DUAL CREDIT, AN OPTION TO BRIDGING THE GAP BETWEEN SECONDARY AND POSTSECONDARY EDUCATION

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DUAL CREDIT, AN OPTION TO BRIDGING THE GAP BETWEEN SECONDARY AND POSTSECONDARY EDUCATION

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DUAL CREDIT, AN OPTION TO BRIDGING THE GAP BETWEEN SECONDARY AND POSTSECONDARY EDUCATION

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By

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ABSTRACT

Educational reform has taken on many faces but current trends focus on college readiness. While educators believe dual credit courses improve college readiness little research has been done to see the true effects. This study examines dual credit course work and the impact it has on graduation rates and number of academic semesters it takes to earn a college degree.

Data collected from universities and colleges across Missouri was compared using independent t-test and ANOVA data analysis tools. The data sample included 20,881 student records collected from a sampling of the colleges and universities in Missouri. The data gathered from the student records was consolidated into a large excel spreadsheet for ease of statistical analysis. The data included the number of dual credits freshmen students had upon entering college, their college graduation rates, and the number of academic semesters it took them to earn a college degree.

Results showed that dual credit coursework taken in high school had a significant impact on graduation rates and the number of academic semesters it took to earn a college degree. It also showed that the number of dual credits earned had a significant impact on both graduation rates and the number of academic semesters it took to earn a degree. Recommendations included revisiting dual credit programs and their requirements, reviewing current legislation and higher education requirements for these programs, and finding ways to encourage dual credit programs for more students. This study added to the body of research on dual credit and its impact on college readiness and gave credibility to dual credit as an option to bridging the gap between secondary and postsecondary education.

CHAPTER ONE

INTRODUCTION

Americans considered their education system the best in the world during the middle of the 20th century (Meadows & Clark, 2011). However, after the publication of "A Nation at Risk" in 1983, education reform began as America focused its attention on education deficiencies. In the 1990s outcome-based education would morph into standards based education and charter and magnet schools would gain ground yet again (Meadows & Clark, 2011). The 21st century would see the No Child Left Behind Act (2002), national legislation aimed at eliminating achievement gaps between student population subgroups, and Race to the Top Act (2011), designed to spur systemic reform and embrace innovation in teaching and learning (Missouri Department of Elementary and Secondary Education, 2014). Recently, the Common Core State Standards were designed to showcase the knowledge and skills that students need to experience success in college and careers (Common Core State Standards Initiative, 2013; Conley, 2014). With RTTT and Common Core pushing 21st century learning skills of rigor, relevance, and relationships, schools are looking for ways to increase their rigor. Dual enrollment and dual credit opportunities are feasible ways of pushing for rigor across the board.

Proponents of dual enrollment contend these programs enhance the senior year of high school, increase college access and success, reduce time to a college degree, and save students money (Hoffman, Vargas, & Santos, 2008). Dual enrollees tend to earn higher grades and are more likely to attain a college degree than non-dual enrollees (An, 2013; Allen & Dadgar, 2012; Bailey & Karp, 2003). In addition to credit accumulation and degree completion, evidence suggests dual enrollment improves students' college

readiness (Kim, Kirby & Bragg, 2006). Conley's (2012) defines college readiness as cognitive factors (e.g., academic achievement and coursework) and noncognitive factors (e.g., commitment to academic goals and effort) that are required to transition to and succeed in college without the need for course remediation. For this study a slight modification of this definition will be used. Noncognitive factors such as graduation rates and number of semesters to complete a degree will be examined.

Problem Statement

School reform is receiving attention nationwide and one of the components of the reform is the attainment of college credit through dual enrollment. Little research has been conducted to determine whether dual credit courses are preparing students for college success. While current education shows there is a clear focus on college and career readiness, this study focuses on college readiness and not career readiness. Currently, educators believe that dual credit coursework improves students' college readiness which includes GPA, time it takes to obtain a degree, and/or actual completion of a degree. Because there has been adequate research on the effects of GPA on college readiness that data will not be included in this study. However, current research has not adequately investigated the impact of high school dual credits on graduation rates or the number of academic semesters it takes to earn a degree. These two areas will be the focus of this study.

Purpose for the Study

The purpose of this study is to examine the impact of students' participation in dual-enrollment programs on college readiness. Factors examined in this study are graduation rates and the number of academic semesters it takes to earn a degree.

Research will be conducted by looking at college freshmen who had college credits when entering college and those who did not to see if there is a statistically significant difference in graduation rates and the number of academic semesters it takes to earn a degree.

Null Hypothesis

H_1 Students completing dual credit courses in high school did not have higher college graduation rates than students not taking dual credit courses in high school.

H_2 Students completing dual credit courses in high school did not graduate from college in fewer academic semesters than students not taking dual credit courses in high school.

H_3 The number of dual credits earned while in high school did not impact college graduation rates.

H_4 The number of dual credits earned while in high school did not impact the number of academic semesters it took to earn a college degree.

Research Questions

1. Does completing dual credit courses while in high school impact college graduation rates?
2. Does completing dual credit courses while in high school impact the number of academic semesters it takes to earn a college degree?
3. Does the number of dual credits earned while in high school impact college graduation rates?
4. Does the number of dual credits earned while in high school impact the number of academic semesters it takes to earn a college degree?

Limitations

1. Dual enrollment programs vary greatly in format. Some define dual enrollment as high school students who are enrolled in traditional college classes taught by community college or university employed instructors at the post-secondary site. Others will use the term dual credit referring to credits that are taught at the high school earning both high school credit as well as college credit. These courses are usually taught by high school instructors who have received adjunct status with the partnering university. The quality control over the instruction of these courses is left up to the partnering sites and sometimes can be overlooked. Regardless of the particular configuration, dual enrollment courses generate college credit for participating students, the primary focus for this study.

Delimitations

1. The research was limited to secondary students who continued their postsecondary education at either a public or private four-year university in Missouri.

Assumptions

1. Missouri students are comparable to students nationwide. Based on that state-reported data, the U.S. Department of Education indicates that the nation's graduation rate stands at 81 percent for the class of 2013. Missouri is a little above the national average at 86% and seems to be growing faster (5%) than the national average (2%) (Education Week Research Center, 2015).

Design Controls

This is a quantitative study looking at the impact of dual credits on graduation rates and the number of academic semesters to degree completion. Two groups will be

studied, those who entered college with dual credit and those who did not. Control indicators represent important demographic and academic characteristics related to college readiness. These include ethnicity, gender, income, home life, GPA, and ACT scores. These factors are limitations of the study in which the researcher has no control. Data will be analyzed and interpreted based on the impact of dual credits on college readiness. Graduation rates and the number of academic semester to complete a degree will be analyzed.

Definitions

Some of the terms used throughout this study are either unique to high school and college partnerships or are used in a unique way in this study. Those terms are used for the purpose of this study and the operational definitions are as follows:

Adjunct faculty or part-time faculty: College instructors who do not hold fulltime positions at the college or university. They are generally employed on a per course basis. Adjunct faculty must meet the teaching credentials established by the college at which they teach.

College: Any post-secondary, degree or certificate conferring educational institution, including public and private four-year academic or vocationally oriented institutions.

College Environment: The sum total of academic and social experiences impacting students enrolled in post-secondary education.

Dual credit: High school course work that is taken at the high school and is given as both high school credit as well as college credit.

Dual enrollment: A partnership between high schools and colleges that allows high school students to enroll in college courses while concurrently enrolled in high school.

Students receive credit toward a high school diploma and college degree for dual-enrollment courses.

Summary

With higher academic standards impacting academia, college and career readiness has been forced to the top of educational agendas. This study will investigate one of the tenants of college readiness, dual enrollment. The effect of dual enrollment on college readiness will be studied.

Advocates assert that dual enrollment improves students' college readiness, but despite these assertions, little research has been conducted to evaluate this relationship. Research investigating whether dual enrollment improves college readiness tend to examine this relationship when students are participating in dual enrollment or shortly thereafter. Despite advocates' assertion that dual enrollment improves students' college readiness (Allen & Dadgar, 2012; Kim, et al., 2006), there is little research on the relationship between dual enrollment and college readiness. Moreover, researchers that do consider whether dual enrollment improves college readiness focus on the immediate gains in college readiness while students are participating in dual enrollment or shortly thereafter (Burns & Lewis, 2000; An, 2013; Karp, 2012), or measure college readiness using only academic indicators. In other words, most dual enrollment studies assess outcomes while students are in high school or upon their immediate transition to college using cognitive measures or academic measures of college readiness such as standardized test scores and placement in remediation. Although important, it is unclear whether dual enrollees display signs of college readiness after their first year of college enrollment. This study will add to the body of research by examining whether dual enrollment

increases college readiness by focusing on graduation rates and the number of academic semesters to degree attainment.

CHAPTER TWO

REVIEW OF RELATED LITERATURE

For centuries the United States of America has celebrated its leadership in education, but there are troubling signs that the U.S. is failing to continue this tradition (Symonds, Schwarts, & Ferguson, 2011). At the end of the first decade of the 21st century, the U.S. was failing to meet its obligation to prepare millions of students with the necessary skills for college and careers readiness (Symonds, et al., 2011). Also alarming are the staggering statistics of college completion rates. According to ACT (2013) 59% of college students who are seeking a four-year degree graduate within six years. That is, 59 percent of first-time, full-time students who began seeking a bachelor's degree at a four-year institution in the fall of 2007 completed the degree at that institution by 2013 (National Center for Educational Statistics, 2015). Most of the remaining 41% never complete the degree. In terms of student retention among first-time, full-time students who enrolled at 4-year degree-granting institutions in 2012, about 80 percent returned the following fall in 2013 (National Center for Educational Statistics, 2015). At 2-year institutions, the total retention rate for first-time students was 60 percent.

With this growing trend it is important to explore the reason behind such a low success rate. We must look for ways to bridge the gap between secondary and postsecondary education. It is time to take a closer look at what can be done on the secondary level to bridge this gap. The purpose of this study is to examine the effects of dual enrollment on college readiness. Following a review of relevant literature, overarching themes surrounding dual enrollment emerged: theoretical frameworks, historical perspectives, college readiness, 21st Century Skills, Common Core, student

engagement, advantages and disadvantages of dual enrollment, and a review of recent dual credit research.

