common theme	Number of respondents indicating theme
Publicly presented product	• One of the most crucial elements of PBL	3
	• The most crucial element of PBL	3
	• Presentation for authentic audience	6
	• Builds accountability for quality	2
	• Improves students' public speaking skills	5
	• Builds students' self-confidence	7
	• Highly motivating for students	9
	• Students receive positive attention	3
	• Brings out students' hidden talents	3
	• Gives meaning or purpose for project	4

Component 8: Publicly presented product. Three respondents declared that the publicly presented product was the most crucial element of PBL. Three others declared it

one of the most crucial. As one respondent noted, the publicly presented product is "the highlight of PBL. Our students have not typically had a chance to present to an authentic audience and to have someone take a vested interest in their work. So, they have really risen to the occasion."

The respondents unanimously agreed that presenting their finished projects to an audience was very motivating for the students and kept them focused on producing high-quality products. It was the thought that others were going to see their work that kept the students focused and hastened completion. One teacher said, "They try harder when they know there is going to be a presentation."

According to seven of the nine respondents, the public presentation was the component that was the most responsible for building the students' self-confidence. As one respondent stated, "It has improved their self-confidence over previous messages they have been given. A couple of students kind of see themselves as scholars now."

In addition to improving the students' self-confidence, half of the respondents noticed a definite improvement in the students' public speaking skills. They reported that the students were concerned about making the presentation and were motivated to practice those skills.

Six respondents noted that in order to achieve the maximum benefit from the public presentation, there must be an authentic audience made up of people who are not just the students' teachers. The audience should include people from the community who have an interest in what the students are doing. For example, one teacher had his students present their projects, small business plans, to a group of business owners in the community.

One benefit of the public presentation, according to one respondent, is that doing a public presentation brings out hidden talents that the students did not realize they possessed. That really encourages them to develop those talents. All respondents noted that their students were motivated and excited about the public presentation of their projects.

Research Question 2. The second research question was, "What strategies do JCS teachers using a PBL curriculum perceive as effective for implementing the eight components of project-based curriculum for high school juvenile offenders?" The nine respondents provided a variety of strategies that they found effective in utilizing PBL with their incarcerated students. Table 16 summarizes common themes in the responses.

More than half of the respondents found that building background knowledge was an effective strategy for implementing PBL. One teacher noted, "Because my kids are 4-5 years behind grade level, I do a lot of groundwork for them." Several teachers commented that since students had very little knowledge of the world outside their immediate neighborhoods, the teachers had to build a lot of background knowledge about other topics.

Half of the respondents noted that having an authentic audience for presentations was an effective strategy for implementing PBL. One teacher noted that his students worked harder on their projects because they knew they were going to be seen by the superintendent, not just their teacher.

Table 16

Common Themes in Participants' Responses About Effective PBL Implementation Strategies

Effective strategy	Number of responses
• Building background knowledge	5
• Presenting to an authentic audience	5
• Providing materials for research	4
• Practice deeper questioning skills	3
• Practice giving/receiving feedback	3
• Modeling	3
• Embed driving question well	3
• Relate driving question to students	2
• Project contracts	2
• Practice presenting skills	2
• Encourage peer interaction	2
• Training/staff development for teachers	2
• Scaffolding	2
• Relevant driving question	2
• Teacher wikis/internal Wi-Fi	1
• Graphic organizers	1
• Gradually increase difficulty	1
• Use visuals, PowerPoints	1
• Be specific about requirements	1
• Have contests	1
• Use a rubric	1
• Group for collaboration	1

Four respondents noted that since access to the Internet was restricted, teachers had to provide the students with the materials and information for them to research. This was frustrating for many teachers, as it limited the students' options, but it was the only way their students could do research. One teacher noted,

> I chose the topics for the kids. I presented them with several topics or themes, and they had to choose from what was available to them, because they cannot surf the Internet for themselves. I think that if it worked the other way around, it would be more exciting for them, it would be better for them to explain why they chose these materials and not those ones.

In response to this concern, two teachers noted that their districts had implemented wikis on internal servers and a student-accessible, protected internal Wi-Fi.

Three teachers noted the strategies of modeling and then practicing skills of deeper questioning and giving productive feedback as effective strategies. Many of the teachers noted that their students had few, if any, positive peer interactions, so it was necessary for the teachers to model these behaviors. The students would then need to practice the skills they had seen modeled.

Three respondents noted that embedding the driving question well in the curriculum was an effective strategy. While only three mentioned this as a strategy, many others mentioned in other parts of their interviews how important a well-embedded question is to the motivation of the students. One participant in particular noted, "If it's embedded correctly, it goes well. But when it's off topic or not embedded well, it's actually detrimental to the program."

Several strategies were noted as effective by two teachers, including contracts for project completion, scaffolding, and encouraging peer interactions. Two teachers noted the importance of ongoing training and staff development for teachers as an effective strategy for successfully implementing PBL. In the words of one respondent, "We are constantly doing more PBL professional development. Each school has PLCs and are talking about PBL and how we can enhance it. So, it's ongoing."

A variety of other strategies were noted by one respondent, including visuals, graphic organizers, rubrics, and grouping students for collaboration. These strategies enabled teachers to successfully implement PBL with their incarcerated students.

Research Question 3. The third research question was, "How does utilizing a project-based curriculum for high school juvenile offenders impact peer socialization and self-concept as perceived by JCS teachers using a PBL curriculum?" The nine respondents offered several comments regarding their perceptions of the impact of PBL on the socialization and self-esteem of their students. Table 17 summarizes common themes from their responses to this question.

Table 17

Common Themes From Participants' Responses on the Impact of PBL on Socialization and Self-Concept

Area	Common theme	Number of responses reflecting theme
Socialization	• Improved collaboration skills	5
	• Give positive feedback	3
	• Improved communication	2
	• Positive change in school culture	2
	• Better at constructive feedback	1
	• Some students' socialization improved	1
	• Giving compliments	1
	• Ability to provide feedback developing	1
	• Hard to get the students to interact	1
Self-concept	• Improved self-confidence	8
	• Students feel empowered	2
	• Students can demonstrate knowledge	2
	• Students feel ownership	1
	• "Light bulb is on"	1
	• Students more aware of themselves and their place in the world	1
	• Students volunteer now	1
	• Students focused on their futures	1
	• Hidden talents revealed	1

***Socialization*.** The majority of respondents noted that their students had improved collaboration skills since they implemented PBL. In some cases this was practiced, while

in others it was more spontaneous. One teacher noticed that his students, who usually preferred to work alone, now wanted to collaborate.

