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The Effectiveness of Personalized Competency-Based Education on Student Engagement at the Secondary Level

Amanda Newmes
alnewmes@eiu.edu

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Eastern Illinois University

Abstract

This study examines the impact of Personalized Competency-Based Education (PCBE) on student engagement across varying ethnicities and grade levels. Personalized Competency-Based Education is built upon the premise that student learning should be based upon the following characteristics: learning is student-owned, learning accommodates flexible pacing, learning shows demonstration of proficiency, students track their own progress, and students determine their own learning pathways and goals. Since current research is limited on the impact of PCBE, especially at the secondary level of education, further study is needed in order to determine how PCBE implementation will effect student engagement. It was hypothesized that PCBE would have a significant impact on student engagement across grade levels 9-12 and all ethnicities. A survey method was used to collect data from 500 students in an urban high school setting in order to determine if there was a correlation between PCBE implementation and student demographics. The results of the study reveal that PCBE has a significant positive correlation on student engagement across all grade levels (9-12) and most ethnicities.

*Key*words: personalized learning, competency-based education, student engagement

Dedication

I dedicate this thesis to my wonderful family. Even when times are crazy, you always manage to find ways to make me laugh and help me to let go of the stressors in life. Thank you for your endless love and encouragement, none of this would have been possible without you. I am extremely blessed to have all of you in my life.

Acknowledgment

First and foremost, to Dr. Md-Yunus, this study would not have been possible without you. Thank you for all of your guidance and support through this entire journey. You have given up endless hours of your personal time to guide me through this process. Thank you for your wisdom, encouragement, and expertise over the last year, you are amazing! To Dr. Fredricks and Dr. VanGunten, thank you for your guidance through this process and providing effective feedback on my research. Dr. Grissom, thank you for your technical support and making a long distance thesis defense possible. Moreover, a special thank you to all of the fabulous teachers I work with that willingly let their students take class time to participate in the survey for this study--you all are the best! To the students who participated in this study, thank you so much for your time, it is greatly appreciated.

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CHAPTER I

Introduction

In the past five years, it has become evident to many school districts across the United States (U.S.) that the traditional school system--whereby students are required to have so many minutes of "seat time" is limiting students (Ryan & Cox, 2017). In fact, the National Assessment of Education Progress (NAEP) shows that traditional schooling methods are leaving disproportionate numbers of student's behind-- especially Hispanic, African American, and mixed-race students who live in low-income households (NAEP, 2014). Additionally, since "one-third of new college students are not prepared for college" secondary schools are looking for innovative ways to ensure students are prepared for college or careers after high school (U.S. Department of Education, 2010, p.1).

In order to ensure success with every student, school districts across the U.S. have been working to implement an educational system that can accomplish this enormous task. Personalized learning is a form of educational instruction that puts the student at the center of learning. The basic principles of personalized learning are that it seeks to alter instruction in ways that customize each students' learning experiences and ultimately leads to a systemic change in how students are assessed and move to more advanced skills (Hyslop & Mead, 2015).

However, implementation of this system has been somewhat difficult in the past, as there was a lack of coherency (competency-based, personalized learning, proficiency-based). Therefore, one major research group, Marzano Research, coined the term personalized competency-based education (PCBE). According to Marzano Research, PCBE has the following characteristics:

- Students move on to the next level within a subject area only after they have demonstrated proficiency at the current level.

- Students learn content at their own pace, so time is not a factor in judging their competencies.

- Students have multiple opportunities and ways to learn specific content.

- Students have multiple ways to demonstrate proficiency with specific content.

- Students develop agency (a central focus, in addition to proficiency with academic content).

- Students have a voice in the teaching and learning process.

- Students have choices in the teaching and learning process (Marzano, et. al., 2017, p.6).

Putting this all together, PCBE learning and instruction is designed for teachers and students to work together to create personalized lessons that tailor to each student's individual strengths and weaknesses. Additionally, PCBE learning and instruction is based upon progress and proficiency in skills (which are aligned to state or national standards) and is uniquely flexible in design. Learners are active participants in setting goals, planning learning paths, tracking progress, and determining how learning will be demonstrated (Patrick, Kennedy, & Powell, 2013).

Purpose of the Study

As PCBE spreads across the U.S. school districts are focusing on PCBE as an answer to problems of the traditional school system such as inequity and low standards. Therefore, one of the main purposes of this study is to examine the impact between PCBE and its effect on student

engagement across various ethnicities. Educational equality is a basic right that all students

should have access to. However, the traditional classroom setting has difficulty in this area as

education in a traditional setting is a one -size–fit- all policy. Fortunately, PCBE does not have

the same constraints. Since PCBE is geared to individualized learning plans that meet the needs

of each student, the author seeks to see just how significantly PCBE impacts student engagement

across various ethnicities and low-income students.

The second purpose of this study is to determine how PCBE impacts student engagement

at the different grade levels (9-12). For instance, is there a significant difference in student

engagement at the 9th grade level versus the 12th-grade level when PCBE is used? Furthermore,

does the level of implementation of PCBE have an impact on student engagement levels? For

example, will students show significant increases in student engagement when PCBE is entirely

new to them, versus students that have been committed to PCBE for a few years?

Research Questions

An encompassing research question for this study is: To what extent does PCBE have an

effect on student engagement at the secondary level? Two, more specific, research questions

will also guide the study:

1. Does PCBE have an impact on student engagement at the high school level?

2. Does student engagement vary according to grade levels (9-12) and ethnicity?

Hypothesis of the Study

 It is hypothesized that personalized competency-based education creates a student-driven

atmosphere in the classroom, which is conducive to promoting critical thinking skills and student

ownership of learning. Therefore, it is also hypothesized that a positive correlation exists between PCBE and student engagement across grade levels (9-12) and all ethnicities.

Significance of the Study

Current data from college and career readiness benchmarks shows that traditional school systems are not meeting the needs of 21st-century learners (The Princeton Review, 2017). In fact, research indicates growing evidence of gaps in college and career readiness skills such as cognitive strategies, content knowledge, learning skills, and transition skills (Lombardi, Conley, Seburn, & Downs, 2012). Since PCBE is an educational system based upon flexible pacing, proficiency of skills, and student ownership of learning that is aligned to state standards; many school districts are turning to PCBE to see increases in the aforementioned skills.

As more states across the U.S. move to a PCBE approach in order to increase graduation rates and ensure success in college, career, or the workforce after high school; it is essential for more research to be conducted in order to determine how significantly PCBE effects student engagement. If PCBE produces significant increases in student engagement and thus postsecondary success, then more school districts will need to make this paradigm shift in education.

If the paradigm shift in education occurs across the U.S., this study will be significant since the findings will pose implications for administrators, community members, teachers, parents, and students. The findings of the study may give insight to schools on how they can efficiently and effectively implement a PCBE program that leads to increased student achievement. Additionally, the findings may also lead to increased professional development opportunities, as well as changes

to the evaluation process of teachers. Implications will also be made on community members, as students will have the skills to be career-ready or job-ready directly out of high school.

Limitations of the Study

There will be two limitations to this study. The major limitation of this study will be the sample of the study. Since personalized competency-based education is in the beginning stages of implementation in this school, this study will be limited to participants who have only been exposed to a PCBE program for six months-eighteen months. Therefore, data analyzed from this study will represent a population of participants that were exposed to the essential elements of a PCBE program for only a brief period of time.

Second, the sample population will consist only of participants from Blackhawk High School and the survey will only be given to participants actively taking a science class 1st, 5th, and 7th hours of a particular day in the Fall of 2018. Since Blackhawk High School is a public suburban school, this study will not yield any results from a private school setting. Therefore, the findings of this study may not be comprehensively representative of all secondary education teachers.

Definition of Terms

Competency-based education (CBE). A system of instruction where students advance to higher levels of learning when they demonstrate mastery of concepts and skills regardless of time, place or pace (Marzano et al., 2017)

Personalized learning. Education is driven by each student's unique needs which imply teachers tailoring their instruction, assessment, and content to individual students (Marzano

et al., 2017).

Personalized competency-based education (PCBE).   A combination of competency based education and personalized learning which includes the following components: 1. Students move on to the next level within a subject area only after they have demonstrated proficiency at the current level; 2. Students learn at their own pace, so time is not a limiting factor; and 3. Students choose how they want to learn and demonstrate knowledge of content, which promotes student agency--a central focus, in addition to proficiency with academic content (Marzano et al., 2017).

Student Engagement. A multifaceted construct typically including three dimensions: Behavioral engagement—focus on participation in academic, social, and co-curricular activities; 2. Emotional engagement—focus on the extent and nature of positive and negative reactions to teachers, classmates, academics, and school; 3. Cognitive engagement—focus on the student's level of investment in learning (Martin & Torres, 2016).

Blended learning. Any formal education program in which student learns at least in part through online learning, with some element of student control over time, place, path, and/or pace (Horn & Staker, 2015).

Summary

While there are some setbacks to PCBE, the pros far outweigh the cons. In order to serve the current needs of students and schools across the country, educators need to change the traditional system into one that is flexible, personalized, student-owned and based upon the

proficiency of skills. This large-scale systemic change, called PCBE, is not perfect (due to variances in implementation), but educators hope to find positive correlations between PCBE and increased student engagement across all grade levels and ethnicities.

CHAPTER II

Review of Literature

This section will discuss the current inadequacies of the traditional school system that have led to a need for a paradigm shift in the education system called Personalized Competency-Based Education (PCBE). A thorough explanation of the process of personalized learning and competency-based education will be explained, as well as how school districts are currently implementing this change into their educational programs. The last section of the literature review will discuss the latest research regarding the implementation of PCBE and its impact on student engagement.

Flaws of Traditional School Systems

One of the current issues that educators deal with on a daily basis is student engagement. In recent years, studies have shown that most states in the U.S. are trying to move away from traditional schooling--schooling whereby students are required to have so many minutes of "seat time" (Ryan & Cox, 2017). In traditional school systems, teachers will often time focus on the middle of the pack, or the students that achieve at a pace that matches most other students in the class. However, this means that students at the lower and upper peripheries of the class are either left behind or cannot move forward. In many cases, these students lose interest in school work. Students at the lower end cannot keep up with the rest of the class and they often experience failure and give up. On the other hand, students at the top of the class can get bored and lose interest in school.

Furthermore, the traditional system has several other flaws which lead to inequality of student success (Lopez, Patrick, Sturgis, 2015). First, the traditional system is based on a fixed mindset whereupon students enter the school system according to their birthdate. Already, students have a wide range of skills and abilities, but they are all put into the same grade level and they are given the same instruction and same assignments. Consequently, even though these students will start to fall behind (and do not demonstrate proficiency), they will be promoted to the next grade (Sturgis, 2016).

On top of that, the traditional school system is organized for efficiently delivering of curriculum, but not necessarily effective curriculum. For example, in a traditional setting, students walk into class, find assigned seats and wait for the teacher to begin lecturing. Approximately once a week students have some form of assessment over the assigned readings and teacher lectures. Hence, it is easy for students to disengage from the lesson at hand.

Furthermore, in the traditional school system, grades are somewhat based on extrinsic motivation (Sturgis, 2016). This means that the letter grades students' receive do not take into account the learning that actually took place in the classroom. Plus, there is a lot of variability between teachers. Some teachers may weight their grades, or give extra credit or participation points while other teachers do not. Therefore, what constitutes an "A" in one class may be a "C" in another, even though the actual learning was similar (Sturgis, 2014).

Last, while grade levels, seat time, and variations are measuring academic success are all flaws of the traditional school system, the largest flaw has yet to be discussed. According to the National Center for Education Statistics (NCES), 9.2% of Hispanic students dropped out from high

school in 2015 (NCES, 2015). Additionally, according to the ISBE PARCC composite scores, in 2017 (in the district this study represents), a 14 point achievement gap between Caucasians and Hispanic students was recorded (ISBE, 2017). Not only is this a significant gap in achievement scores, but demographic data in this district also shows a consistent increase in the population of some ethnic groups (Hispanic, American Indian, and two or more ethnic backgrounds) over the past five years.

According to Illinois State Board of Education (ISBE), the number of Hispanic students in this district has risen from 35% in 2013 to 37% in 2017, while the number of American Indian and students of two or more races have also increased by 1% over the last five years. However, the number of Caucasian students has declined from 59% to 55% from the years 2013-2017 (ISBE, 2017). In contrast to the increasing minority student population, in this district, 95% of the teachers are Caucasian, while only 5% are Hispanic. As a result, curriculum and instruction are being constructed by a dominant Caucasian culture even though almost half of the district's students are non-white. This leads to students feeling like they do not have a say in their learning, therefore, they tend to disengage from learning.

Clearly, the traditional school system has a few flaws that lead to ineffectiveness when it comes to closing achievement gaps of ethnic students in this area of the United States. As educators, this is unacceptable. The lifelong goal of every teacher should be ensuring academic success to each individual student--regardless of ethnicity. As educators, replacing a system that has been used for centuries is not an easy task, but with so many schools not reaching the needs of all of their students, schools and educators needed to find ways to raise the bar so that all students can demonstrate success and districts can show improvement. Therefore, educators,

researchers, and investors are collaboratively working together to rebuild and reform American education into something not entirely new, but definitely exciting-- Competency-Based Education.