Theoretical Frameworks

This study looks at factors that are somewhat within the student's control at the secondary level. These high school factors include amount of dual credit taken, GPA, and ACT score. In addition, background factors which are out of a student's control such as race, gender, ethnicity and poverty, will be explored. Because this study will focus on college readiness, the reason student are not successful at college must be explored. Based on these focus points, this study will use Pierre Bourdieu's theory of cultural capital and Vincent Tinto's student retention theory for the overarching theoretical framework.

Bourdieu held the belief that in the absence of external factors (agency) social structure will reproduce itself. However, through agency, one has the possibility of influencing and resisting the social structure (Winkle-Wagner, 2010). Agency is "the idea that individuals are equipped with the ability to understand and control their own actions, regardless of the circumstances of their lives" (Webb, Schirato, & Danaher, 2002). Education is one area where the interaction of agency and social structure can be investigated (Winkle-Wagner, 2010).

Some terms associated with cultural capital are field, habitus, and agency. Winkle-Wagner (2010) explains "field" as an educational environment where cultural capital exists. In this environment, cultural capital is fostered through habitus. Habitus, which operates at the subconscious level, generates practices which serve, in absence of external factors, to reproduce social structure (Winkle-Wagner, 2010). For example, if it

seems that everyone is going to college and it's the thing to do, then some students will seek a college degree. Even though their parents may not be college educated, trends in society may push them to pursue that next level of education.

Fortunately, Bourdieu allows for the possibility of change, and for exceptions to cultural reproduction, through a concept he calls agency. Agency is the concept that individuals can make definitive choices and control their own actions regardless of their circumstances (Webb, et al., 2002). Taking dual credit courses is an external factor (agency) that provides certain students the ability to change their destinies. This change may or may not affect college persistence and/or student success.

College persistence and/or student success are often clarified by components of student retention theory. A major contributor to student retention theory is Vincent Tinto, who researched why students leave college. His theory offers a model of how students transition from high school to college. He began his work exploring pre-college student skills and knowledge as a primary indicator of persistence and college completion (Tinto, 1975). His revised model looks at retention from a different perspective; it emphasizes that what happens after a student is enrolled in college has more of an impact on retention than their pre-college skills and knowledge (Tinto, 1993).

For students to feel connected to the academic and social community of a college or university campus it is imperative that the student feels a sense of belonging (Tinto, 1993). Close mentoring relationships with faculty, staff, and other students can greatly affect the retention rate of students at college campuses (Tinto, 1987). Tinto's model identifies the impact of academic performance, faculty and staff interaction, extra-curricular involvement, and peer interaction as key components that affect a student's

decision to leave an institute (Tinto, 1993). Dual enrollment programs, when partnered with postsecondary institutions, can allow students to start fostering these relationships early and can help to create a smoother transition from high school to college. For example, meeting with university admission representatives, having access to college campuses, or taking on-line exams can help students connect to the academic and social community of a college campus. A smooth transition can support student retention (Tinto, 1993).

A person's desire to obtain an educational goal does not simply occur without other factors influencing that decision. Therefore, it is important for the context of this study to look at an environmental theory conceptual framework as well. When students decide to pursue an educational goal or career path, they make choices on many levels. Human capital theory (Becker, 1975) says that individuals, through formal research and informal conversations with friends and family, create a cost benefit analysis of their education and career choices. Students who decide to pursue advanced education and training do so because they believe they will benefit from their accomplishments.

Becker (1975) indicates that the most important piece of evidence supporting human capital theory is related to income levels. Individuals who are highly educated and/or skilled tend to earn more than less educated and skilled individuals. Ninety percent of young adults ages 25 to 29 had a high school diploma or its equivalent in 2013, 34 percent had a bachelor's degree or higher (Kena, et al., 2014). As in previous years, in 2012, median earnings were higher for those with higher levels of education—for example, 25- to 34-year-olds with a bachelor's degree earned more than twice as much as high school dropouts (Kena, et al., 2014). Also, the unemployment rate was lower for

bachelor's degree holders in this age range than for their peers with lower levels of education (Kena, et al., 2014). Most individuals who pursue their education do so with the mindset that this will result in increased personal income. Therefore, when a student chooses to enroll in college courses during high school, he or she is connecting that course work with future career plans. Bourdieu's theory of cultural capital allows for the possibility of change through agency. Therefore, it is important to study the factors, which may increase college readiness and allow for student success at the college level.

In Pierre Bourdieu's theory of cultural capital, he distinguishes between three types of cultural capital: embodied (one's sense of culture, traditions, norms), objectified (things that one owns), and institutionalized (recognition of particular tastes, norms, or values within institutions such as schools) (Winkle-Wagner, 2010). Furthermore, cultural capital is acquired in two ways, through one's social origin (family) and through education (schooling).

Bourdieu's theory of cultural capital gives credit to a student's ability to control their own actions. No matter what the student's background or current circumstances, the student has the choice to choose dual enrollment courses while in high school. This coupled with a school environment that fosters college readiness and where the culture or social structure fosters taking college courses while in high school can easily influence a student's education. Tinto's student retention theory implies that a smooth transition is paramount to supporting retention at the postsecondary level. Furthermore, Tinto identifies academic performance and faculty and staff interactions as key components to college retention. Both of these components can be fostered at the secondary level and if encouraged early on, can only lead to a smoother transition to the postsecondary level.

Finally giving credence to human capital theory, students know the cost benefits of their education. If educated at the secondary level about their options, student have the ability to see the relationship between their education and/or skills to their ability to earn money. When studying dual credit as an option to bridging the gap between secondary and postsecondary education it is easy to infuse these theoretical frameworks.

Historical Perspectives

Several factors can affect increases in college readiness, increases in college graduation rates, and retention in college course work. Three such factors involve Advance Placement (AP) courses, early college programs, and dual credit courses (Hoffman & Robbins, 2005; Conley, 2005). Advanced Placement courses provide high school students with an opportunity to prepare for college and take AP exams in some cases to earn college credit (The College Board, 2015; Ewing, Huff, Andrews, & King, 2005). Early college programs are designed to increase the number of students graduating from high school and better prepare those students for college and career. At the end of their schooling, students are expected to graduate with a high school diploma and an associate's degree or two years of transferable college credit (Edmunds, Bernstein, Unlu, Glennie & Arshavsky, 2011). Dual credit programs refer to high school students earning college credits for courses taken through a postsecondary institution.

When looking at dual credit programs and their beginning, the earliest on record is Illinois's dual credit program history which started in the early 1970s (Barnett, Gardner, & Bragg, 2004). In addition, Mokher and McLendon (2009) concluded that dual credit program policy adoptions started in California in 1976 and increased as dual credit became popular. With unified Republican control of state legislative bodies, the

likelihood of states adopting dual credit policies increased. In 2012, dual-credit programs were available in all states, but only 46 states had policies governing those programs (Zimmermann, 2012).

Dual credit emerged in the 1970s and 1980s in response to a need to keep talented students challenged, to help ease transition between high school and college, to develop vocational readiness, and to reduce time to obtain a college degree (Bailey & Karp, 2003; Burns & Lewis, 2000). The original intent of dual credit was to provide a challenging curriculum to academically prepare high school students (Kim, et al., 2004; Conley, 2005).

Early college programs allow students to enroll in special high schools in which they can take high school classes and college classes for the entire school day. Upon completion of the early college program, students graduate from high school with a high school diploma and an associate degree (Edmunds, et al., 2011). Early college high schools integrate high school and college resources to create an accelerated curriculum and allow students to graduate with a high school diploma and an associate's degree in four or five years, instead of six. Reaching out to underserved students is also a feature of early college programs (Krueger, 2006). A similar option is middle college high schools. These schools are essentially high schools located on college campuses and enrollment is usually limited. However, some middle college programs were designed to target low-income or at-risk students. Whatever form they take – dual enrollment, middle college or early college programs – multiple enrollment options provide students with the rigor of a college curriculum while still in high school, and the opportunity to receive both high school and college credits.

Because the target market for some of these programs is not the higher performing students, perhaps a closer look at rigor and relevance would be in order. The National Conference of State Legislatures (2013) found that the rigor of high school course work is more important than parent education level, family income, or race/ethnicity in predicting whether a student will be successful in earning a degree beyond high school. Most states have taken steps to ensure that all students are reaching these benchmarks for college and career readiness. The expectation is that all students can and will acquire 21st century learning skills.

Dual credit has been around since the early 70's and originated to challenge students and provide them with a more challenging curriculum to prepare them better for college or vocational training. Since its inception dual credit has involved through the years and gained more attention. With many schools offering dual credit courses and college and career readiness becoming a priority in secondary education, dual credit programs are being assessed on a regular basis. According to the U.S. Department of Education, college credits earned prior to high school graduation reduces the average time-to-degree and increases the likelihood of graduation for the students who participate in these programs (Krueger, 2006). For these reasons, dual credit courses, will be the focus of this study.

College Readiness

As college-degree attainment becomes the prerequisite for an adequate standard of living, discussions of college access and persistence, especially, has remained a priority among researchers, educators, and policy makers (Conley, 2010; An, 2013). To be competitive in today's society one needs postsecondary education. School

researchers, educators, and policy makers must take a proactive approach to improving college readiness. In 2012, young adults with a bachelor's degree earned more than twice as much as those without a high school credential ($46,900 vs. $22,900) and 57 percent more than young adult high school completers ($46,900 vs. $30,000) (Kena, et al., 2014). According to the U.S Bureau of Labor Statistics:

> …occupations typically requiring postsecondary education for entry generally had higher median wages ($57,770) in 2012 and are projected to grow faster (14.0 percent) between 2012 and 2022 than occupations that typically require a high school diploma or less ($27,670 and 9.1 percent). In addition 19 of the 30 occupations projected to grow faster from 2012-2022 typically require some form of postsecondary education for entry… (U.S Bureau of Labor Statistics, 2013, p. 4)

The labor force is projected to grow 0.5 percent per year from 2012 to 2022, compared with an annual growth rate of 0.7 percent during the 2002-12 decade (U.S. Bureau of Labor Statistics, 2013). According to this statistic, workers ages 55 and older are expected to make up over one-quarter of the labor force in 2022, thus continuing to create a gap between those jobs requiring a college degree and those available to fill those positions. Fewer and fewer students are proving that they are ready for a postsecondary education. ACT (2013) found that only 26% of assessed students met all four of the exam's college readiness benchmark scores and 31% met none. In addition there seems to be a growing trend in the number of students requiring some developmental education before they can enter credit-bearing college courses. If we want our students to meet the

demands of the 21st century and to be prepared for postsecondary education, we must address this problem.