Two respondents noted that their students were communicating more productively with each other, whereas they had not communicated before. In fact, that improved communication changed the culture of the school. As one teacher noted, "The conversations, which had previously been about prison life, were now about learning." This change in culture was also noticed by the students.

A number of comments about socialization were provided by one respondent, including that the students were now better able to give and receive constructive feedback and even compliments. This idea was continued by another respondent, who said that his students' ability to provide constructive feedback was developing.

One teacher noted that his students did not interact due to their prior gang affiliations and their worry about survival in the facility if they interacted with students in rival gangs. He stated that it was difficult to get his students to interact, but he continued to put them in structured situations to build interactions.

Self-concept. Eight of the nine respondents noted that their students' self-confidence had improved since the implementation of PBL, especially from the positive praise they received in the public presentation of their products. One teacher used the word *empowering*, and another described the improvements in her students' self-confidence as "the light bulb is on."

Students were more confident and better able to display their knowledge, noted one respondent. The variety of choices for finished products allowed for the students' hidden talents to come out, and they became successful.

Two teachers felt that their students had become more self-reflective and aware of themselves and the world around them. For the first time, many of the students were focusing on their futures.

Summary

This chapter described the results of the qualitative, phenomenological study utilizing open-ended interviews. The first research question was developed to determine the JCS teachers' perceptions of the impact of the eight components of PBL on the academic performance of the incarcerated juveniles they taught. The second research question was designed to determine strategies that JCS teachers found effective in utilizing PBL with their students. The final research question determined the teachers' perceptions of the impact of PBL on their students' socialization and their self-concepts.

Nearly all the teachers found the component of 21st-century skills to be the most difficult to implement because their students were not allowed to access the Internet due to being in a secure detention facility. This made research difficult and limited the students' amount of voice and choice. Some teachers noted this lack of Internet access as an impediment to using PBL.

Nine JCS teachers in three states were interviewed in person or by phone to determine their perceptions. Overall, they believed that PBL had a positive effect on the academic achievement of their students. While all teachers found some elements of PBL responsible for improved academic achievement of their students, they particularly cited the importance of the components of the driving question, voice and choice, and the public presentation of the product. These three components particularly were credited with the students' increased motivation, deeper inquiry, and higher quality products.

Although the teachers found a variety of strategies useful in implementing PBL, the most essential was building background knowledge. According to the respondents, the students had very limited background knowledge outside their own neighborhoods, so teachers had to help them build their knowledge base. The presentation of the projects to an authentic audience and teachers' providing the resource materials for research were two other effective strategies.

Most of the respondents noted an improvement in their students' socialization skills, particularly collaboration, since the implementation of PBL. Additionally, they noted a positive effect on the school climate.

PBL had a positive effect on the self-concepts of students, according to eight respondents. They also noted that students seemed to feel more empowered and had increased ownership of their work. Finally, teachers noted that the students were, for the first time, focused on themselves and their place in the world and beginning to envision positive futures for themselves after they leave the facility.

CHAPTER V: SUMMARY, CONCLUSIONS, IMPLICATIONS, AND RECOMMENDATIONS

Summary

Chapter V begins with a summary of the study, including the purpose, research questions, methodology, and population and sample. It lists key findings from the study and conclusions drawn from those findings. The chapter outlines implications for action and recommendations for further research surrounding this topic. The chapter ends with final comments.

Purpose Statement

The purpose of this qualitative, phenomenological study was to examine and describe the impact of the Buck Institute for Education's (BIE's) eight components of project-based curriculum (Solis & Larmer, 2012) on high school juvenile offenders' academic achievement and socialization as perceived by juvenile court school (JCS) teachers. A secondary purpose was to describe strategies used to implement the eight components of project-based curriculum for high school juvenile offenders as perceived by JCS teachers using the project-based learning (PBL) approach.

Research Questions

This study was designed to answer the following research questions:

1. To what extent are the eight components of PBL perceived to impact the academic performance of incarcerated juveniles?
2. What strategies do JCS teachers using a PBL curriculum perceive as effective for implementing the eight components of project-based curriculum for high school juvenile offenders?

3. How does utilizing a project-based curriculum for high school juvenile offenders impact peer socialization and self-concept as perceived by JCS teachers using a PBL curriculum?

Methods

This qualitative study utilized semistructured interviews consisting of 10 open-ended questions that elicited answers to the three research questions. Open-ended interview questions are common in qualitative research because they allow the participants to freely express their ideas and perceptions (Doody & Noonan, 2013). The nine participants were given the questions in advance to allow them to fully formulate their thoughts prior to the telephone interviews. The interviews were recorded, and each participant was given the transcript afterward to review for completeness of thought and accuracy of meaning.

After conducting the interviews, the researcher utilized NVivo software to assist with categorizing and coding the data by finding key words in individual interviews that expressed common collective themes among the responses of the participants. The researcher examined the interviewees' responses individually and collectively for common themes to determine the teachers' perceptions of school achievement.

Population and Sample

The population for this study was the group of JCS teachers who utilize PBL with their students. This is a relatively small population, according to the education advocacy group Center for Educational Excellence in Alternative Settings (CEEAS; C. Sampson-Kelly, personal communication, March 10, 2015), which leads education reform initiatives in juvenile facilities and alternative settings throughout the United States. The

JCS setting is unique in that the students attending often have severe mental health, emotional, or substance abuse issues in addition to severe academic deficits (Foy et al., 2012). Educational programs in these facilities must be geared toward accommodating the students' needs and learning styles even more than in traditional settings (Platt et al., 2015). In 2015, there were only seven states in the country that utilized PBL with juvenile offenders.

In purposeful sampling, the researcher selects the sample based on the ability to answer the research questions (Marshall, 1996). The purposeful sample chosen for this study was a group of nine educators who utilized PBL with incarcerated minors. The researcher contacted CEEAS to request contact names for principals in the states that used PBL. The principals gave the researcher names of educators who were willing to participate in the study. The educators were chosen because they had all received training in the BIE model of PBL and coaching in implementation from CEEAS before and during implementation. Geographically, the teachers were located in three states—a western state, a southern state, and a southeastern state—each of which was working with CEEAS to implement PBL in the JCS setting.

All the teachers interviewed were trained in the BIE model of PBL and had utilized it with their students. This experience made them rich sources of knowledge on the impact of PBL on their students. Eight of the respondents taught incarcerated boys, and one taught girls. This reflects the relatively small number of girls compared to boys in juvenile incarceration facilities.

Major Findings

The major findings of this study are organized by research question.

Research Question 1

To what extent are the eight components of PBL perceived to impact the academic performance of incarcerated juveniles?