While CBE is not necessarily a new concept, until recently, implementation of CBE programs in school districts (especially at the secondary level) was difficult. Often times, key components of implementation were lacking, so implementation failed. However, current research into CBE demonstrates that CBE can be implemented in secondary schools if certain protocols are followed. In addition, while some challenges still exist, mainly because research still varies on best practices for implementation, current studies show schools are narrowing that gap. Additionally, current research shows not only how important CBE and personalized learning programs are on student engagement; but also how they positively impact student achievement.

History of Competency-Based Education in the United States

From 1949-1960, a progressive educator named Ralph W. Tyler initiated the concept that curriculum should not remain static, rather it should be based upon clearly stated objectives that fit the needs of students and should, therefore, be reviewed and adapted as the needs and interests of students evolves (Le, Wolfe, & Steinberg, 2014). John Carroll was another major influence on the concept of CBE when he developed the first model in 1963. Carroll argued that individual students demonstrate proficiency in skills at their own time, so education should not be a one-size-fits-all learning model. In essence, Carroll's model laid the foundation for mastery learning (Nodine, 2016).

In the early 1970s, Benjamin Bloom developed a strategy for mastery learning that

emphasized project-based group instruction and reassessment. It was also during this time that

the concept of open classrooms (classrooms without a lot of barriers) was born in the United

States. Furthermore, an educator named Fred S. Keller in the 1970's, argued for the advancement

of students to the next level only after they demonstrated proficiency in skills of the previous

content matter. Unfortunately, while the big ideas of CBE were evolving, they never really took

hold in instructional institutions, mainly because a major piece of the puzzle was still excluded

(Nodine, 2016).

It was not until the 1980s-1990s, when the standards-based movement gained momentum

once more. Federal and local governments decided to take a higher interest in public education

and in 1981, Terrel H Bell, Secretary of Education, directed the National Commission on

Excellence in Education to examine the quality of education in the U.S. It found that the United

States was "A Nation at Risk," a national catastrophe resulting from a mediocrity in public

education (Editorial Projects in Education Research Center, 2004, August 3).

A *Nation at Risk* reminded the public that education needed to encompass learning for all

children, including but not limited to low income, minority, and at-risk children (Hyslop &

Mead, 2016). A *Nation at Risk* also argued that public schools needed to set higher standards

and expect greater achievement on these standards. In other words, if you aim for mediocrity,

mediocrity is what you will receive. The antidote was to set rigorous standards for what students

should be able to know and do each year, measure progress against those standards, and hold

schools accountable for student outcomes (Hyslop & Mead, 2016).

A Nation at Risk led to huge reforms in school districts across the U.S. The Carnegie

Forum on Education endorsed restructuring of schools to a strengthened role of teachers in

public education and National Board for Professional Teaching Standards was created to certify

"accomplished teachers" (Cavalluzzo, Barrow, Henderson, Mokher, & Sartain, 2014, p.1). So,

teaching was not just about directly sharing knowledge, it was about best practices to ensure

engagement and student ownership of learning.

However, while school districts were working towards more effective styles of teaching,

a piece of the puzzle was still missing-- students from every state need to not only show

proficiency but proficiency on the same sets of skills in each subject. In order to help

accomplish this gigantic task, states were responsible for establishing core standards, or

standards that were developed for each content-based class that laid the foundation for what

students should know and be able to demonstrate by the end of that class. States also pushed for

common assessments within each core content area that were aligned to these standards. The

purpose was to make sure that education was similar for all students in a defined area (Hyslop &

Mead, 2016).

In 2002, the No Child Left Behind (NCLB) was developed. It was the latest program to

push states for implementation of common standards and demonstration of student proficiency

across Language Arts and Mathematics by the year 2014 (Rebora, 2015). Additionally, its

foundation hinted at the transformation necessary to promote increased student learning and

achievement. In other words, if students were engaged in learning, they were more likely to

demonstrate success and stay in school. But, while NCLB was ambitious in its vision, it lacked

clarity and direction (Hyslop & Mead, 2015). The problem was that the goals of NCLB were

near impossible for low-income schools to achieve and it relied too heavily upon state test

scores. This meant that educators began "teaching to the test" and moved away from

individualized instruction.

Overall, the 1990s and early 2000s marked a period of time in education where the

general public and governmental consensus was that education matters. The problem, again, was

that the goals of government programs lacked credibility, clarity, and reflection, and therefore

ultimately pushed the curriculum further away from individualized instruction. When placed

under scrutiny, traditional school systems had several flaws which prevented students from

achieving the type of success the government was looking for.

Competency-Based and Personalized Competency-Based Education Defined

The Foundation for Excellence in Education (n.d.) defines *competency-based education*

as: "A system of instruction where students advance to higher levels of learning when they

demonstrate mastery of concepts and skills regardless of time, place, or pace" (Marzano, et. al.,

2017, p. 1). An organization for k-12 online learning (iNACOL) added on to this definition so

that it included what *competency* is defined as--"an explicit, measurable, transferable learning

objective that encompasses knowledge creation as well as skills and dispositions" (Marzano, et.

al., 2017, p. 1).

However, competency-based education, without personalized learning, leaves a huge hole

in the new reform system. Personalized learning is a form of educational instruction that puts the

student at the center of learning. The basic principles of personalized learning are that it seeks to

alter instruction in ways that customize each students' learning experiences and ultimately leads

to a systemic change in how students are assessed and move to more advanced skills (Hyslop &

Mead, 2015).

Personalized learning and competency-based education overlap, and educators often

incorporate *competency-based* into the definition of personalized learning. Therefore, one major

research group, Marzano Research, coined the term *personalized competency-based education*

(PCBE). According to Marzano Research, PCBE has the following characteristics:

- Students move on to the next level within a subject area only after they have
  demonstrated proficiency at the current level.

- Students learn content at their own pace, so time is not a factor in judging their
  competencies.

- Students have multiple opportunities and ways to learn specific content.

- Students have multiple ways to demonstrate proficiency with specific content.

- Students develop agency (a central focus, in addition to proficiency with academic
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- Students have a voice in the teaching and learning process.

- Students have choices in the teaching and learning process (Marzano, et. al., 2017, p.6).

Putting this all together, PCBE learning and instruction is designed for teachers and

students to work together to create personalized lessons that tailor to each student's individual

strengths and weaknesses. Additionally, PCBE learning and instruction is based upon progress

and proficiency in skills (which are aligned to state or national standards) and is uniquely

flexible in design. Learners are active participants in setting goals, planning learning paths, tracking. Learners are active participants in setting goals, planning learning paths, tracking progress, and determining how learning will be demonstrated (Patrick, Kennedy, & Powell, 2013).

PCBE grading. There are six elements of personalized competency-based grading:

- Embrace explicit learning progression or standards so that everyone will have a shared vision of what students learn.

- Develop a clear understanding of levels of knowledge so that students and teachers share an understanding of what proficiency means.

- Ensure transparency so that educators, students, and parents all understand where students are on their learning progression

- Create a school-wide or district-wide standards-based grading policy.

- Offer timely feedback and meaningful reassessments so that students can continue to progress and stay on track

- Provide adequate information infrastructure to support students, teachers, and school-wide continuous improvement (Sturgis, 2014).

Each component of personalized competency-based grading circles back to personalized learning and making sure that each student has the best tools necessary to succeed. It is a system that makes the consequences of achieving or not achieving benchmarks accessible and transparent to young people and puts them in the driver's seat. Once they are in the driver's seat, more often than not, kids will put themselves where they need to be (Shabilla & Sturgis, 2012).

This grading system also offers validation for students moving at their own pace, after they have mastered a skill, even if that meant multiple reassessments (Sturgis, 2104).

However, PCBE grading is not fault-free. For example, there can be variation in the performance level scales that are used to determine levels of proficiency on a common core or NGSS standard. Therefore, while some school districts have adopted four-point scales, others may have adopted five-point scales. Additionally, some school districts have increments of half points while others do not. However, the essential piece of PCBE grading--student success, remains the same no matter what point scale districts use (Sturgis, 2014).

Implementation of a PCBE program

The first major component of developing a PCBE program is Strategy and Integration (Pearson Education, 2016). This step is dependent upon the Superintendent and his/her staff to decide what the district's' mission is, what is the timeline for integration, and what is the strategy for the development of the plan. It is also the responsibility of this team to decide whom project managers will be, selecting a PLC team of educators to aid in the roll-out process, later on, find funding sources, and obtain waivers from the state.

Once a basic outline of development is established, step two, the Organizational phase can begin (Pearson Education, 2016). In this phase, the superintendent's team can select leaders to start looking into career pathways, dual credit programs, community partnerships, and other accreditation programs. Later on, secondary education teachers will have input into these pathways, but it is best if these programs and partnerships are set up ahead of time.

The next phase, the Program Development phase is where all of the educators in the district come in to play (Pearson Education, 2016). While the superintendent's team is working

on the first two phases, teachers should be aligning current curriculum to common core or NGSS standards (Science). In other words, skills should be written to match the standards, and rubrics to assess these skills should be created. Furthermore, teachers need to work in content-based PLC teams to identify common formative and summative assessment that aligns to the rubrics-- which align to the skills and standards.

Student Success is the next step in the implementation of a PCBE program (Pearson Education, 2016). This phase is ultimately, where PCBE ideas take hold in the classroom. Since student success is the key element to CBE programs, this is the heart of the program. In this phase, teachers begin to implement personalized learning in their classrooms. Programs for blended learning, remediation programs, new grading programs, and the career readiness pathways are disseminated to all educators so that they can see the outlook for the district and have crucial input on the pathways that affect their areas of expertise.

During this time, the technology phase can also be incorporated. A plan for 1:1 technology rollout should be developed and pilot programs in place. After the first year of a pilot program, pilot teachers should collaborate to revise and tweak areas of the roll-out that need revision. Rollout plan of 1:1 technology should be developed by the administration and the superintendent and his/her administrative team. A lot of the rollout plan will be based upon district finances (Pearson Education, 2016).

The last two phases, Management, and Marketing are addressed a year or two before the CBE program is implemented (Pearson Education, 2016). During these phases, the career readiness pathways are set and the other programs, such as personalized learning, blended learning, 1:1 technology, and remediation programs have been piloted and are in there second or

third years of running. All partnerships with community colleges, job forces (job shadowing),

etc. have been developed and any kinks ironed-out. Last, community meetings should be held so

that parents, students, and businesses can also see the outlook and timeline for the launch of

PCBE.

Quantitative and Qualitative Research on PCBE

While many school districts agree on the key elements of competency-based education,

implementation of the program varies substantially across the United States (Steele, Santibanez,

Faxon-Mills, Rudnick, Stecher, & Hamilton, 2014). Therefore, it is necessary for more research

to be conducted in order to build a better understanding of variability in various implementations

of competency-based programs. Specifically, researchers need to not only address how students'

experiences with competency-based education are consistent with the range of implementation

used within a school; but also can the components of PCBE be reliably measured? And, if they

can, would the results of such a test be valid?

One of the first research attempts to measure competency-based education

implementation was performed by Sarah Ryan and Joshua D. Cox in their research paper titled

"Investigating Student Exposure to Competency-Based Education" (Ryan & Cox, 2017). In this

study, Ryan and Cox conducted their survey (Ryan & Cox, 2016) on ninth through twelfth-grade

students from two rural high schools in the Spring of 2016. Using confirmatory factor analysis

(CFA), to determine "fit between each hypothesized model" (Ryan & Cox, 2017, p. 10), the data

was then entered into Mplus statistical software. Quantitative analysis of the data showed that

their methods of data analysis were both reliable (scores ranged from .74 - .85) and valid in

measuring the components of PCBE, since all ten latent factors reflecting the elements of PCBE were positively and significantly correlated.

Based on these findings, more research needs to be conducted, using the same survey on larger school samples to reaffirm the findings of Ryan and Cox's study. In addition, survey results could also be combined with personal interviews to examine whether different sources of information produce similar or different results. A qualitative study performed by Klein-Collins and Baylor in 2013, researched 13 individual students, all involved in PCBE programs, from seven different institutions. All 13 students were interviewed about the elements of PCBE and each student was asked to share their individual experiences using PCBE programs. Results of this study found that PCBE could potentially help students with diverse backgrounds engage successfully in high school and beyond. Furthermore, the main ideas in this research demonstrate that post-secondary education reform should encourage greater participation in PCBE and provide a pathway for more institutions of higher education to develop innovative programs (Klein-Collins & Baylor, 2013).

Ryan and Cox's research paved the way for the more valid and reliable research to be conducted on the implementation of PCBE at the secondary levels. Additionally, Klein-Collins and Baylor's research argued for including qualitative analysis into PCBE studies. However, their work was at the post-secondary level (Klein-Collins, & Baylor, 2013). Findings of both of these studies lead to the conclusion that more research needs to be conducted not only on the effectiveness of PCBE on student engagement but also effectiveness at the secondary level of education.

Personalized Competency-Based Education is a system based on student achievement regardless of ethnicity, disability, learning style, and background. Furthermore, it is a system that allows for flexible learning environments and personalized instruction that is aimed to help students take ownership of their learning and prepare them for future successes. Additionally, now that all of the pieces are in place, implementation is finally possible. Personalized Competency-Based Education is the future of education.