To increase college readiness educators need to be aware of the actions and achievements of students that predict future success. Some of those indicators include assessment scores such as ACT and transcript attributes (GPA) and other indicators such as ethnicity (Conley, 2012; Hartman, 2007). Being knowledgeable of these indicators can help us to determine if a student is progressing toward college readiness.

The College Board and ACT both are widely respected as the most standardized ways of measuring the college readiness of students (Cromwell, McClarty, & Larson, 2013). Both offer multiple testing opportunities at different age levels to assess the progression to college readiness. In addition Advanced Placement exams are often coupled with advanced high school courses as a way for students to demonstrate college readiness (Conley, 2005; Cromwell, et al., 2013). Transcript indicators can be predetermining factors of college success. Overall, students who complete a core curriculum, mathematics courses beyond Algebra II, and rigorous courses such as AP, honors, and dual credit tend to be more successful in college than students who do not (Cromwell, et al., 2013; Hartman, 2007). One of the strongest indicators of college readiness is a student's GPA which has been associated with things such as credits earned, retention, and eventual graduation.

While academic preparedness is essential to college success, there are other contributing factors such as attendance, motivation, academic discipline, school conduct, and contextual knowledge (Cromwell, et al., 2013). "A student who is ready for college can qualify for and succeed in entry-level, credit bearing college courses leading to a

baccalaureate or certificate, or career pathway-oriented training programs without the need for remedial or developmental coursework" (Conley, 2012). However, not every student is the same. One must take into consideration the student's interest and post-high school aspirations. Depending on these factors his/her proficiency levels can vary in these areas. These dual credit or career and technical training programs must consist of the four keys to college and career readiness including: cognitive strategies, content knowledge, learning skills and techniques, and transition knowledge and skills (Conley, 2005; Conley, 2012). All of these can be facilitated through the development of a secondary program of instruction designed to equip all students with sufficient knowledge and skills. This program should include attitudinal characteristics such as ethical conduct, ownership of one's behavior, initiative, resilience, collaborative teamwork, motivation, and self-regulation skills (Conley, 2012; Conley, 2014). There are other factors which influence college and career readiness such as positive citizenship, parental support, peer group influence, and financial capability to attend college; however, schools cannot teach or influence them as directly as they can the four keys (Conley, 2012; Conley, 2014).

21st Century Skills

A key element to college and career readiness is 21st Century Skills. To prepare students to be successful in earning a degree beyond high school and to ensure their students are prepared for the 21st century, states must have systems that allow schools and districts to closely monitor student performance at every stage of learning, from preschool through college (Conley, 2005; ACT, 2013). The term 21st Century Skills is a little ambiguous. It refers to a very broad set of character traits, skills, work habits, and

knowledge. These skills created by educators, school reformers, college professors, employers and others, are believed to be critically important to success in today's world, particularly in collegiate programs and modern-day careers and workplaces (Hidden Curriculum, 2014). These skills are also gaining steam with policy makers. At least 10 states have committed to revising standard s for teaching and learning and to creating new assessments that reflect the need for 21st-century skills (Gewertz, 2008).

These 21st Century Skills are typically grouped into four broad categories referred to as the four C's; communication, collaboration, critical thinking, and creativity. Generally speaking, the 21st Century Skills concept is motivated by the belief that teaching students the most relevant, useful, in-demand, and universally applicable skills should be a priority in today's schools. Subsequently, many schools may not sufficiently prioritize these skills or effectively teach them to students (Hidden Curriculum, 2014).

Educators recognize these skills are relevant in all areas of academic study, and these skills can be taught in a variety of ways both within and outside of the classroom. Teachers may be more aware of teaching cross-disciplinary skills in their subject areas. States, accrediting organizations, and schools may require 21st Century Skills to be taught and assessed in courses (Hidden Curriculum, 2014). Schools and teachers may use educational approaches that naturally encourage or facilitate cross-disciplinary skills. Schools allow students to pursue dual credit opportunities and alternative methods in which students earn academic credit and satisfy graduation requirements. For example, completing an internship, apprenticeship, or volunteer experience, can lead to students earning credit. Implementing the standards must now be a catalyst for aligning all

aspects of state and local systems to college and career readiness. An integrated, systemic approach to education delivery is essential for every state (ACT, 2013).

Arnold Packer an economist and senior policy fellow at Western Carolina University's Institute for the Economy and the Future, asserts that assessing students' grasp of 21st-century skills is not easy (as cited in Gewertz, 2008). The assessments are based on current accountability systems which rely heavily on standardized tests. A more subjective assessments of performance on those kinds of skills is needed (Gewertz, 2008). This new 21st century framework comes from the notion that the world is being reshaped by technology and globalization. It strives to discover what matters most in college. The framework identifies learning outcomes for college education necessary for 21st century success and includes knowledge of human cultures, the physical and natural world, intellectual and practical skills, personal and social responsibility, and integrative learning (Association of American Colleges and Universities, 2007; Conley & McGaughy, 2012).

The focus has now turned to the alignment of teaching and learning practices with the realities of the new global century. This new curriculum is usually defined in terms of specific core subjects in high school and specific general education categories in college. Mid-twentieth-century education prescribed general education courses that linked liberal education with general education, and assigned it to the first two years of college. Educators and businessmen alike are calling for cross-disciplinary inquiry, analysis, and application (Association of American Colleges and Universities, 2007).

Skills students need to work and live in society should be integrated across all curricula (Larson & Miller, 2011; Conley & McGaughy, 2012). Though there are many

ways to define 21st Century Skills, all generally emphasize how students can apply their knowledge to real world situations and how they can make connections to prior knowledge. This application involves strong communication and collaboration skills, expertise in technology, innovative and creative thinking skills, and an ability to solve problems.

Implementing College and Career Readiness Standards through the Common Core is a phenomenon that is being embraced by 45 states and the District of Columbia. This initiative will establish a set of clear educational standards (Common Core State Standards Initiative, 2013; Conley, 2014). These standards are designed to ensure the pursuit of college and career readiness. Incorporated into these college and career readiness standards are 21st century learning skills which focus on rigor and relevance. Integral to these standards are the very facets that dual enrollment programs are based upon.

Common Core

According to ACT (2013), states should be implementing standards that promote the aligning of state and local systems to college and career readiness. An integrated, systemic approach to education delivery is essential for every state. The Common Core State Standards Initiative is a standards-based reform in which 45 states and the District of Columbia have agreed to participate (Kornhaber, Griffith, & Tyler, 2014). The reform seeks to anchor U.S. public education in a shared set of high academic standards. It creates a common set of standards for primary and secondary education across these states. The Common Core initiative took shape between 2006 and 2010, as No Child Left Behind (NCLB) came up for reauthorization and problems with current academic and performance standards became increasingly clear (Kornhaber, et al., 2014).

The Common Core State Standards provide clear and consistent learning goals to help prepare students for college, career, and life. These standards were built from existing state standards and should clearly demonstrate what students are expected to learn at each grade level, so that every parent and teacher can understand and support their learning (Read the Standards, 2014). While the standards set grade-specific goals, they do not define how the standards should be taught or which materials should be used to support students. It should be recognized there will need to be a range of supports in place to ensure that all students can master the standards. No set of grade-specific standards can fully reflect the great variety of abilities, needs, learning rates, and achievement levels of students in any given classroom. Importantly, the standards provide clear objectives progressing toward the goal of college and career readiness for all students.

For example, in English Language Arts there have been 10 anchor standards establish to prepare all students for success in college, career, and life by the time they graduate from high school. These standards asks students to read stories and literature, as well as more complex texts that provide facts and background knowledge in areas such as science and social studies. Students are challenged and asked questions that push them to refer back to what they've read. This stresses critical-thinking, problem-solving, and analytical skills. Much like the ELA standards, the Common Core concentrates on a clear set of math skills and concepts. For example, students will learn concepts in a more organized way both during the school year and across grades. These standards encourage students to solve real-world problems by utilizing math problems from all academic

areas. These standards are meant to teach math skills through the use of applicable every day mathematical problems (Common Core State Standards Initiative, 2013).

While this seems to be a step in the right direction in educational reform, the Common Core has gained some opposition across the states. In Missouri House Bill 1490 was signed into law by Governor Nixon. HB 1490 provides a structure and timeline for review of the English language arts, social studies, science, and mathematics expectations that are part of the Missouri Learning Standards (Missouri Department of Elementary and Secondary Education, 2014). These new Missouri Learning Standards could replace the nationally acclaimed Common Core Standards.

No matter what approach, there are ways to increase college and career readiness (ACT, 2013). Teachers should be exposing high school students to rigorous curriculum and students should have access to that curriculum. There should be close monitoring of this curriculum and early interventions should be in place. Clear performance standards should be defined so that everyone knows the expectations. Finally, data-driven decision making policies and practices should be in place so student performance can be assessed on an ongoing basis and teacher instruction can be improved (ACT, 2013).

The International Center for Leadership in Education analyzed the nation's most successful practices (McNulty & Quaglia, 2007). They developed four criteria to support schools in their examination of rigor, relevance and relationships. These four areas included core academic learning, stretch learning, student engagement, and personal skill development. Students need to be stretched through rigorous and relevant learning beyond the minimum requirements, such as taking higher-level courses (McNulty & Quaglia, 2007). Dual credit is a great opportunity to tie into these higher level courses.

If tied into educational goals and career opportunities the relevance for students will secure their success. If a student is interested in the course content, for whatever reason, they will be more successful.