Major Finding 1. The most important finding was the respondents' unanimous agreement that the use of PBL had a highly positive impact on the academic performance of their students. Specifically, they noted that the significant content of PBL embedded in a relevant driving question stimulated the students' need to know and motivated them to design and create meaningful end products that they then presented to an authentic audience.

The teachers in this study described their students as far below grade level in reading and math, as are two thirds of the incarcerated juveniles in the United States (Southern Education Foundation, 2014). Yet, despite this deficit, the students were able to master rigorous content in order to solve complex driving questions that were relevant to them.

According to the teachers, it was this connection of the content to past experiences and relevance to their lives and futures that seemed to drive the students to strive beyond their self-perceived limits to discover answers to complex problems. According to social constructivist theory, students draw on past experiences and expand them to discover relevant meanings (Jennings, 2012).

Three quarters of the respondents noted that the component of student choice, in which the students choose the form of the finished product, motivated their students to

complete the project. Research has indicated that teaching to students' strong modalities improves their motivation and success (Sheridan & Steele-Dadzie, 2006). Student choice is an essential component of PBL but is frequently missing in traditional curricula.

The respondents noted that their students, almost exclusively boys, almost always chose end products involving building forms, writing songs, or creating artwork but almost never chose those involving writing. This finding confirms prior studies that found that incarcerated youth tend to be stronger in concrete, hands-on learning and weak in symbolic learning, such as writing (Sheridan & Steele-Dadzie, 2006).

The presentation of the final product to an authentic audience was another component of PBL that the respondents found beneficial to student achievement. As one respondent noted, "They work harder and delve deeper when they know someone is coming to see their projects." It enhances motivation and achievement if the students have not just an audience but an authentic one, preferably an audience of people with relevance to their projects. Boss (2014) noted that PBL is most effective when the culminating audience is composed of people knowledgeable in that area who are able to provide constructive, meaningful feedback. This connection of the audience to the real world was referenced by two respondents, whose audiences were composed of people with the knowledge and power to make the students' projects a reality. Boss noted that students are more motivated and benefit more from knowing they will have a knowledgeable audience who will give them productive feedback, not just praise.

Major Finding 2. Despite their successful implementation of PBL with incarcerated minors, nearly all respondents noted two components, 21st-century skills and peer feedback and revision, that were problematic to implement due to the

uniqueness of this setting. Eight of the nine respondents noted that due to the security concerns of incarceration facilities, there was little technology use, and students had no access to the Internet. The lack of technology in classrooms in juvenile facilities was also noted in an observational study by Young et al. (2010) in which they noted the classrooms had no computers due to security concerns.

Restrictions on the use of technology, particularly the lack of student Internet access, were described by the study participants as detrimental to implementing PBL in this setting. One of the fundamental tenets of PBL is that the students delve deeply into an essential question and research possible solutions (Solis & Larmer, 2012). The absence of student Internet access meant that the students were dependent on the teachers to provide the research they needed to solve the questions and produce the products. Participants noted that the need to provide their students with the research placed an additional time burden on the teachers and limited the voice and choice for the students. Both the teachers and the students found this frustrating, according to respondents.

Although they did provide their students with many opportunities to use technology such as word processing, PowerPoints, and iMovies to create their end products, some respondents felt the lack of Internet access for research prevented their students from learning 21st-century skills. However, several respondents noted that their students' ability to use computers for the production of products had improved.

Peer interaction through collaboration, feedback, and review was another problematic component with this population, according to the respondents of this study. Several of the participants noted that their students had gang affiliations that restricted their interactions with their peers, making collaboration and peer feedback challenging.

Due to the fear of reprisal from the gang culture in their living units, some of the students were reluctant to interact with their peers, according to respondents.

Most of the respondents reported an improvement in their students' ability to collaborate and provide positive feedback, although one third believed that this component was not fully developed for them. One respondent noted that although her students had been very reluctant to interact due to gang issues, their desire to explore the driving question had motivated them to begin some limited interaction and collaboration. Robertson's (2013) study noted a similar deficit in peer interaction for PBL in an alternative public school setting. She shared sentiments similar to those expressed by respondents in this study that communication barriers would need to be overcome in order for PBL to be most beneficial for students in nontraditional settings (Robertson, 2013).

Research Question 2

What strategies do JCS teachers using a PBL curriculum perceive as effective for implementing the eight components of project-based curriculum for high school juvenile offenders?

Major Finding 3. Half of the nine respondents noted that building their students' background knowledge of the topic was the most important specific strategy they used in implementing PBL, and several others noted their students' lack of background knowledge of project topics. While building background knowledge of the topic is an effective strategy in implementing PBL in any setting, it is especially crucial when using PBL with incarcerated students.

Due to their long histories of truancy and sometimes substance abuse, incarcerated students do not have the basic academic foundations that their peers who regularly attended school received (Southern Education Foundation, 2014). As a result, they are left with large gaps in academic skills and knowledge that may be essential to solving the driving questions. In fact, most of the respondents in this study noted that their students were 3-5 years below grade level, necessitating a need to build foundational academic skills.

Several teachers noted that in addition to gaps in academic knowledge, their students had a general lack of knowledge of the world outside their specific communities. Due partially to the gang lifestyle, which is based largely on specific geographic locations, many of the students were reluctant to explore or actively disinterested in the world outside their immediate neighborhoods. Often their knowledge of the outside world was limited or even erroneous. Thus, one strategy crucial to the success of PBL with this population was building background knowledge of the world outside the students' immediate communities.

The PBL strategy of building background knowledge is based on the social constructivist strategy of scaffolding. In fact, two teachers used the term *scaffolding* when describing this strategy. Scaffolding is the strategy of providing support such as visuals to bridge the gap between the students' current level of background knowledge and the level they must attain to complete the project. It helps relate the new knowledge to what the students already know (Jennings, 2012). Scaffolding is a component of the social constructivist theory of learning and is helpful for building both academic background knowledge and experiential knowledge.

Major Finding 4. As noted in Major Finding 2, several of the respondents noted that their students had a very limited ability or desire to interact with their peers for collaboration or peer feedback. Many of these students also did not know how to give constructive feedback in a respectful manner. About a third of the teacher respondents cited modeling and practicing giving and receiving feedback as effective strategies for improving these areas.

Due to prior gang affiliations and often the culture of the facility, there is little spontaneous interaction or collaboration among incarcerated students, and the interactions that occur are often not constructive. One teacher said his students preferred to work alone in school. The teachers had to model for their students how to interact constructively and how to collaborate to solve a problem. Once the students had seen effective collaboration modeled, their teachers put them into deliberate groups to allow them to practice collaboration.