Summary

While the concept of competency-based education is not necessarily new to educational systems in the U.S., personalized learning blended with competency-based education is. Since PCBE is relatively new to school districts in Illinois, districts are still deciding upon best practices for implementation. Additionally, while studies have been conducted on CBE at all levels, not very many have been conducted on PCBE and its impact on student engagement at the secondary level. Furthermore, since a significant achievement gap still exists between Caucasian students and students of a minority, research needs to be conducted to see if PCBE can help to close this gap. If PCBE does have a significant impact on student engagement at all grade levels and ethnicities, then school districts across the United States must make the shift from a traditional school system to a system that uses PCBE. The following chapter will outline the proposed methodology for the study.

Chapter III

Methods

The study used a quantitative approach and utilized survey methods. The survey was adapted from the Ryan and Cox "Guide to the Competency-based Learning Survey for Students" (Ryan & Cox, 2017) and the Las Cruces Student Engagement Survey (Las Cruces Public School Engagement Survey, 2012). A quantitative approach is an unbiased, mathematical or statistical approach to the collection, analysis, and representation of data. A quantitative approach is necessary for this study, as it will show a correlation or relationship between the two variables of the study. Additionally, using a quantitative approach will also give quantifiable answers and a highly structured design approach (CIRT). The survey will be using a Likert-Scale will be used in the survey (close-ended responses); analysis of the responses will provide a clear and concise correlation between student engagement, PCBE, ethnicity, and grade level.

The independent variable in this study is student engagement in grade levels (9-12) and students of various ethnicities, while the dependent variable is implementation of PCBE. The study seeks to see if a significant correlation exists between the variables. The study intends to examine the impact of PCBE on student engagement, but focuses on two particular research questions regarding PCBE and student engagement: 1. What impact will PCBE have on student engagement at grade levels 9-12?, and 2. What impact will PCBE have on student engagement of students of various ethnicities?

Sample

The survey will be delivered online to approximately 500 participants from a public high school in a suburban town in Northern Illinois. Participation in the survey was non- random, as it was taken by participants who had a 1st, 5th, or 7th hour Science class. Blackhawk high school (pseudonym for actual school research takes place in) is one of two high schools in the district and it serves roughly 1500 students. The following table illustrates the percentages of various ethnicities of students attending Blackhawk High School based upon statistics from the 2016-2017 school year.

Table 1

Student Demographics for 2016-2017 School Year (ISBE, 2017). (n=394)

Ethnicity	Percent
Caucasian	64.3
Hispanic	27.4
African American	3.5
Asian	1.4
American Indian	0.9
2 or more races	2.2

Additionally, Blackhawk high school has 37% of its students listed as low income and roughly two percent of students are homeless. Furthermore, the district Blackhawk high school is in employs 498 teachers, 95% of which are Caucasian. The other 5% of teachers within the district are Hispanic. Almost two-thirds of the teachers in the district hold a Master's degree or

higher. Graduation rate of Blackhawk School is 86% and 58% of its students are deemed ready for college.

However, a significant achievement gap (PARCC Test) was recorded at Blackhawk high school in 2017. The 2016-2017 school years showed an achievement gap of -19 in the district between low income and non-low income students. This is relevant, as a large majority of low income students come from Hispanic origins. In addition, a -14 achievement gap was recorded in this same year between Caucasians and Hispanic students; while a -19 achievement gap was recorded between Caucasians and African Americans in the district (ISBE, 2017). Further data from ISBE reports that Blackhawk high school does not have as significant of an achievement gap as the entire district does. In 2016, Blackhawk high school showed an achievement gap of -7 between Caucasians and Hispanic students, a -11 between low income and non-low income students, and no achievement gap between African American and Caucasian students (ISBE, 2015).

Instrument

The instrument for the study was modified from Las Cruces Student Engagement Survey (K12, 2012). Modifications to the original survey include additional aspects on Demographics and Personalized Competency-Based Learning and were done so in order to gather pertinent information regarding ethnicity, teaching styles, assessment, flexibility, and student engagement. Ryan and Cox's *Guide to the Competency-based Learning Survey for Students,* developed in 2016, were used as a guide when creating the Personalized Learning category of the Student Engagement Survey.

The survey will be administered to participants attending high school in which personalized competency-based learning is being implemented and aims to determine how competency-based learning impacts student views on student engagement. Theoretically, increased personalized competency-based learning results in increased student engagement since students are granted greater flexibility in how they learn. Furthermore, this survey will seek to find additional correlation between ethnicity, grade level, PCBE, and student engagement.

At Blackhawk High School, personalized competency-based learning will have been implemented for only three months. The survey includes 47 items which are broken down into five aspects: Student Demographics, Engagement Scale, Learning Environment, General Satisfaction, and Personalized Learning. The survey will be administered using Qualtrics and data will be analyzed using the Statistical Package for Social Sciences (SPSS). Survey results will provide information on what participants believe about instructional practices associated with PCBE, as well as the extent to which students this impacts levels of student engagement. Data analysis will pay particular attention to the extent to which various ethnic groups and grade levels are exposed to personalize competency-based learning, and the correlation between their exposure and their levels of engagement. Five sample items from each category of the survey are given below:

Category A: Student Demographics

1. What is your current grade level?

    Grade 9

    Grade 10

    Grade 11

Grade 12

2. What is your gender?

Male

Female

Prefer not to say

3. What ethnicity to you identify with?

Latino/Hispanic

Black/African American

Asian

White/Caucasian

Native Indian/Alaskan

Two or More Ethnicities

4. What is your current high school grade point average (GPA)?

0.00-1.00

1.01-2.00

2.01-3.00

3.01-4.00

4.01-5.00

Not Sure

5. Currently, how many of your courses are you taking as blended/online?

    None

    1-2

    3 or more

Category B: Engagement Scale

1.   I try to do my best in school every day

    a.   Strongly Agree

    b.   Agree

    c.   Neither Agree nor Disagree

    d.   Disagree

    e.   Strongly Disagree

2.   I am proud to go to this school

    a.   Strongly Agree

    b.   Agree

    c.   Neither Agree nor Disagree

    d.   Disagree

    e.   Strongly Disagree

3.   I feel my school work is important

    a.   Strongly Agree

    b.   Agree

    c.   Neither Agree nor Disagree

    d.   Disagree

    e. Strongly Disagree

4. I am interested in what I am learning in school

    a. Strongly Agree

    b. Agree

    c. Neither Agree nor Disagree

    d. Disagree

    e. Strongly Disagree

5. I am praised for doing good work at school

    a. Strongly Agree

    b. Agree

    c. Neither Agree nor Disagree

    d. Disagree

    e. Strongly Disagree

Category C: Learning Environment

1. My teachers make sure I am safe at school

    a. Strongly Agree

    b. Agree

    c. Neither Agree nor Disagree

    d. Disagree

    e. Strongly Disagree

2. I feel like I belong at this school

    a. Strongly Agree

    b. Agree

    c. Neither agree nor disagree

    d. Disagree

    e. Strongly Disagree

3. I am involved in extracurricular activities such as athletics, band/chorus, theatre, and clubs

    a. Strongly Agree

    b. Agree

    c. Neither Agree nor Disagree

    d. Disagree

    e. Strongly Disagree

4. I feel that my school offers ways for students to get involved with the community

    a. Strongly Agree

    b. Agree

    c. Neither Agree nor Disagree

    d. Disagree

    e. Strongly Disagree

5. My classes are preparing me for the next grade or after graduation

    a. Strongly Agree

    b. Agree

    c. Neither Agree nor Disagree

    d. Disagree

    e. Strongly Disagree

Category D: General Satisfaction

1. I often work on assignments with others at this school

    a. Strongly Agree

    b. Agree

    c. Neither Agree nor Disagree

    d. Disagree

    e. Strongly Disagree

2. I attend school activities with friends

    a. Strongly Agree

    b. Agree

    c. Neither Agree nor Disagree

    d. Disagree

    e. Strongly Disagree

3. I work hard to do well on my assignments

    a. Strongly Agree

    b. Agree

    c. Neither Agree nor Disagree

    d. Disagree

    e. Strongly Disagree

4. I feel I am treated fairly by my teachers

    a.   Strongly Agree

    b. Agree

    c. Neither Agree nor Disagree

    d. Disagree

    e. Strongly Disagree

5. School staff knows me by name

    a.   Strongly Agree

    b. Agree

    c. Neither Agree nor Disagree

    d. Disagree

    e. Strongly Disagree

Category E: Personalized Learning

1. My teacher allows multiple chances for assessment

    a. Strongly Agree

    b. Agree

    c. Neither Agree nor Disagree

    d. Disagree

    e. Strongly Disagree

2. I move through my coursework at my own pace

    a. Strongly Agree

    b. Agree

    c. Neither Agree nor Disagree

     d. Disagree

     e. Strongly Disagree

3. I know what I need to do to show my teacher I am making progress on each skill

     a. Strongly Agree

     b. Agree

     c. Neither Agree nor Disagree

     d. Disagree

     e. Strongly Disagree

4. I am able to complete some of the course requirements online

     a. Strongly Agree

     b. Agree

     c. Neither Agree nor Disagree

     d. Disagree

     e. Strongly Disagree

5. My teachers work with students in small groups or independently

     a. Strongly Agree

     b. Agree

     c. Neither Agree nor Disagree

     d. Disagree

     e. Strongly Disagree

     After the instrument was finalized, it was created within *Qualtrics Research Suite* survey software. Qualtrics is web based software that allows for online mass distribution of academic

surveys. Qualtrics enables users to send an email with a link to the survey to email addresses of all participants. Furthermore, researchers are able to see how many surveys are completed, but answers to the survey cannot be linked to email addresses, so anonymity is guaranteed (Qualtrics LLC., 2017).

Data Collection Procedures

Before the instrument was delivered online via Qualtrics, the research study was approved by the Institutional Review Board (Appendix B). The researcher used Qualtrics to deliver the instrument to roughly 500 students at Blackhawk High School. The instrument was delivered 1st, 5th, and 7th hours during the participants Science class. Before participants began the survey, instructions were delivered on how to take the survey as well as the purpose of the survey.

The instrument for the study had a total of 47 questions. Of the 47 questions, seven items focused on student demographics, and 40 items related to the assessment of student engagement in classes at Blackhawk High School. For all of the questions that pertained to student engagement, a Likert scale (shown below) was utilized.

1- Strongly Disagree with the statement

2- Disagree with the statement

3-Neither Agree nor Disagree with the statement

4-Agree with the statement

5-Strongly Agree with the statement

After the survey was completed, a thank you email was sent to each participant. At the

completion of data collection, data was sent into SPSS to be analyzed, which is outlined in the

next section.

Data Analysis

Data was analyzed quantitatively using SPSS. SPSS software analyzed the percentage of

students that answered Strongly Agree, Agree, Neither Agree nor Disagree, Disagree, and

Strongly Disagree on each of the survey items in all categories of the survey instrument except

the Demographics category. The mean and standard deviation for each of the dependent variable

items (survey items 8-47) was determined to answer the impact of PCBE on student engagement.

This analysis addressed research question one: Does Personalized Competency-Based Education

have an impact on student engagement at the high school level?

Next, responses were categorized based upon ethnicity and grade level. The data was

further analyzed using Pearson Correlation to determine if there was a correlation between which

ethnicities and grade levels were impacted the most and least on student engagement by PCBE.

A correlation coefficient is a measure of how strongly two items are related to each other. The

values range from -1.0 to 1.0 and the closer the value is to 1.0, the stronger the relationship of the

two items. This analysis addressed research question number two: Does student engagement

vary according to grade levels (9-12) and ethnicity?

Since the Student Demographic Category did not use a Likert Scale, SPSS analyzed the

frequency of responses from each item in this section. The frequencies for the items in this

category of the survey instrument were enumerated by identifying the number of responses for

each answer option that could be selected and then computing the percentage of the frequency of each item response.

Summary

A quantitative approach was utilized in this study to gather and analyze data from a survey instrument that was modified from Las Cruces Public Schools Student Engagement Survey as well as the *Guide to the Competency-based Learning Survey for Students* developed in 2016 by Ryan and Cox (K12, 2012; Ryan & Cox, 2016). Approximately 500 students at Blackhawk High School participated in the online survey after which SPSS was used to collect and analyze data gathered from the survey instrument. Additionally, Pearson Correlation was used to determine the relationship between PCBE and student engagement. Furthermore, the frequencies of student demographics and levels of student engagement were also examined to determine the significance of PCBE on ethnicity and grade level.

CHAPTER IV

Results and Findings

This chapter will discuss the results and findings of the study by addressing the two research questions, "Does PCBE have an impact on student engagement at the high school level?" and "Does student engagement vary according to grade levels (9-12) and ethnicity?" Mean and standard deviation were used to determine how much of an impact PCBE has on student engagement; while Pearson correlation values, frequency, mean, and standard deviation were used to determine the relationship between PCBE and student engagement across grade levels 9-12 and various ethnicities. The following section will discuss the results that relate to the research question one: "Does PCBE have an impact on student engagement at the secondary level?"

Does PCBE Have an Impact on Student Engagement at the Secondary Level?