Educational initiatives like the Common Core State Standards have been developed to create a shared set of standards for all students. However, it is difficult to assign specific standards to meet the abilities, needs, and achievement levels of all students. These standards are a step toward developing clear learning objectives and a focus on college and career readiness. Exposing students to a more rigorous curriculum beyond the basic high school requirements is a way of incorporating these new standards. Dual credit can help students focus on a future goal and bridge the gap between their secondary and postsecondary educational plans. Providing students with higher level course work through dual enrollment while still in high school can help students tap into their own educational plans and help them to meet their specific abilities, needs, and achievement levels.

Student Engagement

When focusing on 21st Century Skills and common learning standards, student engagement is still paramount. In school settings, student engagement has been researched for many years. Student engagement defines the behaviors that affect student motivation which leads to their learning and development. It can impact things such as student achievement, motivation, and behavior, as well as teacher instruction, and classroom environment. When engagement is characterized by the full range of on-task behavior, positive emotion, invested cognition and personal voice, it functions as the engine for learning and development (Conley, 2005; Reeve, 2006; Conley, 2014).

Schools must find out what students are thinking, their goals, and what causes them to engage in the learning offered in schools. Hattie (2013) conducted over 800 studies on meta-analysis related to achievement. Accelerated learning, comprehension programs, mastery learning, and student concentration/ persistence/engagement were all dual credit program traits that were in the top 50 effect factors (Hattie, 2013).

In 2009, the Center for Evaluation and Education Policy (CEEP) administered a High School Survey of Student Engagement (HSSE) to 42,754 students from 103 schools located in 27 states (Yazzie-Mints, 2010). The HSSE results utilized three dimensions or predictors of high school students' academic engagement. Those three dimensions are cognitive/intellectual/ academic engagement, social/behavioral/participatory engagement, and emotional engagement (Yazzie-Mints, 2010).

The first of these dimensions, cognitive/intellectual/academic engagement, captures students' effort, how committed they are to their work, and their strategies for learning. This dimension focuses on student engagement during instructional time and during instructional-related activities and can be described as engagement of the mind. Social/behavioral/ participatory engagement focuses on students' actions and participation during school outside of instructional time. This is a shift of focus to the ways in which students interact within the school community beyond the classroom. This would include non-academic activities, social and extracurricular activities, and interactions with other students and could be described as engagement in the life of the school. Emotional engagement encompasses students' feelings of how well they are connected to their school. This is a reflection of how they generally feel about the school, level of support they get from the members of the school community and their

place in that school community and is described as engagement of the heart (Yazzie-Mints, 2010).

The results were very similar to studies done in 2005. For example, in the 2005 survey, 50 percent of responding high school students indicated they spent four hours or less each week preparing for class and only four percent reported spending 20 or more hours preparing. Students enrolled in honors or college-prep courses reported spending twice as much time per week preparing for class than students in regular courses. These findings suggest the expectations and demands of homework assignments are not challenging enough to adequately engage high school students (Yazzie-Mints, 2005). Students in honors/college preparatory/ advanced classes report higher levels of engagement across all three dimensions than do their counterparts in other academic tracks.

An indicator of academic engagement is student participation in class assignments and discussions (Conley, 2005; Yazzie-Mints, 2010). Forty-two percent of students reported they had sometimes or never integrated information from a number of sources (e.g., books, interviews, Internet resources) for a paper or project. Similarly, only 32 percent of general education students indicated they regularly synthesized information from a variety of subjects. Comparatively, 46 percent of students in honors or college prep programs reported doing so (Yazzie-Mints, 2005). Students responding to HSSE, consistent with data from the four-year period from 2006 to 2009, reported an interesting disjuncture between the time they spend and the importance they assign to various activities (Yazzie-Mints, 2010). These data provide a cautionary note about interpreting time-on-task data too narrowly. A student who spends a great amount of time on a

particular task but does not carry any learning from the task past the end of class cannot be said to have been deeply engaged.

An analysis by the Center of Education (CEP) found four academic mindsets that contribute to a student's motivation: belief in the student's own competence, ownership of his or her learning, interest in the subject or at least understanding of the value of learning it, and a feeling of social relatedness to the school and community (as cited in Sparks, 2014). Student engagement in dual credit course work can create a culture that fosters these mindsets. Things such as academic rigor, enrollment requirements, interest in attending college, and a tie into to their future career plans, could all be benefits of dual credit course work in effecting these mind sets. Camille A. Farrington the lead researcher for the Chicago Consortium on Chicago School Research, argued that academic mindsets are real things and they do have a significant effect on students' achievement (as cited in Sparks, 2014).

High school graduates indicated that there is a gap between their high school preparation and what was expected of them in college (Zapf, Spradlin, & Plucker, 2006; Conley, 2010; Conley, 2014). This would indicate a need for a shift in the mindsets of students to increase student engagement. If we know there is a gap between high school and college, then we must look at what we can do to bridge that gap. Introducing college credits to student in high school is one way the might help shape the mindsets that effect student motivation and engagement.

Students often seem to know information one day but cannot apply the same information the next day. This shows they were not deeply engaged in the learning. Students in higher level classes such as dual enrollment courses exhibit higher levels of

engagement. These students tend to be more engaged intellectually, they participate more and they have some sort of emotional connection to the course work. It means more to them if they can see the value of the course work and therefore it increases their participation and/or engagement.

Advantages and Disadvantages of Dual Enrollment

Dual credit, also known as dual enrollment, refers to courses high school students take to earn credits at both their high school and at the college level. These types of programs encourage all students to apply but require them to meet varying academic requirements before being admitted (Conley, 2010; Zimmermann, 2012). The most successful high school dual-credit programs help students register for appropriate courses and carefully monitor student progress in these course (Conley, 2010). Close communication with college faculty and careful monitoring and alignment with the high school curriculum help these programs to succeed (Conley, 2010; Zimmermann, 2012). Sometimes high school staff may need additional training and students may need extra support such as tutoring.

Dual-credit courses allow students to earn valuable course credit and possibly reduce the number of credits required after high school to earn a bachelor's degree (Zimmermann, 2012). This could reduce their time spent in seeking a college degree and lead to financial savings. Many dual-credits are offered to high school students at a greatly reduced cost (Zimmermann, 2012). These courses mirror the structure of college course work and allow the students to experience college expectations. Dual-credit courses encourage students' beliefs in their ability to succeed in college and they allow

high schools to offer a wide range of challenging courses they might not otherwise be able to offer (Conley, 2010).

Dual enrollment has many benefits for students and their families. Completing college level work while still in high school can better prepare students for the demands of post-secondary education. If students complete college hours while still in high school they can better their chances of completing a bachelors or associates degree earlier (American Association of State Colleges and Universities, 2002). This could lead to ultimately costing students less money. Benefits for colleges and universities include recruitment opportunities, potential revenue, and more visibility in the community. There are two primary benefits for high schools. Dual enrollment is a great opportunity to collaborate with a college or university. Through this collaboration schools can learn what is expected of incoming college students. It can help teachers increase their rigor and relevance in the courses they teach as well as prepare students for college readiness (American Association of State Colleges and Universities, 2002).

Of course there are critics of this theory. While taking college courses as dual credit may be more rigorous, the students are not actually engrossing themselves in actual campus life (Zimmermann, 2012). These students may have more college success, but this could be attributed to the fact that these students often times are more motivated and probably would have had a better graduation rate (Zimmermann, 2012). In addition, while dual enrollment may reduce the overall costs of tuition in college, it is an additional expense and possibly even a financial strain while in high school (Zimmermann, 2012).

While the benefits may seem obvious there are concerns with dual enrollment programs. The cost of dual enrollment can be a deterrent for some students, thus giving

some a disadvantage of even accessing these courses. The quality of the course work is also in question. There are many factors that can affect the quality of these types of courses. For instance, eligibility requirements, instructor qualifications, and the role of the college or university in which the course is dual enrolled (Taylor, Borden, & Park, 2015; American Association of State Colleges and Universities, 2002). Some policymakers and researchers see dual enrollment as diluting quality, while others see a system that shuts out low-income and low-achieving students. Still others worry about the quality of certain high school teachers who are asked to teach college-level courses (Krueger, 2006).

Dual credit programs are available in all states with 46 states having policies governing them. A typical dual credit course is offered at the high school. The student receives high school credit as well as college credit for the course. This often includes a nominal rate or reduced rate as compared to the actual college course rate. Proponents of dual credit programs usually cite three advantages: Taking college-level classes will help with transition to college life, earning college credits during high school will increase the college graduation rates, and dual enrollment courses will reduce financial burdens during college (Zimmermann, 2012).

However, today's students are not ready for college. ACT defines college and career readiness as the acquisition of knowledge and skills a student needs to be successful in first-year courses at an institute of higher education (ACT, 2013; Conley & McGaughy, 2012). In 2012, ACT-tested high school graduates, 28% did not meet any of the ACT College Readiness Benchmarks, while 47% met between one and three (ACT, 2013). This means 25% of the 2012 graduates that took the ACT met all four

benchmarks, leaving an astounding 1 in 4 academically ready for college coursework. More than 20 percent of students entering a four-year college are placed in remedial classes (Complete College America, 2013). More than half of the students that took the ACT in 2012 and were enrolled in a 4-year college met three or more of the ACT College Readiness Benchmarks. At least 10% did not meet any of the benchmarks. For two-year colleges the numbers are even more alarming, with 21% meeting at least three benchmarks and 40% not meeting any (ACT, 2013). There is a clearly identifiable gap between high school and college. It is time for high schools to take a look at their part in this phenomenon.