Teachers noted that they also had to model giving and receiving feedback respectfully for their students. They noted that most of the feedback their students received regarding schoolwork was negative, and the students tended to get angry or shut off when receiving it. Modeling these skills and then allowing the students to have structured practice with them had been an effective strategy for the respondents.

Major Finding 5. Nearly all of the respondents noted that to assist their students with research on topics in an environment with no Internet, they had to provide a wide variety of resource materials for research on a variety of topics. This is a strategy that seems unique to the utilization of PBL in a secure facility, since in nearly every other

educational setting, students can access the Internet to find a wealth of resources on any given topic.

This strategy was one of the most crucial for the success of PBL in a lockdown setting because access to resource materials was limited. Some of the teachers noted the importance of a library at the facility, and many researched topics themselves and printed out Internet articles on project topics for their students. One teacher noted that he kept binders of articles and research materials for PBL lessons that the teachers could share for use in PBL research.

This strategy, while crucial for the success of PBL in this setting, was also one of the most time consuming for teachers, who had to spend hours gathering resource materials. Some teachers noted that this strategy was also frustrating for students because it limited their choice of topics for projects to the types of resources the teachers had gathered. This strategy, however time consuming, was necessary for PBL to be successful in a secure facility with limited Internet access.

Research Question 3

How does utilizing a project-based curriculum for high school juvenile offenders impact peer socialization and self-concept as perceived by JCS teachers using a PBL curriculum?

Major Finding 6. The results of this study indicated that the use of PBL has a positive impact on peer socialization. Half of the respondents reported that the abilities of their students to collaborate had improved due to PBL. Although the students were initially hesitant to interact or work together due to fear of violating gang allegiances, they were motivated to collaborate to complete the projects. Robertson's (2013) study of

the use of PBL with alternative school students noted that the establishment of positive relationships in a collaborative environment encouraged students to become reengaged with their peers and the curriculum.

A third of the respondents noted that utilizing PBL had improved their students' ability to give positive feedback, although the level of improvement varied. Some teachers reported that they had to set up structured situations in which their students would give and receive feedback without getting angry. This strategy proved effective and stimulated spontaneous student interactions.

Major Finding 7. Creating original products to answer driving questions using the eight-component PBL model improved students' self-confidence. Eighty-eight percent of the respondents noted an improvement in their students' self-esteem, and two saw their students as empowered. The positive recognition the students received from the public presentation of the products built their self-esteem and motivated them to work hard on other projects. Tanner (2011) noted this same boost in self-confidence among traditional high school students using PBL.

This overall improvement in the self-esteem of the incarcerated students changed the culture of the school in three cases. Prior to the implementation of PBL, the cultures of those schools were negative, and conversations among the students were about life in the facility. After a few PBL projects, however, the students' increased self-confidence motivated them to want to do more. The schools experienced a paradigm shift in which students began talking about what they were learning, which turned the culture into that of a school, not a prison.

Conclusions

The researcher used the key findings to draw relevant conclusions from the data to answer the research questions. The conclusions are listed in order of the research questions that they answer.

Conclusion 1

Despite some obstacles to implementation, the eight-component model of PBL improved the academic performance of juvenile offender students. All study participants noted the students' deeper knowledge of the topics and their capacity for deeper learning. PBL was highly motivating for students due to the component of voice and choice, which enabled them to choose the form of the final product. The presentation of their products to an authentic audience provided a reason for them to learn the content (Boss, 2014).

This researcher was not able to locate any other studies regarding using PBL with incarcerated juveniles. However, Robertson's (2013) research on the use of PBL with alternative education students, a slightly less severe student population, showed similar results. Robertson noted that "project-based learning can be an effective curriculum model for re-engaging vulnerable youth in school" (p. vi). From her statement, it can be assumed that PBL would also be effective for the most vulnerable students: incarcerated youth.

Teachers indicated that their students' finished products showed that they had mastered significant content at a deeper level than in their previous curriculum. A study by Flores (2012) indicated that traditional instruction in juvenile facilities usually involved basic skills instead of deeper thinking skills.

Conclusion 2

Limited access to technology in secure juvenile detention facilities impedes the effective implementation of PBL with juvenile offenders. The ability to use technology to produce a product and the ability to use the Internet for research are considered 21st-century skills that are crucial for success in the workplace (Partnership for 21st Century Skills, n.d.). However, the security concerns of juvenile facilities preclude students from having access to the Internet. The lack of Internet access prevents students from learning research skills and limits deeper inquiry into the driving questions of PBL. Since students cannot do Internet research themselves, the teachers must do it for them. This is time consuming for teachers and limits the students' choices to the materials the teachers gather.

A 2010 observational study of the educational program in a West Coast juvenile facility revealed a lack of computers in the classrooms (Young et al., 2010). The absence of computers was attributed to concerns that the students would have inappropriate physical altercations over them (Young et al., 2010). The complete absence of technology in JCS classrooms would severely limit the effectiveness of PBL in this setting.

Conclusion 3

Building prior knowledge is an essential instructional strategy to maximize the effectiveness of PBL with incarcerated minors. Research has indicated that incarcerated juveniles are often 3-5 years below grade level due to factors including long periods of truancy, substance abuse, or emotional issues (Foy et al., 2012; Leone & Weinberg, 2012; Platt et al., 2006). As a result, they often lack basic academic skills that are essential in

problem solving. To offset this deficit, teachers must scaffold instruction so students will acquire the basic skills needed to complete the project.

Additionally, due to fears of neighborhood violence, many juvenile offenders have little to no experiential knowledge of the communities or social interactions beyond their communities (Chauhan & Reppucci, 2008). This lack of experiential knowledge must be remedied in order for students to delve deeply into the driving questions of PBL.

Conclusion 4

PBL can have a positive impact on peer socialization among incarcerated juveniles. The extent of this impact reported by respondents varied. Respondents in this study noted that their students improved their collaboration skills and developed some more positive interactions with peers.

The students' ability and willingness to collaborate with peers is also affected by factors such as gang affiliations and the culture of the living units of the facility. Although these factors make students hesitant to interact, providing structured opportunities for select students to collaborate can decrease this hesitation and stimulate interaction. Tanner's (2011) study of the use of PBL with high school students found that even in traditional high schools, students were often reluctant to work together and that peer collaboration initially had to be orchestrated by the teacher. If traditional high school students had to be eased into collaboration, it seems logical that incarcerated juvenile students would need even more encouragement.