Demographics, Engagement, Learning Environment, General Satisfaction, and Personalized Learning were the five aspects that the student engagement survey was divided into. All five aspects represent the essential components of PCBE, and provide the basis of the results in this section. Furthermore, most of the ratings for the Engagement, Learning Environment, General Satisfaction, and Personalized Learning aspects of the survey in the four

range on the Likert Scale, which represented "Agree". Additionally, in aspects two through five (Engagement, Learning Environment, General Satisfaction, and Personal Learning) of the survey, ratings ranged from one "Strongly Disagree" to five "Strongly Agree."

Mean and standard deviation was used to analyze the impact of PCBE on students' engagement at the secondary level. Table 2 (shown below) reports the means and standard deviations of the Engagement, Learning Environment, General Satisfaction, and Personalized Learning aspects of PCBE.

Table 2

Mean and Standard Deviation of Aspects of Student Engagement in PCBE

Aspects of Student Engagement	Mean	Standard Deviation
Engagement Scale	3.89	1.02
Learning Environment	3.65	0.98
General Satisfaction	3.76	1.01
Personalized Learning	3.60	0.96

The following paragraph reveals the results of the participants' responses to the items in the Engagement aspect. There were seven items in the Engagement aspect of the student

engagement survey. In all seven items in this category, the majority of participants responded with "Agree" or "Strongly Agree."

Engagement

There were seven items in the Engagement aspect of the student engagement survey. In all seven items in this aspect, the majority of participants responded with "Agree" or "Strongly Agree." Statistical analysis of the Engagement aspect, overall, revealed a mean of 3.89 and a standard deviation of 1.022. Based on survey items in this aspect also reveal that "I have good friends at this school" (44.2%) and "I feel that my schoolwork is important"(30.2%) are the most influential factors in this aspect based upon the highest number of student responses of "Strongly Agree."   In addition, 54.6% of participants agreed that "My teachers believe that I can do well in school." The items in this aspect that had the highest number of responses in the "Strongly Disagree" column of the Likert Scale were "I am interested in what I am learning in school" (6.1%) and "I am praised for doing good work at this school" (6.1%). See Table 3 below for further descriptions.

Table 3

Percentage of Responses to Survey Items in Engagement Scale Aspect. (n=394)

Item/Scale	1	2	3	4	5
I have good friends at this school	4.1	2.8	7.9	43.7	44.2
I try to do my best in school every day	1.3	5.8	16.0	54.1	22.6
My teachers believe that I can do well in school	2.8	2.5	14.7	54.6	27.2
I feel that my school work is important	2.3	4.8	17.3	48.2	30.2
I am proud to go to this school	4.6	6.1	31.5	40.4	18.3
I am praised for doing good work at school	6.1	15.0	28.2	42.4	10.9
I am interested in what I am learning in school	6.1	12.7	43.5	39.1	11.2

Note: 1=Strongly Disagree; 2= Disagree; 3=Neither Agree nor Disagree; 4= Agree; 5=Strongly Agree

Learning Environment

There were eight items in the Learning Environment aspect of the student engagement survey. All eight items in this aspect, the majority of participants responded with "Agree" or "Strongly Agree." Statistical analysis of the Learning Environment section, overall, revealed a mean of 3.65 and a standard deviation of 0.983 (See Table 2 on page 38). Furthermore, the results of this aspect also reveal that "I am involved in extracurricular activities such as band, choir, theater, and clubs" (46.4%) as well as "The teachers make sure that I am safe in school" (19.8%) are the most influential factors in this aspect based upon participants responses. The items in this aspect that had the highest number of responses in the "Strongly Disagree" column of the Likert Scale were "I look forward to seeing what we do in class each day" (5.1%) and "I

am involved in extracurricular activities such as band, choir, theater, and clubs." (5.1%). See

Table 4 below for further descriptions.

Table 4

Percentage of Responses to Survey Items in Learning Environment Scale Aspect. (n=394)

Item/Scale	1	2	3	4	5
My teachers spend enough time with me to help me do well	3.8	12.4	25.4	49.9	11.7
I look forward to seeing what we do in class each day	5.1	16.0	40.6	28.9	8.6
The teachers make sure I am safe at school	2.5	4.8	25.4	47.0	19.8
My classes are preparing me for the next grade or after graduation	3.3	4.8	21.8	51.0	18.3
I feel like I belong at this school	3.3	9.1	28.4	45.4	12.7
I am involved in extracurricular activities such as athletics, band/chorus, theatre, clubs	5.1	12.7	6.6	28.4	46.4
I have pride in my school	3.8	6.9	25.9	46.7	16.0
I feel that my school offers ways for students to get involved with the community	2.5	6.6	19.3	51.3	19.3

Note: 1= Strongly Disagree; 2= Disagree; 3= Neither Agree nor Disagree; 4= Agree; 5= Strongly Agree

Only one survey item in this category had the highest percentage of responses in the three

range on the Likert Scale which states "Neither Agree nor Disagree" and that survey item " I

look forward to seeing what we do in class each day (40.6%). "Furthermore, it is essential to also

note that no statements in this aspect had the highest percentages in the one or two ranges of the

Likert Scale.   See Table 5 below for further descriptions.

General Satisfaction

There were 11 items in the General Satisfaction aspect of the survey. The results of the

survey indicate that in all eleven items in this aspect, the majority of participants responded

with "Agree" or "Strongly Agree." Statistical analysis of this section, overall, revealed a mean

of 3.76 and a standard deviation of 1.014 (See Table 2 on page 38). The results of this aspect

also reveal that "I want to graduate high school so that I can go to college" (56.1%) and "I go to

school so I can get a job" (28.9%) are the most influential factors in this category based upon

student responses. The items in this aspect that had the highest number of responses in the

"Strongly Disagree" column of the Likert Scale were "Other students treat me with respect and

kindness" (5.3%) followed by "School staff know me by name" (5.1%)." See Table 5 below.

Table 5

Percentage of Responses to General Satisfaction Scale Aspect. (n=394)

Item/Scale	1	2	3	4	5
Other students treat me with kindness and respect	5.3	10.9	27.2	47.0	7.4
I often work on assignments with others at school	4.3	7.6	15.0	54.3	15.7
The rules are mostly fair	4.1	9.9	21.1	51.5	10.7
I have a lot in common with other students at this school	4.3	9.6	21.1	51.0	11.4
I go to school so I can get a job	2.3	4.3	12.9	48.5	28.9
School staff know me by name	5.1	11.9	27.4	38.1	13.
I attend school activities with my friends	3.6	9.6	14.5	49.0	20.6
I want to graduate high school so I can go to college	1.8	1.5	7.6	30.5	56.1
I work hard to do well on my assignments	1.3	5.1	17.3	51.3	23.1
I feel I am treated fairly by my teachers	3.3	5.1	17.3	53.6	18.3

Note: 1= Strongly Disagree; 2= Disagree; 3= Neither Agree nor Disagree; 4= Agree; 5= Strongly Agree

Personalized Learning

There were 14 items in the Personalized Learning aspect of the student engagement survey. All fourteen items in this aspect, the majority of participants responded with "Agree" or "Strongly Agree."   Statistical analysis of the Personalized Learning section, overall, revealed a mean of 3.60 and a standard deviation of 0.960 (See Table 2 on page 38). The results of this aspect also reveal that "My teachers provide extra help if I need it" (20.6%) and "I am able to complete some of the course assignments online" (19.5%) are the most influential factors in this category based upon participants responses. The items in this aspect that had the highest number

of responses in the "Strongly Disagree" column of the Likert Scale were " My teachers teach the

material in several different ways in order to help students learn" (6.6%) and "My teachers give

me feedback on my work or meet with me to discuss my progress" (6.9%). See table 6 below for

the details of percentages of scores from items based on the Likert Scale).

Table 6

Percentage of Responses to Survey Items in Personalized Competency-Based Learning Section.
(n=394)

Item/Scale	1	2	3	4	5
My teacher allows multiple chances for assessment	3.6	6.6	19.0	50.8	16.2
I feel that my grades accurately reflect what I have learned	5.6	16.2	19.8	38.6	15.7
I move through my coursework at my own pace	2.3	9.6	20.3	47.0	16.
I feel as though the teacher allows me to have flexibility in my assignments and/or designs lessons based upon things I am interested in	5.6	13.5	24.1	39.1	13.7
I know what I need to do to show my teachers I am making progress on each skill	2.5	7.6	17.0	53.6	15.5
I must show my teacher that I have mastered each skill before I move on to the next one	2.8	13.7	21.8	44.9	12.9
My teachers let me know how each skill will be assessed or graded ahead of time	3.8	7.6	22.1	48.0	14.7
I am able to complete some of the course requirements online	3.3	5.1	17.3	51.8	19.5
I can earn credit for taking courses at a college (dual credit) or I am given credit for internship or job shadowing opportunities	4.8	8.9	31.7	37.8	12.4
My teachers work with students in small groups or independently	6.3	10.2	21.8	43.4	14.0
My teachers provide extra help if I need it	2.5	5.1	15.2	52.0	20.6
My teachers teach the material in several different ways in order to help students learn	6.6	11.4	22.8	42.9	12.2

My teachers give me feedback on my work or meet with me to discuss my progress	6.9	7.9	23.1	45.7	12.7
I am given multiple ways of showing mastery of a skill, project, case study, teacher evaluations, lab experiments	2.8	9.4	19.8	48.0	16.0

_____

Note: 1= Strongly Disagree; 2= Disagree; 3= Neither Agree nor Disagree; 4= Agree; 5= Strongly Agree

The Personalized Learning aspect of the student engagement survey was an additional

component that was used to reflect the personalized aspect of competency-based education.

Therefore, mean and standard deviation were calculated to find out the impact of PCBE on

student engagement. Table 7 displays the range of means and standard deviations for all of the

questions in this aspect.

Table 7

Mean and Standard Deviation of Personalized Learning Aspect of the Survey

(n= 394)

_____

Personalized Learning Items	Mean	Standard Deviation
1. My teachers allow multiple chances for assessment	3.83	1.19
2. I feel that my grades accurately reflect what I have learned	3.51	1.38
3. I move through my coursework at my own pace	3.87	1.28
4. I feel as though my teacher allows me to have flexibility in my assignment and/or designs lessons based upon things I am interested in	3.47	1.36
5. I know what I need to do to show my teacher I am making progress on each skill	3.80	1.09
6. I must show my teacher that I have mastered each skill before I can move on to the next	3.63	1.11

7. My teachers let me know how each skill will be assessed or graded ahead of time	3.73	0.99
8. I am able to complete some of the course assignments online	3.87	1.21
9. I can earn credit for taking courses at a college (dual credit) or I am given credit for job shadowing opportunities	3.47	1.50
10. My teachers work with students in small groups or independently	3.87	1.11
11. My teachers provide extra help if I need it	4.13	0.99
12. My teachers teach the material in several ways in order to help students learn	3.80	1.07
13. My teachers give me feedback on my work or meet to discuss my progress	3.80	1.05
14. I am given multiple ways of showing mastery of a skill (project, lab, case study, teacher eval.)	3.73	1.1

Student engagement is the connection students have to their school and individuals within the school. Each aspect of the survey: Engagement, General Satisfaction, Learning Environment, and Personalized Learning are all essential components of student engagement. Overall, the majority of student responses were in the four range of the Likert Scale, which means that "Agree" was the most frequent response to almost all of the questions in the survey. This indicates that there is a positive impact of PCBE on student engagement.

Does PCBE and Student Engagement Vary According Grade Levels (9-12) and Various

Ethnicities?

Pearson Correlation was used to analyze the data to determine if significant correlations

could be found between PCBE and student engagement according to grade level and ethnicities..

The results of the study indicated that there were some significant correlations between student

ethnicity and PCBE impact on student engagement. All of the correlation scores are reported in

Tables 8-12, found on pages 46- 55.   The first aspect that will be discussed is PCBE's impact

on student engagement across grade levels 9-12; followed by PCBE's impact on student

engagement across ethnicities (Hispanic/Latino, African American/Black, Asian, Native

Indian/Alaskan, Mixed Race, and Caucasian).

PCBE and Student Engagement Based on Grade Levels

This section of the results pertain to Pearson Correlation according to grade levels.

Pearson Correlation was used to analyze the data to determine if significant correlations could be

found between PCBE and student engagement across grade levels 9-12. The results of the study

indicated that there were some significant correlations between PCBE and grade levels. For

instance, a significant correlation was identified for 9th grade students (See Table 8 below) in the

categories of My teachers teach the materials in several different ways with My teachers provide

feedback on my work or meet with me to discuss my progress ($r = .70$, $p = .005$); as well as I am

given multiple ways of showing mastery of a skill with My teachers give me feedback on my

work or meet with me to discuss my progress ($r = .68$, $p = .005$). However, weak correlations

were discovered between the following items for 9th graders: My teacher allows multiple

chances for assessment X I am able to complete some of the course materials online (r =.00, p =

.005) ; as well as My teacher allows multiple chances for assessment with My teacher allows

multiple chances for assessment with My teachers give me feedback on my work or meet with

me to discuss my progress (r = .00, p = .005).