ACT (2013) indicated there a several policies or practices that can be institutionalized to increase college readiness. The first is implementing college and career readiness standards. Promising practice research shows systemic alignment of key policies and school activities empowers educators to make notable gains in student achievement (ACT, 2013). The second is creating a culture of postsecondary success. Programs that let high school students take college classes have been around for 25 years. Frequently, the programs are considered among the solutions to raising college graduation rates, adding rigor to high school curricula, and taking a chunk out of college costs (Zimmermann, 2012). The creation and implementation of higher graduation standards aligned to college and career expectations is the most visible and representative effort by states to ensure students are prepared to succeed after high school, but it is far from the only one. A policy strategy of increasing interest is the practice of providing students with the opportunity to take college courses while in high school, known as dual enrollment. The premise of dual enrollment is that high school students can enhance

their chances for college success if they better understand what it takes to succeed in college. They can do this by actually experiencing real college coursework, often earning dual credit for both high school and college (Hoffman, et al., 2008).

Educators can have a lasting impact on student achievement. States should support teachers in exposing all high school students, whether they are bound for college or work, to a rigorous core curriculum aligned with college and career readiness standards (ACT, 2013). The levels of expectation for college readiness and workforce training should be comparable in rigor and clarity of purpose because high-quality education or training after high school is increasingly vital to the success of all students in a rapidly changing world (ACT, 2013).

An educator's vision, attitudes, and motivation have a lasting impact on student achievement. Teachers can help promote college and career readiness by facilitating a culture of postsecondary success. Aligning rigorous standards with core curriculum can only adequately prepare students if the courses are truly challenging. Most public schools, by contrast, rely on a combination of AP courses, dual credit, and perhaps a home - grown honors program to address the alignment issue (Conley, 2010). Ensuring access to rigorous high school courses is vital to today's youth. Providing dual enrollment opportunities can ensure this high-quality education.

In addition to a consistent, rigorous set of essential K–12 content standards, states must define performance standards so that everyone knows "how good is good enough" for students to have a reasonable chance of success at college or on the job. Based on decades of student performance data, ACT defines "college readiness" as students having a 50% chance of earning a B or higher or about a 75% chance of earning a C or higher in

first-year college English Composition, College Algebra, Biology, and an introductory social science course (ACT, 2013). Thus, if proper alignment of course content standards has been created for a dual enrollment course, then looking at grades in that course work could help gauge a student's success at college.

In order for students to plan their high school coursework, age-appropriate career assessment, exploration, and planning activities that encourage them to consider personally relevant career options should be used regularly (ACT, 2013). Making rigorous coursework such as dual credit available to all students, when presented with an end goal in mind such as college completion, can only help encourage college and career readiness. For high school students taking college courses, it is not only the rigor of teaching and learning in those courses that matters, but the comprehensiveness of the college experience provided is just as important. For college-level work to promote college success, quality is synonymous with adequate academic support and advising, properly sequenced high school and college courses, appropriate academic content, and thorough, engaging instruction (Hoffman, et al., 2008). The most rigorous studies have found that dual enrollment increases postsecondary enrollment and success (Allen & Dadgar, 2012; An, 2013; Karp, Calcagno, Hughes, Jeong, & Bailey, 2007). Collaborative relationships or partnerships between a high school and postsecondary institution are an important conduit for developing and transmitting college knowledge (Conley, 2012). Teachers and administrators should be empowered with the currently available tools to monitor student achievement throughout high school and should encourage course work that will further student career goals. This coupled with early intervention can lead to college and career readiness for all students.

Dual credit is a way for students to earn college credits while still in high school and often times at a greatly reduced cost. This could help them earn a college degree faster and/or perhaps seek an advanced degree earlier. Dual credit provides a means for schools to offer a wider variety of courses and it helps students ease into college level course work. It can be a confidence builder for students and increase college readiness. Research indicates that students are not ready for college and providing dual credit opportunities can help increase college readiness. Some states question the quality of dual credit programs and acknowledge that while dual enrollment may reduce the overall costs of tuition to college, it is also an additional expense. However, dual credit is still viewed as a way to bridge the gap between secondary and postsecondary education. Although dual credit is offered in all states, not all of them have policies governing them or their policies are very vague (Taylor, et al., 2015). States need to encourage college and career readiness standards as well as inspire cultures of postsecondary success.

Dual Credit Research

A report issued by the National Center for Education Statistics during the 12-month 2010-11 academic year, found that 53 percent of all 2-year and 4-year degree-granting postsecondary institutions reported high school students took courses for college credit (Marken, Gray, & Lewis, 2013). This totaled approximately 1,413,500 students. With dual credit becoming an integral part of the high school curriculum and a national focus on college readiness, dual credit programs are gaining popularity. As with any program, with popularity comes some scrutiny. With a consistent increase in the number of dual credits that students are earning in high school each year, there must be a conscious effort to assess these programs. Continuous improvement in these type of

programs cannot be done without current relevant research on the effects of these programs and there credibility when it comes to college readiness. There has been research that supports dual enrollment programs that have a statistically significant influence on college readiness. This section reviews the research and methods used to determine if exposure to college through dual enrollment affects college readiness and postsecondary persistence to graduation.

A general description of a dual enrollment program is one that allows high school sophomores, juniors and seniors who meet eligibility standards to enroll in college courses and earn college credits while still in high school. Data collected by the US Department of Education, dual enrollment policies exist in 46 states in the United States (Zimmermann, 2012). In recent decades, dual credit has increased in popularity which has allowed a wider population of students to earn college credits and decreased the need for remediation (Fleischman & Heppen, 2009). Cubberley (2009) reported there were positive correlations between dual credit participation and a number of short and long term educational goals related to success in college. Cubberly discovered that male and low-income students benefited more from dual credit participation than did their peers.

A study was completed on students in Florida and Texas on the impact of participation in dual enrollment and subsequent enrollment into and persistence in postsecondary institutions. In Texas, the analyses was done once for all students in the state, and again for only students in Career and Technical Education (CTE) programs. The study showed that participation in dual enrollment was positively related to enrollment in college for both the full sample and the CTE students. Dual enrollment participation also increased the likelihood of initially enrolling in a four-year institution

(by 7.7 percent for all students and 8.6 percent for CTE students) (Karp, et al., 2007). For students who enrolled in postsecondary education, dual enrollment participation was also positively related to their likelihood of enrolling full-time.

Dual enrollment students, whether in the full sample or the CTE sub-sample, were more likely to persist in college to a second semester. The participants also had a higher postsecondary grade point averages in both the first and second year of college. Thus, of the students enrolled in postsecondary education, dual enrollment participation was positively associated with their likelihood of remaining enrolled two years after graduating from high school. The relationship between dual enrollment participation and grade point average continued throughout students' postsecondary careers (Karp, et al., 2007).

The study in Texas was conducted on students who graduated from any of the 19 vocational high schools in New York City and enrolled in the states dual enrollment program call College Now. Though not as consistent as in Florida, positive short- and long-term outcomes of dual enrollment participation in New York City were found. College Now participants were more likely than their peers to pursue a bachelor's degree. College Now participation was also positively related to students' first-semester grade point averages. College Now participants had first-term grade point averages 0.133 points higher than those of non-participants (Karp, et al., 2007). Finally, College Now participation was positively related to students' overall progress toward a degree. Three-and-a-half years after their initial enrollment in postsecondary education, College Now participants had earned significantly more college credits than their non-participating peers. Additionally, although College Now participation by itself did not influence

student full-time enrollment, students who took two or more College Now courses were 3.5 percent more likely to enroll full-time than non-participants, whereas students who took one course were no more likely to do so. Intensity of participation appeared to be more important for long-term outcomes (Karp, et al., 2007).

Given the limited size of our New York City sample, differences only in outcomes in terms of gender could be identified. No significant differences between males and females was found. In the Florida analysis, all of the subgroups were ran. It was found that, in many cases, male and low-income students benefited more from dual enrollment participation than their peers (Karp, et al., 2007). The findings provided an encouraging, though not definitive, picture of dual enrollment as a strategy for encouraging student access to and persistence in postsecondary education. The researchers believed that there was evidence that dual enrollment could be an effective transition strategy for a range of students (Karp, et al., 2007).

Speroni (2011) provided a thorough descriptive analysis of students who choose Advanced Placement, Dual Enrollment, or both, using data from the state of Florida. The evidence directly comparing Advanced Placement and Dual Enrollment was remarkably scarce so this study was conducted to further the body of research on the topic. The study used Florida's statewide data for two cohorts of high school students to assess the relative power of Advanced Placement and Dual Enrollment course experiences for predicting student success. The results indicated that both Advanced Placement and Dual Enrollment are strongly associated with college access and degree attainment, though there were important differences in outcomes across programs. Taken together, these

results suggested a relative underrepresentation of Dual Enrollment students at four-year colleges.

The study found that both Advanced Placement and Dual Enrollment were strongly associated with positive outcomes, but the enrollment outcomes were not the same for both programs. Dual Enrollment students were more likely than Advanced Placement students to go to college after high school, but they were less likely to first enroll in a four-year college. Despite this difference in initial enrollment, the difference between Dual Enrollment and Advanced Placement in terms of bachelor's degree attainment was much smaller and not statistically significant (Speroni, 2011). In addition, the effect of Dual Enrollment was driven by courses taken at the local community college campus; there was no effect for Dual Enrollment courses taken at the high school. With growing concerns about college and career readiness and high schools' ability to deliver college level instruction, the results might call for increased quality control for Dual Enrollment programs at the high school level (Speroni, 2011). Despite the expansion of dual credit and growing concerns and attention to state policy ensuring the quality of dual credit, there is relatively little empirical research concerning the role of state policy in regulating and ensuring quality (Taylor, et al., 2015).

Since this study was done, Advanced Placement and Dual Enrollment programs have become a prominent feature of high school education systems and their growth has continued to increase that last few years. State governments have turned to these programs as a remedy to shortening the time and decrease the number of credits needed for students to get through higher education programs. Speroni (2011) concluded that there is a growing perception that both programs improve educational outcomes and

further research must be done as the number of students in these types of programs increases annually.

Karp and Hughes (2008) illustrated the need to include multiple components in credit-based transition programs. Merely offering the opportunity to enroll in college-level coursework was likely not enough to encourage postsecondary enrollment and participation, especially in middle and low achieving students. Instead, students needed to be supported before and during their college course work. Credit based transition programs also needed to provide multiple pathways through the program. Selection of precollege courses to help build student skills was one such way, along with the proper support and preparedness (Karp & Hughes, 2008; Conley & McGaughy, 2012). Thus, policy makers might want to reconsider policies that limited participation to only academically advanced students.