Conclusion 5

PBL empowers juvenile offender students and improves their self-concepts. All respondents in this study noted that their students had increased self-esteem due to their

success at developing and presenting their projects to an audience. One teacher described his students as "more aware of their place in the world."

Incarcerated minors have experienced school failures that cause them to doubt their abilities and develop negative attitudes about learning. This study found that the completion of projects using PBL changed incarcerated students' attitudes about school and about themselves. One respondent in this study described how PBL had enabled her students to see themselves as scholars. Robertson's (2013) study of PBL in alternative high school settings found that the success the students experienced from PBL enabled them to have more positive self-images and built their self-confidence.

Implications for Action

The conclusions above suggest several implications for action. These are the researcher's recommendations to address the conclusions described above. The group or organization responsible for implementing each implication is designated.

Implication for Action 1

The results of this study indicated that PBL is effective in increasing academic performance, improving peer interactions, and improving the self-esteem of incarcerated youth. However, CEEAS noted that there are only a few states implementing PBL in JCS classrooms, at various levels of implementation.

State or local agencies that have responsibility for educational programs in juvenile facilities throughout the United States should create statewide initiatives for teacher training in the implementation of PBL in all JCSs within their jurisdiction. In addition to creating initiatives, states should commit financial and other resources to implementing and maintaining PBL curriculum and training in their facilities. These

resources should include training in developing projects and ongoing budgets for materials and supplies.

Implication for Action 2

The respondents in this study noted that PBL is most effective when the driving question is relevant and well embedded into the curriculum. Some teachers wanted more training in facilitating student interactions. JCS teachers need training and coaching in the components of PBL in order to learn how to use the model effectively. JCS teachers should be given specific training in strategies such as building background knowledge, developing relevant driving questions, and facilitating peer collaboration among students. The agencies could utilize the expertise of the BIE or advocacy groups such as CEEAS for this training, if needed.

Implementing PBL requires more planning and peer collaboration time for teachers than prior traditional curricula. In addition to training in the components of PBL, teachers need to have additional time for planning on a regular schedule.

Implication for Action 3

Twenty-first-century skills, including the use of technology, are an essential component of PBL. This study confirmed the observations of prior studies regarding the lack of Internet access, and in some cases even computers themselves, in JCS classrooms. This lack of technology, a result of being in a secure detention facility, hinders the implementation of PBL.

JCSs utilizing PBL should work with their probation agencies to design secure Internet systems or internal servers that will allow students to develop technology skills including online research without compromising the security of the facility. These

systems can include teacher wikis located on internal servers, on which teachers load secure links for students to use for research. In addition, every JCS agency should make computers, iPads, and other forms of technology available to students for word processing and project completion.

Implication for Action 4

One of the most motivating components of PBL is the final presentation of the product to an authentic audience. Agencies responsible for administering JCS education programs should reach out to the outside community to develop partnerships to provide resources for PBL and to assemble authentic audiences for presentations of the final products. These audiences should not just be employees of the agency but also members of the community with a direct relation to the topic of the driving question. The agencies that run the schools should also enable the real-life implementation of the projects whenever possible.

In addition to providing an authentic audience for product presentations, the development of partnerships between community businesses and organizations and the JCSs can make products more relevant and meaningful for students and may provide resources for research and supplies.

Implication for Action 5

Agencies that run juvenile facilities should develop plans for increasing positive peer interactions for juveniles in school and throughout the living units of the facilities. They should work with the JCSs to plan structured activities that will allow students to communicate respectfully with each other. Ultimately, the facilities should facilitate a culture change in the living units to expand opportunities for positive peer interactions.

Recommendations for Further Research

Few studies have evaluated the effectiveness of educational programs in juvenile detention facilities. This researcher was unable to find any prior studies regarding the use of PBL with incarcerated minors. The current study determined that JCS teachers perceive that the eight-component model of PBL has a positive impact on the academic performance, socialization skills, and self-concepts of incarcerated minors. It also determined that JCS teachers perceive building background knowledge to be an effective strategy when utilizing PBL. However, further study in this area is needed.

This researcher recommends that a study of the effectiveness of PBL in improving the academic performance and self-esteem of incarcerated minors be done with a much larger sample to determine if the results of this current study would be confirmed by a larger sample. Perhaps, as more JCSs begin to implement PBL, larger samples will be available.

Another area that should be studied is the difference in the effectiveness of the components of PBL between male and female juvenile offenders. There might be differences in the effectiveness of certain components of PBL between the genders.

There is a need for observational studies in which researchers enter schools in juvenile facilities to observe students during the development of the PBL projects. Such studies would provide valuable insight into the success of the PBL components and would help determine the effectiveness of programs.

This researcher believes there would be great value in a study that determined the incarcerated juveniles' perceptions of the effectiveness of PBL in impacting their academic performance, social skills, and self-concepts. Determining the incarcerated

juvenile students' perceptions of the effectiveness of PBL would be helpful in program planning.

This current study indicated some obstacles to fully implementing PBL in a JCS setting, most notably the restrictions on technology and Internet use. This restriction on technology prevents the students from doing deep research for their projects and limits their ability to learn 21st-century skills. Further studies are needed to determine effective strategies for student Internet use inside secure facilities.

Finally, this researcher recommends that a quantitative or mixed-methods study be done that compares the academic performance of incarcerated juveniles in the traditional JCS academic programs with the academic performance of JCS students using PBL. Any of these studies would add to the body of knowledge on the effectiveness of educational programs and would ultimately improve the educational experiences of incarcerated juveniles.

Concluding Remarks and Reflections

The results of this study are important because they add to the small body of research on effective educational approaches for incarcerated juveniles. The study provided data that may determine best practices in educational programs and may even support the expansion of PBL into additional JCSs throughout the United States.

The researcher has experience teaching juvenile offenders, empathizing with their often-traumatic pasts while holding them accountable for changing their futures. She has a passion for improving educational programs in juvenile facilities so that the juveniles develop the knowledge and skills that will enable them to earn their high school

diplomas, go to college, and go on to be productive citizens. The researcher believes that PBL will be an important factor in improving JCS educational programs.

This study evolved into a much different, more meaningful study than it was at its inception. In reviewing the literature, this researcher developed a much deeper understanding of the factors influencing juvenile incarceration and of its long-lasting social and economic effects for the individuals and for society. This new knowledge has deepened her commitment to minimizing these effects.

Conducting this study involved the researcher making contacts at organizations such as CEEAS, and through them conversing with JCS teachers in three different states with whom she would not otherwise have interacted. Some of the study participants expressed the desire to remain in touch with the researcher after the study was completed in order to share ideas and helpful strategies regarding teaching incarcerated juveniles. In fact, one respondent asked the researcher to be a virtual audience to help his students practice their presentation skills. Thus, the benefits of this study go beyond just providing data to providing a network of ideas and resources.