Grade Level 9

For instance, a significant correlation was identified for 9th grade students (See Table 8

below) in the categories of "My teachers teach the materials in several different ways" with "My

teachers provide feedback on my work or meet with me to discuss my progress" (r = .70, p =

.005); as well as "I am given multiple ways of showing mastery of a skill" with "My teachers

give me feedback on my work or meet with me to discuss my progress" (r = .68, p = .005).

However, weak correlations were discovered between the following items for 9th graders: "My

teacher allows multiple chances for assessment" with "I am able to complete some of the course

materials online" (r =.00, p = .005) ; as well as "My teacher allows multiple chances for

assessment" with "My teachers give me feedback on my work or meet with me to discuss my

progress" (r = .00, p = .005).

Table 8

Correlation Matrix PCBE and 9th Grade. (n=394)

Variables	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1. My teacher…assessment	1	.61	.15	.07	.08	.08	.06	.00	.06	.02	.10	.10	.00	.04
2. I feel…learned		1	.48	.49	.51	.56	.45	.51	.47	.41	.46	.55	.52	.46
3. I moved…own pace			1	.43	.42	.54	.46	.39	.45	.43	.36	.43	.52	.50
4. I feel….interested in				1	.47	.51	.51	.46	.46	.43	.46	.49	.47	.50
5. I know…each skill					1	.01	.49	.45	.49	.42	.34	.48	.63	.62
6. I must…next one						1	.57	.40	.41	.41	.43	.55	.53	.53
7. My teachers...of time							1	.49	.46	.45	.43	.55	.46	.55
8. I am… online								1	.43	.45	.53	.49	.48	.54
9. I can…opportunities									1	.41	.34	.36	.34	.41
10. My teachers…independently										1	.61	.66	.34	.59
11. My teachers…need it											1	.64	.62	.61
12. My teachers…students learn												1	.70	.68
13. My teachers …my progress													1	.68
14. I am …lab experiments														1

*p =0.005, two-tailed
Note.

1= My teacher allows multiple chances for assessment, 2= I feel that my grades accurately reflect what I have learned, 3=I move through my coursework at my own pace, 4=I feel as though the teacher allows me to have flexibility in my assignments and/or designs lessons based upon things I am interested in, 5=I know what I need to do to show my teachers I am making progress on each skill, 6=I must show my teacher that I have mastered each skill before I can move onto the next one, 7=My teachers let me know how each skill will be assessed or graded ahead of time, 8=I am able to complete some of the course requirements online, 9 =I can earn credit for taking courses at a college (dual credit) or I am given credit for internship or job shadowing opportunities, 10= My teachers work with students in small groups or independently,

11 =My teachers provide extra help if I need it, 12 =My teachers teach the material in several different ways in order to help students, 13 = My teachers give me feedback on my work or meet with me to discuss my progress, 14 =I am given multiple ways of shadowing mastery of a skill-project, case study, teacher evaluations, lab experiments

Grade Level 10. The same strong and weak correlations were also identified for 10th grade students (See Table 9 below) in the categories of My teachers teach the materials in several different ways with My teachers provide feedback on my work or meet with me to discuss my progress (r= .70, p = .005); as well as I am given multiple ways of showing mastery of a skill with My teachers give me feedback on my work or meet with me to discuss my progress (r = .68, p = .005). However, weak correlations were discovered between the following items for 10th graders: My teacher allows multiple chances for assessment with I am able to complete some of the course materials online (r =.00, p = .005) ; as well as My teacher allows multiple chances for assessment with My teacher allows multiple chances for assessment with My teachers give me feedback on my work or meet with me to discuss my progress (r = .00, p =.005).

Table 9
Correlation Matrix PCBE and 10th Grade. (n=394)

Variables	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1. My teacher…assessment	1	.61	.15	.07	.08	.08	.06	.00	.06	.02	.10	.10	.00	.04
2. I feel…learned		1	.48	.49	.51	.56	.45	.51	.47	.41	.46	.55	.52	.46
3. I moved…own pace			1	.43	.42	.54	.46	.39	.45	.43	.36	.43	.52	.50
4. I feel….interested in				1	.47	.51	.51	.46	.46	.43	.46	.49	.47	.50
5. I know…each skill					1	.01	.49	.45	.49	.42	.34	.48	.63	.62
6. I must…next one						1	.57	.40	.41	.41	.43	.55	.53	.53
7. My teachers...of time							1	.49	.46	.45	.43	.55	.46	.55

8. I am… online	1	.43	.45	.53	.49	.48	.54
9. I can…opportunities		1	.41	.34	.36	.34	.41
10. My teachers…independently			1	.61	.66	.34	.59
11. My teachers…need it				1	.64	.62	.61
12. My teachers…students learn					1	.70	.68
13. My teachers …my progress						1	.68
14. I am …lab experiments							1

*p =0.05, two-tailed

Note:

1= My teacher allows multiple chances for assessment, 2= I feel that my grades accurately reflect what I have learned, 3=I move through my coursework at my own pace, 4=I feel as though the teacher allows me to have flexibility in my assignments and/or designs lessons based upon things I am interested in, 5=I know what I need to do to show my teachers I am making progress on each skill, 6=I must show my teacher that I have mastered each skill before I can move onto the next one, 7=My teachers let me know how each skill will be assessed or graded ahead of time, 8=I am able to complete some, 9 =I can earn credit for taking courses at a college (dual credit) or I am given credit for internship or job shadowing opportunities, 10= My teachers work with students in small groups or independently, 11 =My teachers provide extra help if I need it, 12 =My teachers teach the material in several different ways in order to help students, 13 = My teachers give me feedback on my work or meet with me to discuss my progress, 14 =I am

given multiple ways of shadowing mastery of a skill- project, case study, teacher evaluations, lab experiments

Grade Level 11. In regards to 11th grade students, strong correlations were identified between the following categories (See Table 10 below): My teachers provide extra help if I need it with I am given multiple ways of showing mastery (r = .62, p = .005); as well as I know what I need to do to show my teachers I am making progress in each skill with My teachers give me feedback on my work or meet with me to discuss my progress (r = .63, p = .005). Furthermore,

a few areas of weakness between PCBE and 11th graders were also identified in the following

categories: My teacher allows multiple chances for assessment with I am able to complete some

of the course requirements online (r = .00, p = .005); as well as My teacher allows multiple

chances for assessment with My teachers give me feedback on my work or meet with me to

discuss my progress (r= .00, p = .005).

Table 10

Correlation Matrix PCBE and 11th Grade. (n=394)

Variables	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1. My teacher…assessment	1	.61	.15	.07	.08	.08	.06	.00	.06	.02	.10	.10	.00	.44
2. I feel…learned		1	.48	.49	.51	.56	.45	.51	.47	.41	.46	.55	.52	.46
3. I moved…own pace			1	.43	.42	.54	.46	.39	.45	.43	.36	.43	.52	.40
4. I feel….interested in				1	.50	.51	.51	.46	.46	.43	.46	.49	.57	.60
5. I know…each skill					1	.01	.49	.45	.49	.42	.34	.48	.63	.42
6. I must…next one						1	.57	.40	.41	.41	.43	.55	.53	.53
7. My teachers...of time							1	.49	.46	.47	.45	.55	.46	.59
8. I am… online								1	.43	.45	.53	.49	.48	.54
9. I can…opportunities									1	.41	.34	.36	.34	.41
10. My teachers…independently										1	.41	.36	.34	.59
11. My teachers…need it											1	.61	.60	.62
12. My teachers…students learn												1	.40	.48
13. My teachers …my progress													1	.41
14. I am …lab experiments														1

*p =0.005, two-tailed

Note: 1= My teacher allows multiple chances for assessment, 2= I feel that my grades accurately reflect what I have learned, 3=I move through my coursework at my own pace, 4=I feel as though the teacher allows me to have flexibility in my assignments and/or designs lessons based upon things I am interested in, 5=I know what I need to do to show my teachers I am making progress on each skill, 6=I must show my teacher that I have mastered each skill before I can move onto the next one, 7=My teachers let me know how each skill will be assessed or graded ahead of time, 8=I am able to complete some of the course requirements online, 9 =I can earn credit for taking courses at a college (dual credit) or I am given credit for internship or job shadowing opportunities, 10= My

teachers work with students in small groups or independently, 11 =My teachers provide extra help if I need it, 12 =My teachers teach the material in several different ways in order to help students, 13 = My teachers give me feedback on my work or meet with me to discuss my progress, 14 =I am given multiple ways of shadowing mastery of a skill- project, case study, teacher

Grade Level 12. In regards to 12th grade students, strong correlations were identified between the following categories: I am given multiple ways of showing mastery of a skill with My teachers let me know how each skill will be assessed or graded ahead of time($r = .55$, $p = .005$); as well as My teachers teach the material in several different ways in order to help students with I must show my teacher that I have mastered each skill before I can move on to the next one ($r = .55$, $p = .005$). Additionally, weaker correlations were identified in the following areas: My teachers give me feedback on my work or meet with me to discuss my progress with My teacher allows multiple chances for assessment ($r = -.01$, $p = .005$); as well as I am able to complete some of the requirements online with My teacher allows multiple chances for assessment ($r = .00$, $p = .005$).

Table 11

Correlation Matrix PCBE and 12th Grade. (n=394).

Variables	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1. My teacher…assessment	1	.51	.19	.07	.08	.08	.06	.00	.06	.03	.10	.10	-.01	.05
2. I feel…learned		1	.40	.41	.43	.46	.45	.41	.47	.42	.46	.44	.42	.46
3. I moved…own pace			1	.50	.50	.54	.51	.49	.49	.48	.46	.53	.52	.54
4. I feel….interested in				1	.47	.51	.51	.46	.46	.43	.46	.49	.47	.50
5. I know…each skill					1	.01	.49	.45	.49	.42	.34	.48	.43	.42
6. I must…next one						1	.74	.40	.41	.41	.43	.55	.43	.43
7. My teachers...of time							1	.49	.46	.45	.43	.55	.46	.55
8. I am… online								1	.43	.45	.53	.49	.48	.54
9. I can…opportunities									1	.41	.34	.36	.34	.41
10. My teachers…independently										1	.41	.46	.43	.49
11. My teachers…need it											1	.54	.52	.51
12. My teachers…students learn												1	.40	.48
13. My teachers …my progress													1	.48
14. I am …lab experiments														1

*p =0.005, two-tailed

Note.

1= My teacher allows multiple chances for assessment, 2= I feel that my grades accurately reflect what I have learned, 3=I move through my coursework at my own pace, 4=I feel as though the teacher allows me to have flexibility in my assignments and/or designs lessons based upon things I am interested in, 5=I know what I need to do to show my teachers I am making progress on each skill, 6=I must show my teacher that I have mastered each skill before I can move onto the next one, 7=My teachers let me know how each skill will be assessed or graded ahead of time, 8=I am able to complete some of the course requirements online, 9 =I can earn credit for taking courses at a college (dual credit) or I am given credit for internship or job shadowing opportunities, 10= My teachers work with students in small groups or independently, 11 =My teachers provide extra help if I need it, 12 =My teachers teach the material in several different ways in order to help students, 13 = My teachers give me feedback on my work or meet with me to discuss my progress, 14 =I am given multiple ways of shadowing mastery of a skill-project, case study, teacher evaluations

Overall, grade levels nine and ten had stronger correlations with PCBE than grades eleven and twelve. This is evident as grade levels nine and ten had several significant values over .60, while grades eleven and twelve did not. While grades eleven and twelve had several significant correlations between PCBE and grade levels, respectively, both grade levels showed a weak correlation between "My teacher allows multiple chances for assessment" and "My teachers give me feedback on my work or meet with me to discuss my progress.

The following section describes the results of PCBE's impact on student engagement across various ethnicities. Pearson Correlation values were identified for the following ethnic groups at Blackhawks High School (with the exception of Native Alaskan/Indian): Hispanic/Latino, African American/Black, Asian, White/Caucasian, Native Alaska/Indian, and Two Ethnicities or More.

Hispanic/Latino

For the Hispanic/Latino ethnic group, the most significant correlations were found between the following items: "My teachers teach the material in several different ways in order to help students" with "My teachers give me feedback on my work or meet with me to discuss my progress" (r = .70, p = 0.005. Another significant correlation for the Hispanic/Latino ethnic group was "I am given multiple ways of showing mastery of a skill" with "My teachers teach the material in several different ways in order to help students" (r= .68, p = .0005).