Perhaps the most important conclusion for policy makers to take away from this research was the importance of collaboration and communication across secondary and postsecondary sectors. Aligning high school curriculum with college expectations is built on strong communication and collaboration among program instructors. In addition, support services created and provided jointly by secondary and postsecondary partners seems to be more effective than those delivered by a single institution (Karp & Hughes, 2008). Credit based transition programs policy should seek to create environments in which faculty work collaboratively. Thus, creating a context for a critical rethinking of the high school curriculum by engaging secondary teachers with the demands that colleges place on their students. This could lead to all students, whether enrolled in dual credit or not, engaging in activities that prepare them for college-level work. Such

widespread collaboration, and its potential impacts, mirrors the goals of the larger K–16 movement, in which high schools and colleges are encouraged to work together to align their curriculum and standards to create a seamless education system for all students.

Fleischman and Heppen (2009) looked at dual credit courses as being one of several promising programs to turn around failing schools. While investigating comprehensive school reform they looked at dual credit and early college high schools. Fleischman and Heppen found that dual credit programs are increasingly being used as a way to reach larger groups of students, increase access to underrepresented students, and decrease the need for remediation the first year of college. Fleischman and Heppen reported that correlation studies suggest that dual credit programs are associated with increased academic achievement and educational attainment.

Benefits from dual credit may be long lasting. Hughes (2010) found that dual enrollment programs were positively related to students' likelihood of earning a high school diploma, to college enrollment, to persistence in college, and to higher postsecondary grade-point averages. Research also provides evidence that dual enrollment improves students' college readiness. The probability of taking a remedial course for students who participated in dual enrollment is lower than those who did not participate in dual enrollment (An, 2013; Kim, et al., 2006). As expected dual credit students had a 10-18% difference of credits earned over their non-dual credit peers. It was unknown if the credit momentum would continue. After the second year of college credit, accumulation increased for the dual credit students to 20% (Hughes, 2010). The effects of dual credits earned in high school increased the second year college persistence rate (Swanson, 2008) and those students who earned college credits while in high school

were more likely to graduate from college and more quickly than students who did not (An & Taylor, 2015).

Karp (2012) argues dual enrollment helps students' transition from high school to college because students learn the norms and behaviors of college from participating in these programs. This transition not only requires students to prepare academically for the rigors of college coursework but it acclimates them to the elements of postsecondary education. Students who participated in dual enrollment initially had little understanding of the study skills and expectations necessary to succeed in college. As students finish their dual enrollment course work, they have a better sense of these skills and expectations for college success (Karp, 2012). Furthermore, research shows participation in dual enrollment improves students' study habits and raises their academic motivation (An & Taylor, 2015; Karp, 2012).

Despite the insights derived from prior research, research on dual enrollment effects tend to concentrate on two related areas of analysis. The first considers the influence of dual enrollment on immediate educational outcomes. For example, researchers are interested in the effects of dual enrollment on college readiness immediately after secondary graduation or after the first year of postsecondary education. These outcomes are focused on college readiness. The second area of research focuses on the influence of dual enrollment on college outcomes or postsecondary persistence to graduation. Here, researchers are interested in whether dual enrollment improves college success and persistence, which ultimately leads to a college degree. Although dual enrollment researchers typically agree that one purpose of dual enrollment is to improve

college readiness, few researchers have explicitly tested this claim and the effects of dual enrollment on persistence to graduation.

Dual credit has been gaining in popularity the last 5 to 10 years and several studies have been done on dual credit programs. However, none of those studies really concentrate on the relationship between students who start college with dual credit and students who don't and how it affects their persistence to graduation at the post-secondary level. Does dual credit earned while in high school better prepare students for college success or persistence to graduation at the post-secondary level? This study will add to the body of research on dual credit programs and their effects on college and career readiness and persistence to graduation. When looking at high school educational reform perhaps the focus should be on dual credit programs, their assessment standards and the policies that govern them.

Summary

Bourdieu's theory of cultural capital allows for the possibility of change through agency. Therefore, it is important to study the factors, which may increase college readiness and allow for student success at the college level. The research has shown that dual credit has been gaining ground for years. Numbers of students earning dual credit has been on the rise consistently since 2011. Dual enrollment programs can be administered in high school classrooms, on a college campus or through a distance-learning provider (Krueger, 2006). These numbers are growing each year proving that dual credit is not just a phenomenon but an educational reform that has been happening for years. Additional research needs to be conducted to explore all facets of this phenomenon in order to inform policies and practices that will support change.

Academic rigor, a broad range of courses, an introduction to college expectations, a relevant curriculum, and a cost reduction are all enhancements for students who take advantage of dual credit programs (Hoffman & Robins, 2005; Andrews & Barnett, 2002). Some states created dual credit for better relationships between high schools and colleges, enhancing K-12 efficiency, increasing rigorous college-prep curriculum for all students, increasing attainment of postsecondary students, and reducing remediation (Krueger, 2006). Zeidenberg and Bailey (2010) expounded on the benefits of dual credit (e.g., obtaining college credit in high school, shortening time frame, decreasing costs); however, they believed the challenge of dual credit course work and the decrease of culture shock are just as important or maybe more important than earning college credit, shortening time frame, and decreasing costs.

Dual credit course work enhances 21st century learning skills and incorporates the 4 C's; communication, collaboration, critical thinking, and creativity. We know students perform better in courses that they like or that mean something to them. If those courses are tied to their future career goals or college enrollment then student engagement is increased. The benefits of these types of dual credit programs are undeniable.

Dual enrollment programming, if embraced more enthusiastically by school districts, community colleges and universities, could provide a better alternative to early college entrance or credit bearing transition programs. Dual credit programs have the potential to benefit a broad spectrum of students and provide yet another way to build a better and smoother transition between secondary and post-secondary education and workforce training. More research needs to be done on this topic as we take a closer look

at dual enrollment and the effect it has had and continues to have on schools across the nation.

CHAPTER THREE

RESEARCH DESIGN AND METHODOLOGY

The purpose of this causal comparative study was to determine if the completion of dual enrollment courses while in high school impacted the graduation rates of college students. In addition, the researcher sought to determine if the completion of dual enrollment courses while in high school impacted the number of academic semesters it took to earn a college degree. Data was gathered to see if there was a significant difference in college success rates between students who started college with college credits and those who did not.

Research Questions

1. Does completing dual credit courses while in high school impact college graduation rates?
2. Does completing dual credit courses while in high school impact the number of academic semesters it takes to earn a college degree?
3. Does the number of dual credits earned while in high school impact college graduation rates?
4. Does the number of dual credits earned while in high school impact the number of academic semesters it takes to earn a college degree?

Null Hypothesis

H_1 Students completing dual credit courses in high school did not have higher college graduation rates than students not taking dual credit courses in high school.

H_2 Students completing dual credit courses in high school did not graduate from college in fewer academic semesters than students not taking dual credit courses in high school.

H_3 The number of dual credits earned while in high school did not impact college graduation rates.

H_4 The number of dual credits earned while in high school did not impact the number of academic semesters it took to earn a college degree.

Research Procedures

Data from the 2009, 2010, and 2011 freshmen enrollees was sought from Missouri four-year public and private colleges and universities. There were 13 four-year public and 24 private universities or colleges in Missouri that were contacted. The data was used to evaluate how many students had college credits when they entered college. The data received was analyzed statistically to determine if a significant difference in graduation rates and the number of academic semesters it took to earn a degree existed between students who completed dual credits while in high school and those who did not.

The researcher obtained a master email list of Registrars from all the four-year public and private universities and colleges in Missouri from the Missouri Department of Elementary and Secondary Education and initial contact was made. After the key contact person was established, several methods were utilized to collect the student data. An initial email was sent to the Registrar at all four-year public and private universities and colleges in Missouri on January 4th, 2016. Two attachments were included in the email, one clearly outlining what data was needed, and the other, the researcher's approved IRB form from Southwest Baptist University. A window of four weeks was allowed for

participants to collect the data. A follow-up email was sent and phone calls were made after the initial email as a reminder to those who had yet to respond to the request, as well as to thank those who had collected the data. If respondents declined to participate, or did not take any action by the end of the sixth week, there was no further communication.

The researcher requested student data on the 2009, 2010, and 2011 freshmen enrollees. This data included graduation rates, how many dual credits the students started college with if any, and how many academic semesters it took them to graduate. The researcher requested that the data from any student under the age of 18 be excluded. The researcher requested this data to be gathered using a numbering system so all students would remain anonymous. This method protected to privacy of the student's data. Due to the large number of colleges and universities in the data sample, the estimated representative sample was 20 percent of those colleges responding. This amounted to 7 colleges or universities out of 37 possible respondents.

Of the 37 possible respondents, data was gathered from 5 institutions which was a sampling of 13.5% and included data on 20,881 students. Respondents included Missouri State University, Missouri Southern State University, Southeast Missouri State University, Northwest Missouri State University, and William Jewel College. The data requested included: total number of dual credits when enrolling as first time freshmen, graduation rates, and number of academic semesters it took to earn a college degree, GPA, and ACT scores. Although GPA data was collected it was not included in this study because there has been adequate research on the effects of GPA on college readiness. In addition, data on ACT scores was also collected but not reported

consistently and was not necessary to answer the research questions. The data was not used because it was suspect, thus a validity concern.

The data analysis of this causal-comparative study looked at two independent groups, students who earned dual credits while in high school and students who did not. The dependent variables, graduation rates and number of academic semester to earn a degree, were examined. Based on these groups the researcher used a variety of descriptive and inferential statistics such as mean, standard deviation, independent t-test, and ANOVA to analyze the data.

An independent t-test was used to compare students who took dual courses while in high school to graduation rates and number of academic semesters it took to earn a college degree. The independent t-test was used to address research questions one and two. It was used to determine if there was a statistically significant difference in the graduation rates of those students as well as the number of academic semesters it took them to earn a college degree. Continuous variables were analyzed based on a sliding scale of 10 credit intervals. The four categories were 1-10 credits, 11-20 credits, 21-30 credit and 31 and above credits. An ANOVA was used to compare the variables to number completing a degree, research question three, and to compare the variables to the number of academic semesters to degree attainment, research question four.

