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Advanced Placement Versus Dual Credit: The Long-Term Effects Of Advanced Academics On Post-Secondary Success And Completion At A Public Four-Year Research University In A Border City

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ADVANCED PLACEMENT VERSUS DUAL CREDIT: THE LONG-TERM
EFFECTS OF ADVANCED ACADEMICS ON POST-SECONDARY
SUCCESS AND COMPLETION AT A PUBLIC FOUR-YEAR
RESEARCH UNIVERSITY IN A BORDER CITY

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Doctoral Program in Educational Leadership and Administration

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Dedication

To Noah Michael

Your happy disposition, eagerness to learn, and unconditional love amazes me every day.
Son, I'm so proud to be your mother.

To Michael Anthony

Our life together and the doctoral journey started simultaneously. I love the adventures we've embarked on and the life we've created. I couldn't have done this without you, love.

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by

ELDA ARMENDARIZ, M.Ed.

DISSERTATION

Presented to the Faculty of the Graduate School of
The University of Texas at El Paso
in Partial Fulfillment
of the Requirements
for the Degree of

DOCTOR OF EDUCATION

Educational Leadership and Foundations
THE UNIVERSITY OF TEXAS AT EL PASO

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Abstract

Goldrick-Rab, Carter, and Wagner (2007) contend that “there are disproportionately few evaluations of program effectiveness, and thus the question of ‘what works’ is rarely adequately addressed in higher education. In other words, we have often failed to adequately connect theory to practice” (p. 2472). Due to the differing nature of the curricula for the Advanced Placement and Dual Credit Programs and the processes by which students can earn college credit in high school, most of the existing research focuses on the impact of the individual programs, which presents the need for future research on the relative effectiveness of the different programs (Perna, Rowan-Kenyon, Bell, Thomas, & Li, 2008).

The purpose of this non-experimental quantitative study is to evaluate the characteristics and postsecondary outcomes of students at a research university in a community near the border between the United States of America and the United States of Mexico who, while in high school, earned college credit only in advanced placement courses, students who took only dual credit courses in high school, students who earned credit in both advanced placement and dual credit courses, and students who took neither type of pre-college credit courses. In addition, this study aims to determine the intellectual development of current first-time freshmen enrolled at this university and explore the statistical significance of the intellectual development position according to the student group. “There is little empirical research on the impact of dual enrollment on student persistence and achievement, and even less on student development” (Hoffman, Vargas, & Santos, 2008). Theories on cognitive student development in college all stem from William Perry’s theory of intellectual and ethical development. The second component of this study assesses the intellectual development of first-time freshmen according to Perry’s position through the delivery of the Learning Environment Preferences instrument survey.

On May 23, 2015, the Texas Legislature passed House Bill 505, which prohibits a limit to the number of dual credit courses in which a student can enroll. Hence, the state is supporting the expansion of dual credit programs, and this legislation will significantly impact how secondary

and postsecondary institutions align their college readiness initiatives. The results of this study found that a statistically significant difference exists between the postsecondary outcomes of Dual Credit students and non-Dual Credit students. In addition, students enrolled in a combination of Dual Credit and Advanced Placement high school courses significantly outperformed students solely enrolled in either program as related to first-year college GPA, persistence rate, and four and six-year graduation rate.

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Chapter 1: Introduction to the Study

Introduction

College aspiration encompasses a discovery of self, wide-ranging opportunities, economic advancement, increased social capital, and, most importantly, educational growth. For Hispanic and disadvantaged youth, however, navigation from a public secondary school to the vigorous academic environment of an institution of higher education may seem daunting or unattainable. Although a successful college experience is largely influenced by external factors, academic expectations are at the core of postsecondary student development. The student population of the community of El Paso, Texas, near the border between the USA and Mexico (hereafter referred to as a USA–Mexico border community) has a high percentage of students who are Hispanic and from low socioeconomic backgrounds. This student population can provide important insights into the transition and success that students experience in higher education. Efforts are continuously made by educators to not only provide quality education for all students, but to increase students' access and commitment to higher learning in postsecondary institutions.