Education reforms in JCS classrooms have only recently begun to be implemented. The use of PBL is one of these reforms. When planning this study, the researcher intended that the conclusions drawn from its results would have an impact on the momentum of reforms in juvenile education programs.

The researcher believes that the main conclusion drawn from this study, that the use of PBL as an instructional strategy improved the academic performance, socialization skills, and self-concepts of incarcerated juveniles, provides confirmation that PBL should be used in educational programs in juvenile facilities nationwide. The researcher hopes

that this will inspire further studies that will continue to build the evidence base on the effectiveness of PBL in this setting.

Ultimately, the researcher would like to publish this work and continue the associations she has made with organizations such as CEEAS to help transform educational programs for juvenile offenders. The implementation of instructional strategies such as PBL in JCS classrooms will provide positive school experiences for these youth, improve their academic performance, and enable them to graduate from high school and attend college or a trade school. PBL can play a key role in the ultimate mission of the juvenile justice system of enabling young offenders to put aside their troubled pasts and become productive members of society.

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APPENDICES

APPENDIX A

IRB Approval Form

BRANDMAN University Chapman University System

BRANDMAN UNIVERSITY INSTITUTIONAL REVIEW BOARD

Application for IRB Review of New Research Protocol

Part 1 – Administrative Information

This form is to be used for requesting IRB review of any new project. IRB approval is required before any research involving human subjects may be initiated.

Full details must be provided and all necessary documentation submitted. Brandman University is committed to safeguarding the rights and welfare of all people who participate in research conducted by Brandman faculty and students. Brandman University supports responsible experimentation which promises to increase knowledge and understanding, and encourages the highest ethical standards among Brandman researchers.

The central aim of the BUIRB is to protect the rights of human participants in research studies, including their rights to give informed consent and to have their safety protected from undue risk. The BUIRB has the responsibility and authority to review and approve all research projects by Brandman faculty and students involving human or animal participants. It will approve only research that conform to the professional standards as understood within the relevant discipline.

The BUIRB Application becomes the researcher's record of the compliance with laws and regulations protecting the rights and welfare of human participants in research as documented by the Department of Health and Human Services (DHHS) regulations 45 CFR 46, as specified in the Office for Protection from Research Risks (OPRR) 1983 report on *Protection of Human Subjects*.

Submit an electronic copy of the Application for Exempt, Expedited and Standard Review to **buirb@brandman.edu**.

Institutional Review Board Application

IMPORTANT: ***Please respond to all the questions. Do not leave any items blank. Responding to each question on this application fulfills one of the requirements for the ethical conduct of researchers. If a question does not pertain to your study, indicated not applicable (NA) following the question. Do not delete or modify questions from this application. Please note that incomplete applications will be returned without review.***

Research Information

Researcher's Assurance: I certify that the information provided in this application is complete and correct. I understand that as principal researcher, I have ultimate responsibility for the conduct of the study, adherence to ethical standards, and protection of the rights and welfare of human participants. I agree to: (1) Conduct the study according to the approved protocol; (2) Make no changes to the approved study without prior IRB approval; (3) Use the approved procedure and form(s) for obtaining informed consent; and, (4) Promptly report any significant adverse events to the IRB within five working days of occurrence.

Researchers Name: Paulette E. Koss Date 12/12/2014

Faculty Advisor/Sponsor/Chair Assurance: By my signature, I certify that the student has sufficient knowledge to conduct the study in keeping with the protection of human participants. Further, I agree to: (1) monitor study progress; (2) Supervise the researcher in solving problems in the research as they arise; (3) Ensure that the researcher promptly report

significant adverse events; (4) Identify an alternate advisor or sponsor in the event that I am unavailable (on leave or sabbatical) and advise the IRB in writing of such arrangements.

Faculty Advisor/Sponsor/Chair Name: Dr. Douglas Devore Date 12/12/2014

Principal Researcher's Contact Information:

Name: Paulette E. Koss

Mailing Address: 114 Amber Oaks Lane, Glendora, CA 91741

Work Phone: 661-296-8444 Personal Phone: 626-513-3592

E-mail Address: koss9101@mail.brandman.edu

Co-Principal Investigator: (Student/Faculty Advisory/Sponsor/Chair)

Principal Researcher's Contact Information:

Name: Dr. Douglas DeVore

Department: Brandman University

Mailing Address:

Work Phone: 623-293-2421 Personal Phone:

E-mail Address: ddevore@brandman.edu

Application Type: ☑ New Proposal ☐ Response to Initial Review (All revisions must be in italics)
☐ Renewal: IRB Number

Title of proposed research study:

Using Project Based Learning with Incarcerated Minors: A Teachers' Perspective

Type of Review Requested:

☐ Exempt Review: As defined in 45 CFR 46 there are six exemptions to the regulatory requirements of described in section 46.101(b) of 45 CFR 46. See BUIRB Research Review Policy for "exempt" review requirements.

☑ Expedited Review: Surveys considered minimal risk, research on individual or group behavior or characteristics where research does not cause stress to subject and confidentiality is maintained, research involving deception that poses no more than minimal risk, performance of non-invasive tests, collection of data using noninvasive procedures, collection of blood samples by finger stick or venipuncture by trained personnel, research using existing documents, records, pathological specimens, or diagnostic specimens.

☐ Standard Review: Research with greater than minimal risk, research of a sensitive nature, research with vulnerable populations (children, prisoners, pregnant women, mentally disabled, elderly individuals, non-English or English as second language speakers, or economically/educationally disadvantaged individuals), research involving invasive procedures, research inducing physical pain or potential injury.

Type of Research:

- ☐ Institutional Research
- ☑ Graduate Research
- ☐ Undergraduate Research

Principal Researcher Position:

- ☐ Faculty
- ☑ Doctoral Student
- ☐ Masters Student
- ☐ Other_____

Principal Researcher's College Affiliation:

- ☐ College of Arts and Sciences
- ☐ College of Business and Professional Studies
- ☐ Nursing and Health Professions
- ☑ Education

Category that applies to your research:

- ☑ Doctoral Dissertation
- ☐ Masters' Thesis
- ☐ Faculty Professional/Academic Research
- ☐ Course Project
- ☐ DNP Clinical Dissertation Project

Part 2 – Study Design, Methods and Procedures

Provide a summary of the study, including the purpose and research questions:

The purpose of this phenomenological study is to examine the impact of the Buck Institute of Education's 8 Components of Project Based Learning (PBL) on high school juvenile offenders' academic performance, and socialization, as perceived by juvenile court school teachers. A secondary purpose is to describe strategies used to implement the 8 components of PBL for high school juvenile offenders as

Describe briefly how this study will contribute to existing knowledge in the field:

There is currently very little research on effective instructional strategies to improve performance, socialization, and self esteem in incarcerated juveniles. The results of this study could help determine effective instructional strategies to use with this student population.