Human Participants and Ethics Precautions

This quantitative study was non-experimental in nature and used existing data. Because the research was being done through Southwest Baptist University, and in accordance with their guidelines regarding the protection of human participants, approval to conduct this study was obtained from the Research Review Board. After receiving

approval from the SBU Research Review Board, the data about human subjects was collected from the higher education institutions. Depending on the institution, approval by the SBU Research Review Board was sufficient; however, when required by the institution, approval was sought through the institution's IRB/RRB. Information that might lead the researcher to the identity of students was removed from the data before the data was given to the researcher. Due to the collection method, types of questions, and methodology of this study, there was no bias or possible conflicts of interest.

Summary

This quantitative study sought to determine if the completion of dual enrollment courses while in high school impacted college graduation rates as well as the number of academic semesters it took to earn a college degree. Data was collected from five Missouri four-year colleges and universities. The data was analyzed to determine if the completion of dual credit courses while in high school impacted college graduation rates and the number of academic semesters it took to earn a college degree. Analysis was also done to determine if the number of dual credits earned in high school impacted college graduation rates as well as the number of academic semesters it took to earn a college degree. Chapter Four will present the data and information that resulted from answering the research questions in narrative and table form. Chapter Five will summarize the paper, discuss the research questions, review the discovered data and findings, and provide recommendations.

CHAPTER FOUR

ANALYSIS

The purpose of this quantitative study was to determine if the completion of dual enrollment courses while in high school impacted the graduation rate of college students. This study looked at two independent groups, students who earned dual credits while in high school and those who did not, and compared them to the dependent variables of graduation rates and number of academic semesters to earn a degree.

The impact of dual credit coursework on college graduation rates and the number of academic semesters it took to earn a degree were analyzed using an independent t-test. The impact of the number of dual credits earned on college graduation rates and the number of academic semesters it took to earn a degree were analyzed using an ANOVA.

Analysis of Data

The researcher investigated college freshmen who had college credits when entering college and those who did not to see whether there was a statistically significant difference in graduation rates and the number of academic semesters it took to earn a degree. Four research questions were developed and statistical analysis were done to analyze the data.

Null Hypothesis: H_1 Students completing dual credit courses in high school did not have higher college graduation rates than students not taking dual credit courses in high school. *Research Question* 1: Does completing dual credit courses while in high school impact college graduation rates?

An independent t-test was used to compare students who had completed dual credits in high school and graduation rates. The test was used to determine if there was a

statistically significant difference in the graduation rates of those students who had completed dual credits in high school and those who did not; see Table 1.

Table 1

Independent t-test for Dual Credits in High School and Graduation Rates

	N	Mean	Significance (2-tailed)
Students graduating from college.	7,889	9.50455	.000
Students not graduating from college.	9,419	4.57145	.000

The results showed a significance level of .000 which is less that the alpha level of .05, meaning there was a statistical difference in the college graduation rates between students who did and did not earn dual credit courses in high school. The mean for students graduating was 9.504 while the mean for those not graduating was 4.571. The mean values indicated that students with dual credit courses had a higher graduation rate than students without dual credit courses. Students had a higher probability of graduating if they took dual credit courses in high school. Based on the significance level of $p <$ .000 less than the alpha level of .05, the null hypothesis is rejected. Thus, students entering college with dual credit courses graduated at a higher rate than students who entered college without dual credits.

Null Hypothesis: H_2 Students completing dual credit courses in high school did not graduate from college in fewer academic semesters than students not taking dual credit courses in high school. *Research Question* 2: Does completing dual credit courses while in high school impact the number of academic semesters it takes to earn a college degree?

An independent t-test was used to compare students who had completed dual credits while in high school and those who did not. The test was used to determine if there was a statistically significant difference in the number of academic semesters it took to earn a college degree; see Table 2.

Table 2

Independent t-test for Number of Academic Semesters and Dual Credits in High School

	N	Mean	Significance (2-tailed)
Students having completed dual credit courses in high school.	5,720	10.755	.000
Students not having completed dual credit courses in high school.	1,004	12.198	.000

The results showed a significance level of .000 which was less that the alpha level of .05, meaning that completing dual credit courses while in high school had a significant impact of the number of academic semesters it took to earn a college degree. The mean for number of academic semesters it took to earn a college degree for students graduating having completed dual credit courses while in high school was 10.755, while the mean for the number of academic semesters it took to graduate for those students not completing dual credit courses in high school was 12.198, thus showing that the number of academic semesters it took for students to graduate that had completed dual credit courses in high school was lower than for those students that had not completed dual credit courses while in high school. The difference in the means of students who took dual credit courses while in high school and those who did not was 1.433, therefore, students who took dual credit courses in high school graduated almost a semester and a half earlier than students that did not take dual credit courses in high school. Based on the significance level of $p < .014$ less than the alpha level of .05, the null hypothesis is

rejected. Thus, students entering college with dual credit courses graduate in fewer semesters than students who enter college without dual credit courses.

Null Hypothesis: H_3 The number of dual credits earned while in high school did not impact college graduation rates. *Research Question* 3: Does the number of dual credits earned while in high school impact college graduation rates?

An ANOVA was used to compare the number of dual credits earned while in high school and college graduation rates. The test was used to determine if there was a statistically significant difference in the number of dual credits earned while in high school and college graduation rates. The number of dual credits earned while in high school were coded using the sliding scale; see Table 3.

Table 3

Dual Credits Earned Sliding Scale

Code	Number of Dual Credits Earned
1	0-10
2	11-20
3	21-30
4	>30

Table 4 shows the results of an ANOVA showing the impact of the number of dual credits completed on graduation rates showed significant differences in students with 1-10, 11-20, 21-30 and 30+ dual credits, $F(3, 17760) = 383.834$, $p = .000$. The results of a Tukey's HSD post-hoc test are shown below in Table 5. Statistical significance ($p = .000$) showed up in Tukey's HSD post-hoc test between all four groups, however there was not a significant difference in 21-30 and 30+ dual credits ($p = .938$).

Because the significance level ($\sigma = .000$) is less than that alpha level ($\alpha < .05$), the null hypothesis is rejected. Thus, the answer to research question three is that the number of dual credits earned in high school does impact college graduation rates, however there is not a statistical significant difference between students earning 20-30 credit hours and students earning more than 30 hours; therefore, students earning more than 30 dual credit hours are not more likely to graduate than students earning between 20 and 30 hours.

Table 4

ANOVA for Number of Dual Credits and Graduation Rates

	Sum of Squares	Df	Mean Square	F	p value
Between Groups	268.418	3	89.473	383.834	.000
Within Groups	4,139.896	17,760	.233		
Total	4,408.313	17,763			

* = $p < .05$

Table 5

Tukey's HSD post-hoc test for Number of Dual Credits and Graduation Rates

Sliding Scale of Dual Credits Earned	Sliding Scale Comparisons	Mean Difference	Standard Error	Significance
1	2	.2496*	.0095	.000
	3	.3246*	.0146	.000
	4	.3426*	.0279	.000
2	1	-.2496*	.0095	.000
	3	.0750*	.0164	.000
	4	.0930*	.0288	.007
3	1	-.3246*	.0146	.000
	2	-.0750*	.0164	.000
	4	.0180	.0309	.938
4	1	-.3426*	.0279	.000
	2	-.0930*	.0288	.007
	3	-.0180	.0309	.938

Null Hypothesis: H_4 The number of dual credits earned while in high school did not impact the number of academic semesters it took to earn a college degree. *Research Question* 4: Does the number of dual credits earned while in high school impact the number of academic semesters it takes to earn a college degree?

An ANOVA was used to compare the number of dual credits earned while in high school and the number of academic semesters it took to earn a college degree. The test was used to determine if there was a statistically significant difference in the number of dual credits earned while in high school and the number of academic semesters it took to earn a college degree. The number of dual credits earned while in high school were coded using the sliding scale: see Table 3.

Table 6 shows the results of an ANOVA showing the impact of the number of dual credits completed on number of academic semesters it took to earn a college degree showed significant differences in students with 1-10, 11-20, 21-30 and 30+ dual credits, $F(3, 8115) = 82.329$, $p = .000$. The results of a Tukey's HSD post-hoc test are shown below in Table 7. Statistical significance ($p = .000$) showed up in Tukey's HSD post-hoc test between all four groups, however there was not a significant difference in between 21-30 and 30+ dual credits ($p = .416$). Because the significance level ($\sigma = .000$) is less than that alpha level ($\alpha < .05$) the null hypothesis is rejected. Thus, the answer to research question four is that the number of dual credits earned in high school does have an impact on the number of academic semesters it takes to earn a college degree, however there is not a statistical significant difference between students earning 20-30 credit hours and students earning more than 30 hours. Thus, students earning more than 30 dual credit hours are not more likely to graduate earlier than students earning between 20 and 30 hours.

Table 6

ANOVA for Number of Dual Credits and Number of Academic Semesters

	Sum of Squares	Df	Mean Square	F	p value
Between Groups	1,102.904	3	367.635	82.329	.000
Within Groups	36,237.034	8,115	4.465		
Total	37,339.937	8,118			

* = $p < .05$

Table 7

Tukey's HSD post-hoc test for Number of Dual Credits and Number of Academic Semesters

Sliding Scale of Dual Credits Earned	Sliding Scale Comparisons	Mean Difference	Standard Error	Significance
1	2	.5896*	.0554	.000
	3	.9162*	.0787	.000
	4	1.1606*	.1446	.000
2	1	-.5896*	.0554	.000
	3	.3266*	.0864	.001
	4	.5709*	.1490	.001
3	1	-.9162*	.0787	.000
	2	-.3266*	.0864	.001
	4	.2444	.1591	.416
4	1	-1.1606*	.1446	.000
	2	-.5709*	.1490	.001
	3	-.2444	.1591	.416

Summary

Statistical significance was found supporting the impact of completing dual credit courses while in high school on college graduation rates. Evidence was also found that not just completing dual credit courses while in high school impacted graduation rates but the number of those high school credits completed also affected graduation rates. Completing dual credit courses while in high school was also found to impact the number of academic semesters it took to earn a college degree. Not only completing dual credit courses while in high school but also the number of dual credits completed while in high school impacted the number of academic semesters it took to earn a college degree.