Table 12

Pearson Correlation Matrix PCBE and Ethnicity--Hispanic/Latino. (n=78)

Variables	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1. My teacher…assessment	1	.43	.42	.54	.46	.39	.45	.43	.30	.47	.52	.43	.48	.50
2. I feel…learned		1	.47	.51	.51	.46	.46	.41	.32	.43	.46	.49	.47	.50
3. I moved…own pace			1	.61	.49	.45	.49	.42	.34	.48	.45	.52	.48	.51
4. I feel….interested in				1	.63	.55	.60	.46	.41	.64	.55	.65	.65	.62
5. I know…each skill					1	.62	.63	.48	.42	.54	.58	.64	.58	.62
6. I must…next one						1	.57	.40	.41	.41	.43	.55	.46	.53
7. My teachers...of time							1	.49	.46	.45	.43	.53	.48	.55
8. I am… online								1	.43	.45	.53	.49	.46	.54
9. I can…opportunities									1	.43	.45	.53	.49	.41
10. My teachers…independently										1	.61	.66	.62	.59
11. My teachers…need it											1	.64	.62	.61
12. My teachers…students learn												1	.70	.68
13. My teachers …my progress													1	.64
14. I am …lab experiments														1

*p= .005, two tailed

Note: 1= My teacher allows multiple chances for assessment, 2= I feel that my grades accurately reflect what I have learned, 3=I move through my coursework at my own pace, 4=I feel as though the teacher allows me to have flexibility in my assignments and/or designs lessons based upon things I am interested in, 5=I know what I need to do to show my teachers I am making progress on each skill, 6=I must show my teacher that I have mastered each skill before I can move onto the next one, 7=My teachers let me know how each skill will be assessed or graded ahead of time,8=I am able to complete some of the course requirements online, 9 =I can earn credit for taking courses
at a college (dual credit) or I am given credit for internship or job shadowing opportunities, 10=My teachers work with students in small groups or independently, 11 =My teachers provide extra help if I need it,12 =My teachers teach the material in several different ways in order to

help students, 13 = My teachers give me feedback on my work or meet with me to discuss my progress, 14 =I am given multiple ways of shadowing mastery of a skill- project, case study, teacher evaluations, lab experiments.

African American/Black. Results of the Pearson correlation for the African American/Black ethnic group identify a significant correlation between "My teachers teach the material in several different ways in order to help students" with "My teachers give me feedback on my work or meet with me to discuss my progress" ($r= .59$, $p = .005$). Another significant correlation for this ethnic group is "My teachers teach the material in several different ways in order to help students" with "I am given multiple ways of showing mastery of a skill" ($r= .58$, $p = .005$). See Table 13 below.

Table 13

Correlation Matrix PCBE and Ethnicities – African American Ethnicity. (n=16)

Variables	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1. My teacher…assessment	1	.33	.21	.40	.39	.29	.35	.31	.20	.37	.41	.35	.31	.40
2. I feel…learned		1	.35	.41	.39	.41	.38	.31	.31	.38	.39	.39	.37	.42
3. I moved…own pace			1	.51	.39	.41	.38	.33	.31	.38	.35	.43	.35	.41
4. I feel….interested in				1	.43	.32	.50	.35	.31	.54	.51	.55	.55	.52
5. I know…each skill					1	.52	.53	.41	.35	.38	.38	.51	.49	.61
6. I must…next one						1	.41	.40	.39	.39	.41	.44	.41	.43
7. My teachers...of time							1	.41	.41	.39	.38	.41	.38	.41
8. I am… online								1	.30	.31	.31	.32	.34	.34
9. I can…opportunities									1	.33	.35	.33	.39	.31

10. My teachers…independently	1	.59	.56	.51	.49
11. My teachers…need it		1	.51	.51	.52
12. My teachers…students learn			1	.59	.58
13. My teachers …my progress				1	.54
14. I am …lab experiments					1

*p =0.005, two-tailed

Note: 1= My teacher allows multiple chances for assessment, 2= I feel that my grades accurately reflect what I have learned, 3=I move through my coursework at my own pace, 4=I feel as though the teacher allows me to have flexibility in my assignments and/or designs lessons based upon things I am interested in, 5=I know what I need to do to show my teachers I am making progress on each skill, 6=I must show my teacher that I have mastered each skill before I can move onto the next one, 7=My teachers let me know how each skill will be assessed or graded ahead of time, 8=I am able to complete some, 9 =I can earn credit for taking courses at a college (dual credit) or I am given credit for internship or job shadowing opportunities, 10= My teachers work with students in

small groups or independently, 11 =My teachers provide extra help if I need it, 12 =My teachers teach the material in several different ways in order to help students, 13 = My teachers give me feedback on my work or meet with me to discuss my progress, 14 =I am given multiple ways of shadowing mastery of a skill- project, case study, teacher evaluations, lab experiments

Asian. Furthermore, results of the Pearson Correlation for the Asian ethnic group identify a few significant correlations for this ethnic group. The first significant correlation is "I feel my grades accurately reflect what I have learned" with "I must show my teacher that I have mastered each skill before I can move onto the next one" (r =.76, p = .005).   Another significant correlation shown for this ethnic group is "My teachers teach the materials in several different ways in order to help students" with "I am given multiple ways of showing mastery of a skill" (r = .69, p = .005). These results are reported in Table 14 below.

Table 14

Correlation Matrix PCBE and Asian Ethnicity. (n=12)

Variables	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1. My teacher…assessment	1	.46	.44	.54	.46	.39	.45	.43	.40	.47	.52	.44	.49	.50
2. I feel…learned		1	.48	.51	.51	.76	.51	.42	.45	.43	.44	.48	.47	.55
3. I moved…own pace			1	.65	.51	.49	.45	.44	.41	.45	.45	.51	.48	.51
4. I feel….interested in				1	.61	.54	.55	.56	.55	.54	.51	.61	.64	.63
5. I know…each skill					1	.67	.65	.49	.45	.55	.58	.64	.58	.63
6. I must…next one						1	.49	.42	.41	.43	.43	.50	.45	.55
7. My teachers...of time							1	.48	.47	.48	.41	.51	.42	.51
8. I am… online								1	.48	.45	.51	.49	.44	.59
9. I can…opportunities									1	.49	.41	.50	.42	.45
10. My teachers…independently										1	.62	.65	.59	.61
11. My teachers…need it											1	.59	.59	.62
12. My teachers…students learn												1	.69	.69
13. My teachers …my progress													1	.61
14. I am …lab experiments														1

*p =0.005, two-tailed

Note: 1= My teacher allows multiple chances for assessment, 2= I feel that my grades accurately reflect what I have learned, 3=I move through my coursework at my own pace, 4=I feel as though the teacher allows me to have flexibility in my assignments and/or designs lessons based upon things I am interested in, 5=I know what I need to do to show my teachers I am making progress on each skill, 6=I must show my teacher that I have mastered each skill before I can move onto the next one, 7=My teachers let me know how each skill will be assessed or graded ahead of time, 8=I am able to complete some of the course requirements online, 9 =I can earn credit for taking courses at a college (dual credit) or I am given credit for internship or job shadowing opportunities, 10= My teachers work with students in small groups or independently, 11 =My teachers provide extra help if I need it, 12 =My teachers teach the material in several different ways in order to help students, 13 = My teachers give me feedback on my work or meet

with me to discuss my progress, 14 =I am given multiple ways of shadowing mastery of a skill-project, case study, teacher evaluation.

Native Indian/Alaskan. The survey results in the demographic section showed there were no descents of the Native Indian/Alaska ethnic group that participated in the study. Therefore, no data was analyzed for this ethnic group, including Pearson Correlation values.

Two or More Ethnicities. However, results of the Pearson Correlation for the Two or More Ethnicities ethnic group did identify a few significant correlations for this ethnic group (See Table 12 below). The two strongest correlations were "My teachers work in small groups or independently" with "My teachers teach the material in several different ways in order to help students (r = .65, p = .005); as well as "My teachers give me feedback on my work or meet with me to discuss my progress' with 'I feel as though the teacher allows me to have flexibility in my assignments and/or designs lessons based upon things I am interested in' (r = .63, p = .005). See Table 15 below.

Table 15
Correlation Matrix PCBE and Mixed Race Ethnicities. (n= 32)

Variables	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1. My teacher…assessment	1	.41	.40	.50	.45	.37	.41	.40	.30	.46	.50	.40	.45	.51
2. I feel…learned		1	.47	.51	.51	.46	.46	.41	.32	.43	.46	.49	.47	.52
3. I moved…own pace			1	.51	.42	.40	.49	.41	.42	.34	.48	.45	.52	.48
4. I feel….interested in				1	.61	.50	.50	.42	.41	.61	.50	.61	.63	.50
5. I know…each skill					1	.59	.41	.42	.38	.50	.50	.54	.51	.52
6. I must…next one						1	.47	.42	.41	.41	.40	.51	.42	.50
7. My teachers...of time							1	.44	.46	.46	.41	.50	.40	.51
8. I am… online								1	.44	.41	.50	.50	.44	.55

9. I can…opportunities	1	.44	.44	.50	.44	.41
10. My teachers…independently		1	.51	.65	.60	.59
11. My teachers…need it			1	.60	.61	.61
12. My teachers…students learn				1	.59	.58
13. My teachers …my progress					1	.61
14. I am …lab experiments						1

*p =0.005, two-tailed

Note: 1= My teacher allows multiple chances for assessment, 2= I feel that my grades accurately reflect what I have learned, 3=I move through my coursework at my own pace, 4=I feel as though the teacher allows me to have flexibility in my assignments and/or designs lessons based upon things I am interested in, 5=I know what I need to do to show my teachers I am making progress on each skill, 6=I must show my teacher that I have mastered each skill before I can move onto the next one, 7=My teachers let me know how each skill will be assessed or graded ahead of time, 8=I am able to complete some of the course requirements online, 9 =I can earn credit for
taking courses at a college (dual credit) or I am given credit for internship or job shadowing opportunities, 10= My teachers work with students in small groups or independently, 11 =My teachers provide extra help if I need it, 12 =My teachers teach the material in several different ways in order to help students, 13 = My teachers give me feedback on my work or meet with me to discuss my progress, 14 =I am given multiple ways of shadowing mastery of a skill- project, case study, teacher

White/Caucasian. In the ethnic group White/Caucasian, several significant correlations were also identified. Two of the strongest correlations within this ethnic group were: "My teachers teach the material in several different ways in order to help students" with "My teachers give me feedback on my work or meet with me to discuss my progress" (r = .70, *p* = .005); and "I am given multiple ways of showing mastery of a skill" with "My teachers teach the material in several different ways in order to help students" (r = .68, *p* = .005). Additional results from this ethnic group can be viewed in Table 16 below.

Table 16

Correlation Matrix PCBE and White Caucasian Ethnicity

Variables	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1. My teacher…assessment	1	.43	.42	.54	.46	.39	.45	.43	.30	.47	.52	.43	.48	.50
2. I feel…learned		1	.47	.51	.51	.46	.46	.41	.32	.43	.46	.49	.47	.50
3. I moved…own pace			1	.61	.49	.45	.49	.42	.34	.48	.45	.52	.48	.51
4. I feel….interested in				1	.63	.55	.60	.46	.41	.64	.55	.65	.65	.62
5. I know…each skill					1	.62	.63	.48	.42	.54	.58	.64	.58	.62
6. I must…next one						1	.57	.40	.41	.41	.43	.55	.46	.53
7. My teachers...of time							1	.49	.46	.45	.43	.53	.48	.55
8. I am… online								1	.43	.45	.53	.49	.46	.54
9. I can…opportunities									1	.43	.45	.53	.49	.41
10. My teachers…independently										1	.61	.66	.62	.59
11. My teachers…need it											1	.64	.62	.61
12. My teachers…students learn												1	.70	.68
13. My teachers …my progress													1	.64
14. I am …lab experiments														1

*p =0.005, two-tailed

Note: 1= My teacher allows multiple chances for assessment, 2= I feel that my grades accurately reflect what I have learned, 3=I move through my coursework at my own pace, 4=I feel as though the teacher allows me to have flexibility in my assignments and/or designs lessons based upon things I am interested in, 5=I know what I need to do to show my teachers I am making progress on each skill, 6=I must show my teacher that I have mastered each skill before I can move onto the next one, 7=My teachers let me know how each skill will be assessed or graded ahead of time, 8=I am able to complete some of the course requirements online, 9 =I can earn credit for taking courses at a college (dual credit) or I am given credit for internship or job shadowing opportunities, 10= My teachers work with students in small groups or independently, 11 =My teachers provide extra help if I need it, 12 =My teachers teach the material in several different ways in order to help students, 13 = My teachers give me feedback on my work or meet

Participant's Demographic

In order to obtain a better understanding of the student population of the participants at Blackhawk high school, Table 17 below illustrates how many students from each grade level and ethnicity participated in the survey and since the student demographic section of the survey was not based upon a Likert Scale, the numbers are represented in frequency and percentages. Table 18, also below, breaks down the student demographics section further by illustrating the number and percentage of ethnicity according to grade level.

Table 17

Demographic Variables: Frequency and Percentage of Grade Level, Gender, and Ethnicity of the Sample (n=394)

Grade Level	Frequency	Percentage
9th	139	35.3
10th	122	31.0
11th	73	18.5
12th	59	15.0
Gender		
Male	134	43.0
Female	294	63.7
Prefer not to say	8	2.0
Ethnicity		
White/Caucasian	255	64.7
Latino/Hispanic	78	19.8
Black/ African American	16	4.1
Asian	12	3.0
Identify with more than one ethnicity	32	8.1

Table 18

Number and Percentage of Ethnicity According to Grade Level. (n=394)

	Ethnicity						
Grade Level	**W/C**	**B/Af Am**	**L/H**	**Aa**	**NI/As**	**More than**	**Total**
9th	94	7	23	4	0	11	139
	(67.63)	(5.04)	(16.55)	(2.88)	(0)	(7.91)	
10th	80	4	23	4	0	9	120
	(66.67)	(3.33)	(19.17)	(3.33)	(0)	(7.50)	
11th	44	3	17	3	0	5	72
	(61.11)	(4.17)	(23.61)	(4.17)	(0)	(6.94)	
12th	34	2	15	1	0	6	58
	(58.62)	(3.45)	(25.86)	(1.72)	(0)	(10.34)	
Total 4	252	16	78	12	0	31	389

Note: W/C= White Caucasian, B/Af Am= Black/African American, L/H= Latino/Hispanic, Aa= Asian American, NI/As = Native/Alaska, More than= Identify with more than one ethnicity

Summary

The results from the mean and the standard deviation of the survey scores show that overall, PCBE illustrates a significant impact on student engagement, especially in the category of Personalized Learning. Furthermore, while PCBE shows numerous strong correlations between ethnicity and grade level, some discrepancies are noticeable. For instance, grade levels nine and ten show stronger correlations in many areas than eleventh and twelfth grades.