Description of Human Subjects:

Target Population	Total Number of Participants Sample Size	Characteristics of Population	Specify age of Subjects
Teachers in juvenile detention facilities who utilize PBL with incarcerated minors.	9 juvenile court school teachers	Teachers in juvenile facilities, implemented PBL with incarcerated minors.	Adults over 18.

Do your subjects include any of the following:

- ☐ Pregnant Women/Neonates
- ☐ Minors ages seven through seventeen
- ☐ Infants or Children younger than seven years of age
- ☐ Cognitively Impaired
- ☐ Inmates or Prisoners
- ☐ Elderly/Aged Persons
- ☐ Non-English Speaking Persons
- ☐ Economically or socially disadvantaged
- ☐ Adults with physical or mental disabilities
- ☐ Patients
- ☐ Other special populations targeted in the study protocol

Recruitment

Specify how you will gain access to, recruit and select your subjects: Describe when, where and how participants will be contacted. How will potential participants be initially identified? From what sources will participants be identified, i.e., school, business, health care, law enforcement, non-profit organization, etc. Attach letters or email from all organizations on official letterhead granting permission or IRB approval from the organization. Attach all recruitment documents i.e., flyers, brochures, bulletin boards, Media, electronic media, social media, etc.

The researcher contacted a publicly listed non-profit organization that trains juvenile court school teachers in various states in PBL. This organization referred her to directors in 5 states. The researcher contacted the directors via email and asked if they would recommend teachers for participation. The researcher contacted the recommended teachers via email provided by the program directors to seek their approval to participate

Data Collection

- ☐ In-person Interview
- ☐ In-person Questionnaire
- ☐ Observation
- ☐ Mail Survey/Questionnaire
- ☑ Telephone Survey/Interview
- ☐ Participant Observation
- ☐ Standardized
- ☐ Experimental Procedure
- ☐ Archival Data
- ☐ Electronic Survey
- ☑ Audio/Video Recording and Analysis
- ☐ Focus Group Interview
- ☐ Standardized/Educational Test

List all instruments, assessments, tests, questionnaires, interviews or other materials developed specifically for this research. If no special assessments were developed and used in this study state "non-applicable" or NA .
Attach a copy of all materials used in this research.

Researcher developed a semi-structured interview instrument utilizing literature review, expert review, and pilot testing.

List the titles of all instruments, assessments, tests, questionnaires, interviews for other materials developed commercially or by a third party. If no commercially developed materials were used in this study state "non-applicable" or NA.
Attach copies of all materials and verification of permission to use the materials in this research.

NA

Describe in detail and in sequence the study procedures that involve human participants including tests, treatments and research interventions.

Participants will receive an email with the Participant's Bill of Rights and informed consent, with an explanation of the study. Participant will be asked to review the Bill of Rights and the informed consent (see Part 5). The participant will be interviewed via telephone or Skype, after again receiving consent to participate. After the interview, participant will receive an email with transcription of interview to review for clarity of meaning, and can make any changes needed. Participant will receive a thank-you email with a $10 Starbucks gift card.

Are you offering payment other inducements to participants in this study?

☐ NO
☑ YES Describe the amount of the payment or inducement and how it will be received.

$10 Starbucks gift card received via email.

Will participation in the study involve any cost to the participant?

☑ NO
☐ YES If yes, indicate the anticipated costs and rationale.

Part 3 – Risks and Benefits

Please select all of the potential risks that are involved in your study.

- ☐ Use of private records (such as educational or medical records)
- ☐ Manipulation of psychological or social state such as sensory deprivation, social isolation, psychological stress
- ☐ Probing for personal or sensitive information in surveys or interviews such as private behaviors or employer assessments.
- ☐ Presentation of materials which some participants may consider sensitive, offensive, threatening or degrading.
- ☐ Possible invasion of privacy of subject's family
- ☐ Social or economic risk (reputation, cultural, employability, etc.)
- ☐ Identification of child, spousal, or elder abuse
- ☐ Identification of illegal activity
- ☐ Risk of injury or bodily harm
- ☐ Other risks (please specify)

What level risk does this research present to dignity, rights, health, welfare, or privacy of the participants?

- ☑ Less than Minimal Risk to Participants – Justify your rating below
- ☐ Minimal Risk to Participants – Justify your rating below
- ☐ More than Minimal Risk to Participants – Explain and specify risks below

Describe the steps that will be taken to minimize risks or harms and to protect the welfare of participants. Include a description of how you will handle an adverse or unexpected outcome that could be potentially harmful against any risk.

All participant information will be kept in a locked storage cabinet or password protected computer accessible only to the researcher. In the study, the participants, and the names of their agencies will be kept anonymous. After the study, all audio recordings of interviews, transcripts, and participant information will be destroyed.

Describe any benefits that individuals may reasonably expect from participation. If there are none, state "None."

There is no direct benefit for individual participation. However,the participants may benefit from the feeling of satisfaction from contributing to the body of knowledge in their field.

Describe any anticipated benefits of this study to society, academic knowledge or both.

This study will add to the very sparse body of research on effective instructional programs for incarcerated minors and determine best practices in developing these programs.

Part 4: Privacy and Confidentiality

Will you or any member of your research team collect or have access to any of the personal identifiers listed below? Select all that apply.

- [x] Name
- [ ] Date of Birth
- [x] Mailing or email address
- [x] Phone numbers
- [ ] Social Security number
- [ ] Medical records
- [ ] License
- [ ] IP address
- [x] Photos/images/audio recording
- [ ] Signatures, handwriting samples

Any unique identifier not mentioned above:

Describe the procedures for how the subject's privacy will be maintained during the study. What provisions have been made to protect the confidentiality of participants? Where will you securely store data and research records? How will you dispose of signed consent, data and research records after the research is completed?

All participant information (name, email address, phone number) will be kept in a locked storage cabinet or password protected computer accessible only to the researcher. The participant will be referred to anonymously using an alphabetic code. After the study, all paper documents and interview transcriptions will be shredded. All audio recordings and/or electronically stored documentation that may identify participants will be electronically/digitally destroyed.