One effort that primarily targets the academic rigor of postsecondary institutions is the encouragement that high school students receive to enroll in advanced academic programs, also known as dual enrollment (DE) programs. Such programs have seen a strong push for and competition within the two types of DE programs available: Advanced Placement (AP) and Dual Credit (DC) programs, which use different course syllabi. AP courses are based on national standards set by the College Board, and course credits can be transferred to a majority of universities nationwide. In contrast, DC courses align with a two- or four-year state institution and are primarily recognized by public, state colleges and universities. As we educate and advise students on the benefits of enrolling in AP or DC courses in high school, we ask: What are the long-term performance outcomes according to the credit-based program in which a student enrolls? Are students who enroll in AP, DC, or both types of courses more apt to complete their college degree within four years? What trends are exposed by the relationship between a student's

choice of college major and the AP or DC courses in which he/she was enrolled in high school? Finally, does the number of credits a high school student transfers to a four-year public university affect the time until that student completes an undergraduate degree?

“If an archaeologist were to search among the artifacts of high school reform, she would find layer upon fragmented layer of improvements – but with only tangential relationships with one another” (Hoffman, 2003, p. 43). A plethora of programs and policies initiated in good faith by educators significantly impact the educational opportunities provided to students. Kretchmar and Farmer (2013) point out that in education, more so than in any other profession, practices and systems implemented within our schools have been handed to us over the years and, for the most part, remain uncontested. Coinciding with this notion, Goldrick-Rab, Carter, and Wagner (2007) contend that “there are disproportionately few evaluations of program effectiveness, and thus the question of ‘what works’ is rarely adequately addressed in higher education. In other words, we have often failed to adequately connect theory to practice” (p. 2472). In an era of educational reform where an obvious disconnect exists in the transition between academic environments, collaboration amongst researchers and practitioners is vital to fill the gaps in knowledge. The rapid unprecedented growth of both AP and DC programs within the past decade demonstrates efforts to add layers of improvement. However, K-12 educators and higher education officials will continue spinning their wheels because there is little reliable and valid feedback to adequately improve program implementation. The challenge remains to determine the degree to which DE programs will increase the number of students who attain postsecondary credentials, with an emphasis on minority and disadvantaged populations (Hoffman, 2003).

BACKGROUND OF THE STUDY

In the US–Mexico border region of El Paso, Texas, it is estimated that 89% of the student population is Hispanic and 76% of students are of low socioeconomic status; of the more than 10,000 students who graduate from high school every year, approximately 60% enroll in a postsecondary institution immediately after high school (El Paso Collaborative for Academic

Excellence [EPCAE], 2011). That leads us to believe that 4,000 US–Mexico border residents who are 18 years of age enter the workforce every year. Of the 60% of students who enroll in college, 43% attend local institutions, either The University of Texas at El Paso (UTEP) or El Paso Community College (EPCC), and 17% leave the county to pursue postsecondary education (EPCAE, 2011). UTEP is a public, state university that enrolls over 20,000 undergraduates and 3,177 graduate students (UTEP, 2016). The UTEP student population is 80% Hispanic, and approximately 84% of the students are from the El Paso area (UTEP, 2016). It is crucial that educators in the El Paso region not only collaborate in local P-16 vertical alignment, as the majority of the students remain in the area, but that they ensure that efforts to improve the public school curriculum will help students transition to postsecondary education and succeed at the university level. It is important to note that curriculum alignment is not the defining factor in college readiness, but is a crucial component in a student’s perception of his/her ability and academic preparedness.

In a community of residents who are largely economically disadvantaged and of an ethnic minority, the road to college graduation is paved with obstacles at every turn. Research to assess college readiness measures has primarily focused on the academic preparation of the student (Maruyama, 2012). The admission process, financial aid, and social acceptance can greatly impact a student’s determination to continue the quest for higher learning. Although these factors are simply the initial steps to guide students to a postsecondary education, they are not sufficient to lead to the preferred outcomes (Trent, Orr, Ranis, & Holdaway, 2007). As important as it is to debunk financial aid myths and encourage students from low socioeconomic backgrounds to apply to and attend a college or university, obtaining financial aid will not independently solve the dilemma of low rates of student access, retention, and completion of postsecondary education (Tierney, 2008). It is necessary to further assess the expectations and academic preparation of students as they transition from a secondary institution to higher education.