Additionally, while White/Caucasian, Asian American, and Hispanic ethnicities illustrate numerous strong correlations with PCBE, Mixed Race and African American students demonstrate values that show weaker correlations to PCBE (values are still significant, but lower than other ethnicities). It is also important to note that data for Native American/Alaskan Indian were unavailable. The results of this study will be further discussed along with the study implications for the education profession in the following section.

CHAPTER V

Discussion and Conclusion

While competency-based education programs have existed for over fifty years, they have garnered new interest as school districts look for innovative and progressive ways to address current educational challenges with traditional platforms of education. Furthermore, while a multitude of studies has been conducted on the effects of competency-based education at the elementary level; current research on the effects of competency-based education at the secondary level is lagging. Therefore, this study sought to answer if PCBE has an impact on student engagement at the secondary levels and if PCBE's impact on student engagement varies according to grade level or ethnicity. This section will discuss, in detail, the findings of the study as well as limitations, implications, and areas for future studies.

Discussion

According to Kane and Staiger (2012) student reports about classroom experiences are a reliable source for information about instructional practices. Furthermore, information gathered from student reports can be useful tools to seek and understand information about implementation of PCBE and refined instruction. Data from student perception surveys can also be used to provide feedback for improvement of learning and instruction as well as making data-based decisions. For example, student reports of low exposure can help guide teachers to more consistent practices and implementation. Furthermore, data garnered from student perception surveys can be used as opportunities for school staff to reflect on current practices as well as areas for improvement or disconnect between teacher beliefs and student beliefs.

Does PCBE Have an impact on Student Engagement?

The first research question sought to find a correlation between PCBE and student engagement. Overall, the results of the study indicate that PCBE has a significant impact on student engagement in all five PCBE categories of the survey (Demographics, General Satisfaction, Engagement, Learning Environment, and Personalized Learning). Furthermore, the results of the student engagement survey reveal practices teachers are doing the most as well as a few areas that need better implementation or a further look into student beliefs.

Practices That Teachers Are Doing Well

Overall, the results of the student engagement survey show that teachers are doing a competent job of implementing all components of PCBE. The areas that teachers are currently excelling at, based upon the high percentage of student responses being reported as "Strongly Agree" or "Agree" is broken down by survey category. Under the "Engagement" section of the student survey, 78% of students responded with "Strongly Agree" or "Agree" to the following items: "I have good friends at this school", "I feel that my schoolwork is important", " I try to do my best in school every day", and "My teachers believe that I can do well in school".

In the "Learning Environment" category of the student engagement survey, 67% or more of students reported as "Strongly Agree" or "Agree" to the following items: "I am involved in extracurricular activities…", My classes are preparing me for the next grade or after graduation", "The teachers make sure I am safe at school", and "I feel that my school offers ways for students to get involved in the community".

In the "General Satisfaction" category of the student engagement survey, 74% or more of students reported as "Strongly Agree" or "Agree" that teachers are doing a proficient job at following student items: "I am treated fairly by my teachers", "I work hard to do well on all my assignments", and "I go to school so I can get a job" as well as "I want to graduate high school so I can go to college".

As far as the "Personalized Learning" category of the survey, teachers are doing a great job of personalized learning in several areas as students reported "Strongly Agree" or "Agree" to the following items in this category: "I know what I need to do to show my teachers I am making progress on each skill", "I am able to complete some of the course assignments online", and "My teachers provide extra help if I need it".

The percentages reflected for each of these categories of the student survey are extremely significant, especially since the personalized learning components of PCBE have only been implemented for three months (Sept.-Nov.) at the time of the survey. In regards to the first three categories of the survey, the overwhelming student response is that students' basic needs are being met, as a large majority of the student population that participated in the survey report that they feel safe at school, they are treated fairly, they are involved in the community, and they feel that they are being adequately prepared for life after high school.

Practices That Need Further Research

The top five areas that students responded with "Strongly Disagree" in the survey were also broken down by categories based upon the student engagement survey. It should be noted that all of these areas reported less than 7% of the student responses in the "Strongly Disagree" category of the Likert Scale. Under the "Engagement" category of the survey, "I am praised for

doing good work at this school" and "I am interested in what I am learning at school" were highest amongst the 7% of the participants that rated these items as "Strongly Agree."

The other three items that 7% or less of participants responded with "Strongly Disagree" fell under the "Personalized Learning" category and included the following items: "My teachers work with small groups or independently," "My teachers teach the material in several different ways in order to help students learn," and "My teachers give me feedback on my work or meet with me to discuss my progress." Therefore, teachers can note that this is an area for improvement and possibly future professional development opportunities.

Does PCBE Have an Impact Across Grade Levels (9-12)

Based upon the results of the student engagement survey, in the area of PCBE and grade levels (9-12), there are significant correlations the show numerous similarities between grade levels and areas of strong and weak correlations. For instance, across all grade levels 9-12, under the "Engagement" category of the survey, strong correlations (79% or higher of students responding "Strongly Agree" or "Agree") were identified in the following areas: "I have good friends at this school," "I try to do my best in school every day," "My teachers believe I can do well in school," and "I feel that my schoolwork is important."

Under the "Learning Environment" category of the survey, strong correlations (67% or higher of students responding "Strongly Agree" or "Agree") were identified in the following areas: "The teachers make sure I am safe at school," My classes are preparing me for the next grade or graduation," "I am involved in extracurricular activities…," and "I feel that my school offers ways for students to get involved in the community."

Under the "General Satisfaction" category of the survey,   strong correlations (72% or higher of students responding "Strongly Agree" or "Agree") were identified in the following areas: "I often work on assignments with others at school," "I go to school so I can get a job," "I want to graduate high school so I can go to college," I work hard to do well on all my assignments," and "I feel I am treated fairly by my teachers."

Under the "Personalized Learning" category of the survey, strong correlations (70% or higher of students responding "Strongly Agree" or "Agree") were identified in the following areas: "My teacher allows multiple chances for assessment," I know what I need to do to show I am making progress on each skill," I am able to complete some of the course assignments online," and "My teachers provide extra help if I need it."

While all of these items are areas that teachers are doing a commendable job, especially for implementing these practices for a brief time, there are eleven other parts to personalization that were not consistent across all grade levels. Furthermore, three items from the survey that resulted in a weak correlation (19%-43% of student responses of "Strongly disagree" or Disagree") across all grade levels were: "I feel as though the teacher allows me to have flexibility in my assignments and/or designs lessons based upon things I am interested in," "I feel that my grades accurately reflect what I have learned," and "I can earn credit for taking courses at a college (dual credit) or I am given credit for job shadowing opportunities."

Even though some of these items have not been in practice long or are being put into practice the next school year, these are still items that should be discussed by content teams and building level PLC teams in order to seek improvement. For example, teachers can create

Independent Studies which involve job shadowing or community service opportunities that students can also receive credit for.

Does PCBE have an Impact on Student Engagement Across All Ethnicities?

The second research question of the study also sought to find out if PCBE's impact on student engagement was the same across all ethnicities. Based upon the results of the student engagement survey, in the area of PCBE and ethnicities, there are significant correlations that show numerous similarities between various ethnic groups and areas of strong and weak correlations. For instance, in the "Engagement" category, 79% or higher of student responses of "Strongly Agree" or "Agree" occurred in the following items: "I have good friends at this school," "My teachers believe that I can do well in school," and "I am proud to go to this school."

In the "Learning Environment" category of the survey, 70% or higher of student responses of "Strongly Agree" or "Agree" occurred in the following items: "My classes are preparing me for the next grade or after graduation," "I am involved in extracurricular activities…", and "I feel that my school offers ways for students to get involved in the community."

In the "General Satisfaction" category of the survey, 76% or higher of student responses of "Strongly Agree" or "Agree" occurred in the following items: "I go to school so I can get a job," "I want to graduate high school so I can go to college," and I work hard to do well on all of my assignments."

Last, in the "Personalized Learning" category of the survey, 70% or higher of student responses of "Strongly Agree" or "Agree" occurred in the following items: "My teacher allows multiple chances for assessment," "I know what I need to do to show my teachers I am making progress on each skill," "I am able to complete some of the course requirements online," and "My teachers provide extra help if I need it."

The items of the "Personalized Learning" category of PCBE are all areas that teachers at Blackhawk High School are doing well across all ethnic groups. This is especially positive, as most teachers at Blackhawk High School had only three months (September-November) of experience in personalizing lessons.

However, a few other trends were identified across various ethnicities. For example, the following items were identified as having weak correlations (21% of student responses reported as "Strongly Disagree" or "Disagree" across all ethnicities (except Native Indian/Alaskan): "I feel my grades accurately reflect what I have learned," "I am praised for doing good work by my teachers," and "I look forward to seeing what we do in class each day." The last two items that were identified as having a weak correlation across ethnicities is concerning. Students should be praised for doing good work in class, as that is a basic element of good teaching practices. Furthermore, if students do not look forward to class each day, this will have a significant negative impact on student engagement in the classroom. Further research should be conducted in this area to figure out what the causes of the student beliefs are in this area.

Additionally, another concern that this area of the study reflects is the large number of students reporting that they do not feel their grades accurately reflect what they have learned.

However, next year will mark the first year of every teacher using competency-based grading, Career Pathways and new programs for dual credit and job shadowing for credit, so these items are predicted to have a stronger correlation in years to come. In fact, it would be beneficial to send out this survey again in the Spring of 2020, after students have some experience in classes that relate directly to the career pathway they chose. For instance, if a student chose the Health occupations pathway, will they rate personalized learning items at a higher level since many of their classes are suited to that particular area of study?

Implications for Practice

Regardless of student demographics, it is important for teachers to take the time to learn about student interests, cultures, beliefs, and home lives. It is vitally important that all teachers believe all students can achieve, regardless of the challenges, backgrounds, disabilities and other obstacles they might bring to class each day. By promoting personalization and competency-based education in classrooms, students will feel empowered to take ownership of their learning and know that whatever pathway they choose to master a skill or towards a career goal, teachers will be facilitators to guide them along their differentiated paths and towards school and life success.

While the findings of this study demonstrate that teachers at Blackhawk High School are creating engaging, personalized competency-based environments in their classrooms, which has positively impacted the learning process across grade levels and ethnicities, there is still room for improvement. If a teacher is not implementing PCBE in their classroom, it is possible that some professional development opportunities are required for that teacher to take the next step. While

personalizing lesson plans takes time and effort, it is the responsibility of schools to provide

students with cultural and global awareness to produce socially responsible citizens.

Implications for Further Research

While this survey is a good starting point for schools that are in the beginning phases of

PCBE implementation, further research should be conducted after the statistical analysis of the

results to gather further information. For instance, to get a complete picture of what is

developing in a school, student and teacher interviews could be conducted. For instance, if a

student reported little exposure to personalization, the researcher could conduct an interview to

delve into that student's beliefs about elements of the teachers' approach. It is possible that

some of the vocabularies on the survey was confusing and led to an invalid response. It would

be beneficial to have an ESL teacher in the room when the survey was being conducted in order

to clarify items on the survey.

While student perspectives about classroom experiences are a reliable source for

gathering data on instructional practices, surveys should be repeated and results compiled to get

a better overall sense of student exposure to policies and practices. Implementation of PCBE is

not something that can be pushed out rapidly, it takes several transitional phases and changes in

foundational beliefs for it to be implemented correctly. But, once the transition is successfully

made, schools will see a significant positive impact on student engagement in their classrooms.

Limitations of the Study

There are two limitations to this study. The primary limitation of this study will be the

sample of the study. Since personalized competency-based education is in the beginning stages

of implementation in this school, this study will be limited to students who have only been

exposed to a PCBE program for roughly three months (September-November). Therefore, data

analyzed from this study will represent a population of students that were exposed to the

essential elements of a PCBE program for only a brief period of time.

Second, the sample population will consist only of students from Blackhawk High School

and the survey will only be given to students actively taking a science class 1st, 5th, and 7^{t}hours

of a particular day in the Fall of 2018.   Furthermore, since Blackhawk High School is a public

suburban school, this study will not yield any results from a private school setting. Therefore,

the findings of this study may not be comprehensively representative of all secondary education

teachers.