CHAPTER FIVE

CONCLUSIONS AND RECOMMENDATIONS

School reform has been a topic of interest for years. It has received nationwide attention and became paramount after the publication of "A Nation at Risk" in 1983. Educational reform took on several initiatives focusing on outcomes based education, standards based education, and charter and magnet schools. In 2001 No Child Left Behind focused on achievement gaps between student groups and state programs would emerge such as Missouri's Race to the Top to spur systematic reform and spur innovation in teaching and learning. Most recent is the Common Core State Standards which are designed to help prepare students for college and careers. These types of reform would focus on 21st Century Skills with an emphasis on the three R's; rigor, relevance, and relationships. Educational institutions at all levels are pushing for rigor and relevance and college and career readiness has been launched to the forefront of educational reform. Because of a shift in this paradigm, research must focus on things that have a high impact on college and career readiness. This study focused on dual credits earned in high school and their impact on college readiness, a major factor of educational reform.

With all of these reform efforts could it be possible that the answer is already in place? Proponents of dual enrollment programs contend that the senior year of high school is key to educational reform at the secondary level. With a new movement of early graduation and little research done to see the effects of this new phenomenon, keeping the final years of high school relevant and at the same time providing a smooth transition to post-secondary education has become a priority. Providing dual enrollment programs could be a viable way to increase rigor and relevance and give new life to the

final year of a traditional high school. It could reduce the time to earn a college degree and it could save students money. Guiding this study was the impact of students' participation in dual-enrollment programs on college readiness. Factors examined in this study were graduation rates and the number of academic semesters it took to earn a degree. The researcher looked at college freshmen who had dual credits when entering college and those who did not to see if there was a statistically significant difference in graduation rates and the number of academic semesters it took to earn a degree.

Although GPA data was collected it was not included in this study because there has been adequate research on the effects of GPA on college readiness. In addition, data on ACT scores was also collected but not reported consistently and was not necessary to answer the research questions. Because little research had been conducted to see if dual credit courses were preparing students for college, this study was conducted to see if having dual credit courses in high school impacted the graduation rates and the number of academic semesters it took to earn a degree. Supporting research questions included:

1. Does completing dual credit courses while in high school impact college graduation rates?
2. Does completing dual credit courses while in high school impact the number of academic semesters it takes to earn a college degree?
3. Does the number of dual credits earned while in high school impact college graduation rates?
4. Does the number of dual credits earned while in high school impact the number of academic semesters it takes to earn a college degree?

Summary of Methods

The researcher collected data from Missouri higher education institutions on freshmen enrollees from 2009, 2010, 2011. Data on graduation rates, the number of academic semesters it took to earn a degree, and the number of dual credits earned while in high school was collected. The data was consolidated in an excel spreadsheet so that appropriate statistics could be ran. Independent t-test and ANOVA were used for data analysis.

Summary of Findings

The purpose of this study was to examine the impact of students' participation in dual-enrollment programs on college readiness. The impact of students completing dual credit course work while in high school on graduation rates was addressed through research questions one and two and the impact of the number of dual credits earned while in high school and the number of academic semesters it took to earn a college degree where addressed through research questions three and four.

Research Question 1: Does completing dual credit courses while in high school impact college graduation rates? Students who completed dual credit courses while in high school graduated from college at a higher rate than those that did not. These results indicate that there is a significant difference in college graduation rates of students who took dual credit and those who did not. Students who took college courses while in high school had a higher probability of graduating from college.

Research Question 2: Does completing dual credit courses while in high school impact the number of academic semesters it takes to earn a college degree? Students who completed dual credit courses while in high school took fewer academic semesters to

graduate. This significant difference indicated that students who took dual credit courses while in high school graduated in fewer semesters than those that did not take dual credit courses while in high school. Graduates who took dual credit courses while in high school graduated almost a semester and a half earlier than those that did not.

Research Question 3: Does the number of dual credits earned while in high school impact college graduation rates? The number of dual credits earned while in high school impacted college graduation rates. Students who earned dual credits in high school had a higher probability of graduating from college. As the number of dual credits earned increased so did the probability of graduating from college. Students who had 11-20 hours of college credit graduated at a higher rate than students having 0-10 hours of college credit. Students who had 21-30 hours of college credit graduated at a higher rate than students who had 11-20 hours of college credit. Students who had 21-30 hours of college credit graduated at a higher rate than students having 11-20 hours of college credit. However, taking more than 30 hours of dual credit courses while in high school did not increase the probability that students would graduate at a higher rate than students taking 20-30 dual credit courses. The threshold seemed to hold at 30 credits and anything over that did not show a significant difference in graduation rates.

Research Question 4: Does the number of dual credits earned while in high school impact the number of academic semesters it takes to earn a college degree? The number of dual credit courses earned while in high school impacted the number of academic semesters it took to earn a college degree. The more dual credit courses a student took while in high school, the fewer academic semesters it took them to earn a college degree. Students who had 11-20 hours of college credit graduated in fewer academic semesters

than students having 0-10 hours of college credit. Students who had 21-30 hours of college credit graduated in fewer academic semesters than students who had 11-20 hours of college credit. However, students who earned more than 30 hours of college credits while in high school did not graduate in fewer semesters than students who earned 21-30 hours of dual credit courses. The threshold seemed to hold at 30 credits and anything over that did not show a significant difference in the number of academic semesters it took to earn a college degree.

Limitations of the Study

Limitations to this study included the reliability of the data gathered by the colleges and universities. Because there is not a systematic way for postsecondary institutions to report this data, the data collection process included different methods of collecting and coding of the data. This could have led to different interpretations of the data that was collected or definitions such as first time freshmen enrollees and dual credit earned while in high school. Data showing students who graduated from each institution did not take into account the possibility of the student going on to another institution and graduating.

With 5 institutions or 13.5% of the possible respondents providing 20,881 student records, the estimated representative sample of 20% was not reached. The data analysis and resulting figures would have been strengthened with a larger sample, but the results were sufficient to draw conclusions and make recommendations.

Implications of Research

This study was conducted to add to the body of research on dual credit programs and their effects on college readiness and persistence to graduation. Many studies have

been done on dual credit programs but none of those studies really concentrated on the relationship between students who earn dual credits while in high school and college readiness (Marken, et al, 2013; Karp, et al., 2007). Previous studies did not focus on the impacts of earning dual credits in high school and persistence to college graduation or the number of academic semesters it takes to graduate. Does dual credit earned while in high school increase college readiness? This study gives credence to the idea that earning dual credits while in high school does positively impact college graduation rates and reduces the number of academic semesters it takes to earn a degree. When looking at high school educational reform perhaps the focus should be on dual credit programs, their assessment standards and the policies that govern them.

With many states having dual enrolment policies (Zimmermann, 2012), and there being clear benefits to these types of programs, clear standards should be in place to govern these programs. This would insure the credibility of these programs as well as insure the rigor and relevance of the content (American Association of State Colleges and Universities, 2002). State and federal education agencies should revisit dual credit requirements for colleges. Thus, making it easier for dual credit programs to be developed. State legislatures should support the development of dual credit programs and encourage proper definitions of what constitutes a dual enrollment program as well as the entrance requirements, teaching credentials, and credit earning standards (Conley, 2010; An, 2013). Postsecondary institutes should continue to foster more positive relationships with secondary institutions and improve on these types of programs. Funding should be explored to provide dual credit opportunities for students from all demographics and finally, a systematic approach to tracking these types of data should be

explored. As education reform evolves, dual credit should be considered as an option to bridging the gap between secondary and postsecondary education

Recommendations

The following recommendations include extensions or modifications to add to the body of research examining whether dual enrollment increases college readiness. The review of literature in this study highlighted a number of overarching themes surrounding dual enrollment such as: theoretical frameworks, historical perspectives, college readiness, 21st Century Skills, Common Core, student engagement, advantages and disadvantages of dual enrollment, and a review of recent dual credit research. This study focused on the effects of dual enrollment on college readiness but it would be beneficial to further study these effects by studying the characteristics of students who earn dual credits in high school and continue on with their education at postsecondary institutions. Some characteristics to study would be: high school GPA, ACT and SAT scores, family income levels, single parent vs. two parent homes, and demographics. It would be beneficial to explore the components of dual credit programs to look for consistencies between quality programs. More research needs to be done on this topic as we take a closer look at dual enrollment and the effect it has had and continues to have on schools across the nation.

Conclusions

We know students will do better in courses they like or that they can see the relevance in. If these courses are tied to their future, whether it be career aspirations or college readiness, student engagement is increased. Dual credit courses can fulfill this void that sometimes exist at the secondary level. With more and more students

graduating early from high school, research needs to be done of the effects of this trend. Are students mature enough to graduate early, are they really pursuing post-secondary schooling, and are they being successful when entering post-secondary institutions early? Providing the opportunity of a rigorous and relevant dual credit program within the secondary school setting could be a viable way of providing these students the opportunities that they are so ready to acquire, but with a sense of security and at a cost savings. The four C's of communication, collaboration, critical thinking, and creativity are at the core of 21st century learning skills and when incorporated with rigor, relevance, and relationships, provide for a solid educational foundation (Hidden Curriculum, 2014). Dual credit course work can infuse all of these skills and help to bridge the gap between secondary and postsecondary institutions (National Center for Educational Statistics, 2015; Conley, 2014). The benefits of dual credit programs are undeniable.

The data from this study overwhelmingly supported a significant difference in college success rates between students who started college with college credits and those who did not. The impact of dual credits earned in high school and their impact on college graduation rates and the number of academic semesters it took to earn a college degree was clear. Based on this study, school districts, community colleges, and universities should consider continued and expanded opportunities for dual credit. Dual credit programs have the potential to benefit a broad spectrum of students and provide a way to bridge the gap between secondary and postsecondary institutions.

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