“There is little empirical research on the impact of dual enrollment on student persistence and achievement, and even less on student development” (Hoffman, Vargas, & Santos, 2008, p.

17). Theories on cognitive student development in college stem from William Perry's work. Perry's theory of intellectual and ethical development outlines nine different positions of student understanding, where the fifth position is when a student understands that finding a simple right answer is rare rather than the norm (Love & Guthrie, 1999). Students intellectually progress from basic dualism, which presents a black and white picture of absolute truth, to relativistic thinking and then to a commitment to relativism (Perry, 1970). Perry also observed that although students do not remain in a given position for a fixed period of time, three periods of deflection occur. The three periods of deflection are temporizing, retreat, and escape, where a student backtracks in his developmental progress. Perry (1970) identified the majority of college freshmen as being at position 4: late multiplicity by the end of the first year of college. This stage encompasses the student's encounter with the unknown and the acceptance that everyone has a right to an opinion by understanding that there is no right answer to everything and that the authority figure does not know all. The environments created by secondary schools and postsecondary institutions differ considerably and reflect the intellectual development of the students. Secondary schools operate within highly structured parameters that enforce the expectation for students to learn from the teacher, master the content that is presented, and begin to think critically while following the school's rules and norms. Opening the door to diversity and a multiplistic view of the world leads to a sense of freedom for the student (Copes, 1982). Students must transition from the structured environment of secondary school and assimilate to the college environment, which is generally characterized by greater freedom and diversity. In essence, if advanced academic courses are taught at the high school level for college credit, they should foster the intellectual development of students towards a multiplistic and relativistic frame of mind.

The rigor of advanced courses has key implications for graduation rates, workforce income, and two- or four-year college aspiration and completion (Long, Conger, & Iatarola, 2012). "Students who took the high-level math course had a 30% higher labor market income 13 years out than those who did not" (Long, Conger, & Iatarola, 2012, p. 289). Granted, much of this increase may be attributed to the completion of a college degree. Long, Conger, & Iatarola (2012)

found that students in Florida who enrolled in a level-3 math course by the 10th grade were 25% more likely to graduate from high school and 45% more likely to attend a 4-year college. For the marginal student, as many Hispanic and disadvantaged students typically are, this is a considerable increase. A large concern is that “Black and poor students were less than half as likely to take a Level 3 course in any subject than their White and non-poor peers” (Long, Conger, & Iatarola, 2012, p. 307). Although we certainly want to increase the number of students who enroll in advanced courses and successfully attain college credit through AP or DC programs, it is important to analyze their coinciding pathway upon completion of the DE program.

In their work to establish college-level standards and K-12 entities that define the curricula for non-AP courses, Kirst and Venezia (2001) highlight the disconnect that exists between higher education and the K-12 curricula. More than 25% of college freshman at four-year universities and almost 50% of freshman at two-year colleges do not make it past their first year (Kirst & Venezia, 2001). Students at an urban “commuter” university with an all-access policy, similar to UTEP, who decide to leave college may attribute that decision to the combined pressure of managing a job, family, and school (Kinnick & Ricks, 1993). Efforts to augment retention rates at public universities must keep freshmen at the forefront of their objectives. Retention, completion and graduation rates impact the standing of a public university. “Graduation rates at the least selective public universities in many states range between 30% and 50%” (Kirst & Venezia, 2001, p. 93). Also affecting college completion rates are the remedial courses into which some students are placed. More than 50% of community college students and between 28%-40% of first-time undergraduates need to enroll in at least one remedial course (Bautsch, 2013). Less than 25% of students who place into remedial courses at community college graduate with a certificate or degree, compared to 58% of undergraduates who do not require remedial courses who earn a bachelor’s degree (Bautsch, 2013). Perceptions of the benefits of AP and DC courses include the opportunity to save money by earning college credit while in high school, as well as raising a student’s sense of self-accomplishment and ability to complete a college degree. Hence, the number of necessary remedial courses will be addressed through high school intervention efforts,

to include support of students in advanced courses such as AP and DC courses, which should improve college retention rates.