Conclusion

Since student perception surveys are highly reliable in capturing student beliefs about a

particular subject, the engagement survey that was used in this study can be used by other school

districts to gather data to measure PCBE implementation and student outcomes. Without reliable

data from surveys such as this one, we would not be able to validate elements of PCBE to

student engagement; however, results from this study suggest that the student engagement survey

used in this research offers a reliable way to measure the impact of PCBE on student

engagement.   Furthermore, results from this survey can be used by school staff to provide

effective feedback on teacher practices that are currently creating increased engagement

opportunities, as well as practices that need some refinement.

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Appendix A

Survey Instrument

The Student Engagement Survey for Students

This survey is designed to be administered to students attending 9th-12th grade in which competency-based learning is being implemented, and was modified from the Student Engagement Survey created by Las Cruces Public Schools (K12 Insight, 2012). This survey collects information from key elements of personalized learning and student engagement such as; measuring the level of engagement among students, identifying which groups of students are not engaged; and identifying areas to help improve engagement. Other areas of information collected from this survey include how a students' learning environment impacts the degree of engagement, which type of classroom activities are most engaging to students, career and education goals, relationships with adults at the school, and beliefs about extracurricular activities. Results and analysis from this survey will help schools find areas of strength as well as any weaknesses. Educators and administrators can also use the results to reflect on current teaching practices, modify current lessons, and identify students that are still slipping through the gaps.

Table 1. Survey Construct

_____

Description	Items	Scoring
Demographics: Grade Level, Ethnicity, Gender, Expected level of education, G.P.A.	7 Questions	Close-Ended Questions
Engagement Scale: Measures each students' level of engagement	7 Questions	Average Score of 8 items Not Engaged= <3.5 Engaged= 3.5-4.5 Highly Engaged= 4.5-5.0
Learning Environment: Assess safety, peer support, extracurricular activities, connection to adults, and a sense of belonging	8 questions	Average Score of 8 items Not Engaged= <3.5 Engaged= 3.5-4.5 Highly Engaged= 4.5-5.0
General Satisfaction: Assesses feelings about school experiences, school rules, and dropping out of school .	11 Questions	Average Score of 8 items Not Engaged= <3.5 Engaged= 3.5-4.5 Highly Engaged= 4.5-5.0

Personalized Learning: Exposure to multiple options for assessment and course credit well as personalized instruction and learning opportunities	14 Questions	Average Score of 8 items Not Engaged= <3.5 Engaged= 3.5-4.5 Highly Engaged= 4.5-5.0

How to Administer the Survey

This survey is meant to be administered online but can be given via pencil and paper. The survey should take students 15-20 minutes to complete if all five content areas are administered.

How the Survey was Adapted

The original survey included three categories: Engagement Scale, Learning Environment, and General Satisfaction. The Engagement scale was only slight modified from the original survey by the deletion of a question about student safety. The Learning Environment Section was also modified, as some questions were moved to the personalized learning section so that this section focused on sense of belonging, safety, and extracurricular activities. In addition, two questions were added—one question focused on school pride and the other focused on community involvement. In the third category, General Satisfaction, three questions that dealt with school rules and extracurricular activities were omitted, as they were addressed in the previous category. In addition, a question was added about student perception on being treated fairly by teachers. The fourth category, Personalized Competency-Based Learning was added to suit the needs of the study, as personalized learning is a major component of competency-based education. A total of fourteen questions were added to the survey under the category of Personalized Competency-Based Learning. Additionally, a fifth category was added to include student demographic information that will be used to fit the research questions of the study; such as whether or not student engagement varies by ethnicity.

How to Analyze Survey Results

Descriptive statistics such as mean, standard deviation, and frequency can be calculated using this survey. Survey questions from the Learning Environment Category, General

Satisfaction Category, Engagement Scale, and Personalized Learning Category all use a Likert

Scale. However, the Demographic section of the survey requires students to select from response

options such as grade level, gender, expected level of education.

The Engagement Scale Section of the survey is calculated using the average score of the

eight questions included in that section. Scores in the less than 3.5 range were labeled as Not

Engaged, while scores in the 3.5-4.5 range were labeled as Engaged. Last, scores recorded as

4.5-5.0 were rated as Highly Engaged.

Student Engagement Survey

This is a survey about your experiences at Belvidere North High School. This survey is

NOT a test, so there are not right or wrong answers. Please answer every question. Your

responses will be collected through a secure survey system and all data will be encrypted and

stored on secure servers. No one will be able to connect individual responses to you or any other

student.

This survey should take about 15-20 minutes to complete the survey. By clicking on

"NEXT" you agree to participate in this study.

Category A: Student Demographics

A1. What is your current grade level?

❏ Grade 9

❏ Grade 10

❏ Grade 11

❏ Grade 12

A2. What gender do you identify with?

❏ Male

❏ Female

❏ Prefer not to say

A 3. What ethnicity to you identify with?

❏ Latino/Hispanic

❏ Black/African American

❏ Asian

❏ White/Caucasian

❏ Native Indian/Alaskan

❏ More than 1 ethnicity

A5. What is your current high school grade point average (GPA)?

❏ 0.00-1.00

❏ 1.01-2.00

❏ 2.01-3.00

❏ 3.01-4.00

❏ 4.01-5.00

❏ Not Sure

A6. Currently, how many of your courses are you taking as blended/online?

❏ None

❏ 1-2

❏ 3 or more

A7. How much education do you expect to complete?

❏ Less than high school

❏ High school diploma

❏ GED

❏ Associate's degree

❏ Bachelor's degree

❏ Master's degree

❏ Doctoral or advanced professional degree

Category B: Engagement Scale

This set of questions asks about practices and personal beliefs at your school. Your responses to these questions will help school leaders and teachers understand students' experiences at your school. Like all questions in this survey, there is not any right or wrong answers to these questions.

B1. For the following statements, indicate how you agree or disagree.

Sub item	Strongly Disagree (1)	Disagree (2)	Neither agree nor Disagree (3)	Agree (4)	Strongly agree (5)
I have good friends at this school	❏	❏	❏	❏	❏
I try to do my best in school every day	❏	❏	❏	❏	❏
My teachers believe that I can do well in school	❏	❏	❏	❏	❏
I feel that my schoolwork is important	❏	❏	❏	❏	❏
I am proud to go to this school	❏	❏	❏	❏	❏
I am praised for doing good work at school	❏	❏	❏	❏	❏
I am interested in what I am learning in school	❏	❏	❏	❏	❏

C. Learning Environment: This set of questions asks about personal beliefs and a sense of belonging at your school. Your responses to these questions will help school leaders and teachers understand students' experiences at your school. Like all questions in this survey, there is not any right or wrong answers to these questions.

C1. For the following statements, indicate how you agree or disagree.

Sub item	Strongly Disagree (1)	Disagree (2)	Neither agree nor Disagree (3)	Agree (4)	Strongly agree (5)
My teachers spend enough time with me to help me do well	❏	❏	❏	❏	❏
I look forward to seeing what we do in class each day	❏	❏	❏	❏	❏
The teachers make sure I am safe at school	❏	❏	❏	❏	❏
My classes are preparing me for the next grade or after graduation	❏	❏	❏	❏	❏
I feel like I belong at this school	❏	❏	❏	❏	❏
I am involved in extracurricular activities such as athletics, band/chorus, theatre, clubs	❏	❏	❏	❏	❏
I have pride in my school	❏	❏	❏	❏	❏

I feel that my school offers ways for students to get involved with the community	☐	☐	☐	☐	☐

D. General Satisfaction: This set of questions asks about how you feel you fit in and are treated by others at your school. Your responses to these questions will help school leaders and teachers understand students' experiences at your school. Like all questions in this survey, there is not any right or wrong answers to these questions.

D1. For the following statements, indicate how you agree or disagree.

Sub item	Strongly Disagree (1)	Disagree (2)	Neither agree nor Disagree (3)	Agree (4)	Strongly agree (5)
Other students treat me with kindness and respect	❏	❏	❏	❏	❏
I often work on assignments with others at school	❏	❏	❏	❏	❏
The rules at school are mostly fair	❏	❏	❏	❏	❏
I have a lot in common with other students at this school	❏	❏	❏	❏	❏
I go to school so I can get a job	❏	❏	❏	❏	❏
School staff know me by name	❏	❏	❏	❏	❏
I attend school activities with friends	❏	❏	❏	❏	❏

I want to graduate high school so I can go to college	☐	☐	☐	☐	☐
I work hard to do well on my assignments	☐	☐	☐	☐	☐
I feel I am treated fairly by my teachers	☐	☐	☐	☐	☐

E. Personalized Competency-Based Learning: This set of questions asks about current teaching styles at your school. Your responses to these questions will help school leaders and teachers understand students' experiences at your school. Like all questions in this survey, there is not any right or wrong answers to these questions.

E1. For the following statements, indicate how you agree or disagree.

Sub item	Strongly Disagree (1)	Disagree (2)	Neither agree nor Disagree (3)	Agree (4)	Strongly agree (5)
My teacher allows multiple chances for assessment	❏	❏	❏	❏	❏
I feel that my grades accurately reflect what I have learned	❏	❏	❏	❏	❏
I move through my coursework at my own pace	❏	❏	❏	❏	❏
I feel as though the teacher allows me to have flexibility in my	❏	❏	❏	❏	❏

assignments and/or designs lessons based upon things I interested in					
EFFECTIVENESS OF PCBE ON STUDENT ENGAGEMENT 87					
I know what I need to do to show my teachers I am making progress on each skill	❏	❏	❏	❏	❏
I must show my teacher that I have mastered each skill before I can move on to the next one	❏	❏	❏	❏	❏
My teachers let me know how each skill will be assessed or graded ahead of time	❏	❏	❏	❏	❏

I am able to complete some of the course requirements online	☐	☐	☐	☐	☐
I can earn credit for taking courses at a college (dual credit) or I am given credit for internship or job shadowing opportunities	☐	☐	☐	☐	☐
My teachers work with students in small groups or independently	☐	☐	☐	☐	☐
My teachers provide extra help if I need it	☐	☐	☐	☐	☐
My teachers teach the material in several	☐	☐	☐	☐	☐

different ways in order to help students learn				
EFFECTIVENESS OF PCBE ON STUDENT ENGAGEMENT 88				
My teachers give me feedback on my work or meet with me to discuss my progress	☐	☐	☐	☐	☐
I am given multiple ways of showing mastery of a skill—project, case study, teacher evaluations, lab experiments	☐	☐	☐	☐	☐

Appendix B

IRB Approval

October 19, 2018
Amanda Newmes
Sham'Ah Md-Yunus
College of Education

Dear Amanda,

Thank you for submitting the research protocol titled, "Effectiveness of Personalized Competency-Based Education on Student Engagement at the Secondary Level" for review by the Eastern Illinois University Institutional Review Board (IRB). The IRB has reviewed this research protocol and effective 10/16/2018, has certified this protocol meets the federal regulations exemption criteria for human subjects research. The protocol has been given the IRB number 18-117. You are approved to proceed with your study.

The classification of this protocol as exempt is valid only for the research activities and subjects described in the above named protocol. IRB policy requires that any proposed changes to this protocol must be reported to, and approved by, the IRB before being implemented. You are also required to inform the IRB immediately of any problems encountered that could adversely affect the health or welfare of the subjects in this study. Please contact me, or the Compliance Coordinator at 581-8576, in the event of an emergency. All correspondence should be sent to:

Institutional Review Board
c/o Office of Research and Sponsored Programs
Telephone: 217-581-8576
Fax: 217-581-7181
Email: eiuirb@www.eiu.edu
Thank you for your cooperation, and the best of success with your research.

John Bickford, Chairperson
Institutional Review Board
Telephone: 217-581-7881
Email: jbickford@eiu.edu

Appendix C

Recruitment Letter

 Dear Parent/Guardian,

      My name is Amanda Newmes and I am currently a Science teacher at BNHS as well as an Eastern Illinois University student whom is working (with Dr. Md-Yunus), to obtain my Master's degree in Curriculum and Instruction. My thesis involves studying the impact personalized competency-based education has on student engagement at the secondary level. In two weeks, I will be inviting your child to participate in an online survey during their Science class. The purpose of the survey is to help me gather data about competency-based education (flexible seating, flexible pacing, personalized instruction) and student engagement. The survey has questions such as: 1. What grade level are you; 2. Do you feel as though your teachers provide multiple opportunities for assessment; 3. Are you involved in any clubs or sports; 4. My teachers believe I can do well in school; and 5. I feel my schoolwork is important. Other than myself and my professor, no one else will have access to any of the data or emails. All answers will be kept confidential and anonymous. From data gathered, I hope to see what areas of learning competency-based education has a strong impact on as well as areas for improvement. By signing this release form, you agree that your child may take the survey in two weeks. Your child's participation is strictly voluntary and he/she will have an alternate activity on Canvas if he/she chooses not to participate. If your child chooses to participate in this online survey, he/she may withdraw at anytime during the survey without consequences of any kind. All students who take the survey will be entered in a drawing for five-$5.00 gift cards. I appreciate your support. If you have any questions or concerns about this research, please feel free to contact me at: anewmes@district100.com or 815-544-3699.

Thank you!
Amanda Newmes- Science Teacher

_____

My son/daughter _____, has my permission to

participate in the online survey described above. I understand I am free to withdraw my consent

and discontinue my child's participation at any time.

_____   _____

Parent/Guardian Signature   Date