Part 5 – Consent Process

Informed Consent

The entire informed consent process involves giving a subject adequate information concerning the study, providing adequate opportunity for the subject to consider all options, responding to the subject's questions, ensuring that the subject has comprehended this information, obtaining the subject's voluntary agreement to participate and, continuing to provide information as the subject or situation requires. Identify and describe the procedures you will use to obtain Informed Consent. Attach your proposed consent form(s) (see Brandman University requirements and Sample Informed Consent form) and include the script of oral explanations. Include any Informed Consent forms required by other participating organizations.

- ☐ Consent required
- ☐ Written assent for children and individuals under 18
- ☐ Parent/Guardian permission for children and individuals under 18
- ☑ Participant informed consent required
- ☐ Consent not required
- ☑ Consent obtained at the beginning of on-line survey, phone interview or personal interview or focus group (attach a copy of electronic versions or oral scripts used to obtain consent)

Informed consent procedures

Researcher will email the Participant's Bill of Rights and Informed Consent to all participants and request that they review and email the researcher their approval. At the start of the interview, the researcher will review the Informed Consent and Participant Bill

Attachments to be included with IRB Application

Participants Bill of Rights, Informed consent, Interview Questions and protocol, recruitment emails

Part 6 – Attachments

Include any of the following attachments applicable to this application:

Consent/Assent Forms (All parental/guardian consent forms, Information sheets for Waiver of Consent, Internet Consents, Verbal Consent scripts, etc.)

Screening Materials (Demographic questionnaires or measures used in screening subjects for inclusion or exclusion)

Site Permission/Support Letters (Letters form agency or organization granting permission – on official letterhead)

Recruitment Materials

Data Collection Instruments (Questionnaires, copyrighted tests, focus group questions, interview questions, scripts, etc.)

Part 7 – Assurance

I agree:

- To comply with all BUIRB policies, decisions, conditions and requirements.
- This study protocol has been designed, to the best of my knowledge, to protect human participants engaged in research in accordance with the applicable principles, policies, regulations, and laws governing the protection of human subjects in research.
- To obtain prior approval from the BUIRB before amending the research protocol or the approved consent/assent form.
- To report to BUIRB any adverse event (s) and/or unanticipated problem (s) involving risks to participants.
- To submit the Annual Review Form as needed.

Principal Investigator: Paulette E. Koss Digitally signed by Paulette E. Koss DN: cn=Paulette E. Koss, o, ou, email=koss9101@mail.brandman.edu, c=US Date: 2014.12.12 10:48:45 -08'00'

Faculty Advisor/Sponsor/ Chair: com.apple.idms.appleid.prd.384961792b53546e4e31443843 354b5a5543543657773d3d Date: December 12, 2014

Part 8 - Full BUIRB Review

Full BUIRB review is required for all research involving greater than minimal risk to subjects. This responsibility cannot be delegated. Full review is required for research involving any protected subject population. Protected groups include: fetuses, pregnant women, human in vitro fertilization, prisoners, children, elderly, and psychiatric patients. Depending on the type of research or target population, some groups may be vulnerable to coercion or undue influence, or have impaired capacity to make decisions and require additional safeguards. The researcher shall design subject selection and consent procedures that will protect the rights and welfare of all subjects. In addition, a study may be referred to the full board by an expediting reviewer. For example, a reviewer may seek guidance from the full board in determining whether a study meets the regulatory definition of minimal risk or when the scientific question posed exceeds the expertise of the identified expediting reviewer.

Describe how your protocol mitigates or accommodates possible risks to the research participants.

Describe the professional experiences and special training you have that qualifies you to conduct the proposed study involving more than minimal risk to participants.

APPENDIX B

Informed Consent Form

BRANDMAN UNIVERSITY INSTITUTIONAL REVIEW BOARD

December 9, 2014

Dear Participant,

I am a doctoral student at Brandman University who is conducting a study on teachers' perspectives of the impact of the 8 components of PBL on the academic performance and peer socialization of incarcerated juvenile students. Additionally, the study will examine the strategies used to implement project based learning for high school juvenile offenders from the perspective of juvenile court school teachers.

I am asking for your assistance with this study by participating in an interview via telephone or Skype. The interview will take about 45minutes and will be scheduled at a time convenient for you. If you agree to participate in the interview, you may be assured that it is completely confidential. No names will be attached to notes or transcriptions from the interview. All information will be stored in locked files accessible only to me. No agency will have access to the information. You will be free to stop the interview and withdraw from the study at any time. Further, you may be assured that the researchers are not in any way affiliated with your agency.

I, Paulette Koss, am available at 626-513-3592 or koss9101@mail.brandman.edu to answer any questions you may have. Your participation would be greatly appreciated.

Sincerely,

Paulette Koss

APPENDIX C

Literature Review Synthesis Matrix

Author	Social constructivism	Jerome Bruner	Lev Vygotsky	Shared meaning	Zone of proximal development	Thomas's PBL	Teacher/student role	Buck Institute PBL 8 components	Significant content	Need to know	Driving question	Student voice & choice	21st-century skills	Inquiry & innovation	Feedback & revision	Publicly presented product
Boss, 2014																x
Bruner, 1966	x	x		x	x											
Buck Institute for Education, 2009				x			x	x	x	x	x	x	x	x	x	x
Chen, n.d.	x	x	x	x	x		x		x		x					
Coffey, 2008		x				x	x	x								
Grant, 2002				x			x				x		x	x	x	x
Han & Bhattacharya, 2001	x						x		x		x	x	x	x	x	
Jennings, 2012	x	x														
Kemp, 2013	x		x	x			x		x		x					
Kim, 2001	x		x	x	x		x		x							
Larmer & Mergendoller, 2010				x			x	x	x	x	x	x	x	x	x	x
McLeod, 2012	x	x		x	x											
Neff, 2010	x		x	x			x									
Pelech, 2008	x	x		x			x		x	x	x			x		

Author	Social constructivism	Jerome Bruner	Lev Vygotsky	Shared meaning	Zone of proximal development	Thomas's PBL	Teacher/student role	Buck Institute PBL 8 components	Significant content	Need to know	Driving question	Student voice & choice	21st-century skills	Inquiry & innovation	Feedback & revision	Publicly presented product
Ravitz, 2009						x	x		x		x					
Robertson, 2013	x		x	x	x		x		x	x	x		x	x	x	x
Solis & Larmer, 2012							x	x	x	x	x	x	x	x	x	
Tanner, 2011	x			x			x		x		x	x	x	x		x
Thomas, 2000						x	x		x		x			x		
Yilmaz, 2008	x		x	x			x		x		x	x		x		
Zhao, 2009						x	x		x	x	x			x	x	