DE programs, also known as credit-based courses, aim to challenge students in high school with college-level material and by extension, grant college credit that will make the college transition seamless. The term “dual enrollment program” encompasses AP and DC courses, amongst other programs such as the International Baccalaureate (IB) and state-articulated courses. In a continued effort to promote student success and college readiness, the Texas Legislature required that students be able to earn at least twelve semester college credit hours in high school and in 2007, these college credit hours included DC courses (American Institutes for Research, 2011). Nationwide, the number of public high school students enrolled in DC courses in the 2010-2011 school year was 2,036,700, compared to the 3,457,100 students enrolled in AP courses (Thomas, Marken, Gray, & Lewis, 2013). Approximately 67% of public high schools in the United States offer AP courses and 71% offer DC courses (Peters & Mann, 2009). Due to the differing nature of the AP and DC curricula and processes for earning college credit, most of the existing research focuses on the impact of an individual program, which presents the need for future research on the relative effectiveness of the different programs (Perna, Rowan-Kenyon, Bell, Thomas, & Li, 2008).

Problem Statement

Insight into the advanced academic programs and educational outcomes of students in the US–Mexico border region of El Paso, Texas sheds light on the current state of initiatives to improve college readiness, particularly for students of Hispanic ethnicity and those of low socioeconomic status. The population of this border region is 76.6% Hispanic, and 38.5% of the children live below the poverty level (City-Data Forum, 2014). Only 60% of the high school graduates from the region attend a postsecondary institution directly after high school, and only 17% leave El Paso in pursuit of higher education (EPCAE, 2011). Conley (2008) asserts that students are college-ready when they are proficient in four areas: key cognitive strategies, key

content knowledge, academic behaviors, and contextual skills and awareness because college success is contingent upon intellectual development and academic achievement. This definition of college readiness coincides with Perry's (1970) theory of intellectual and ethical development, which provides the positions of a college student's intellectual progress as the student moves from dualistic thinking to relativistic thinking. Fifty-four percent of middle- and upper-income high school graduates are academically prepared for college, compared to 22% of low-income high school graduates (Hoffman, Vargas, & Santos, 2008). The retention rate for first-time college students who return after their first year has remained constant at 58% (National Student Clearinghouse, 2014). Enrollment in AP and DC programs has increased substantially, with supportive local and state policies that ease the transition from secondary to postsecondary education and increase the number of students who earn a college degree. DC programs are establishing a foundation of influence, and research on these programs is expanding. Meanwhile, the College Board continues to conduct exhaustive research on AP programs. There is thus a pronounced need for research that evaluates and compares these DE programs and their long-term effects on students' completion of postsecondary degrees or other credentials. This study seeks to evaluate the long-term performance outcomes of students at a four-year public research university who had enrolled in two college credit-based programs while in high school within a community that is significantly Hispanic and of low socioeconomic status.

Purpose of the Study

The purpose of this non-experimental quantitative study is to evaluate the characteristics and postsecondary outcomes of students enrolled at a research university located in a US–Mexico border community, comparing the outcomes of students who earned college credit only in AP courses while in high school (AP students), students who took only DC courses in high school (DC students), and students who earned college credit in both DC and AP courses while in high school (DCAP students). Descriptive statistics will provide insight into the students categorized as AP students, DC students, and combined DCAP students. A one-way analysis of variance

(ANOVA) test is conducted to determine whether there is a statistically significant difference in the first-year GPA and final-year GPA of the students by group. A chi-squared goodness-of-fit test is conducted to determine whether there is a statistically significant difference in the first-year persistence rate by group. Finally, a chi-squared test of independence is conducted to determine whether there is a statistically significant difference in the college graduation rate, time to degree completion, and time to degree completion based on the number of credit hours earned in high school by group. The independent variables evaluated are the AP students, DC students, and DCAP students. The population of interest is first-time freshmen students entering UTEP in the fall of 2008, fall of 2009, and fall of 2010. In addition, this study seeks to evaluate the intellectual development position, according to Perry, of first-time freshmen during the spring 2017 semester. A one-way ANOVA test is used to determine whether a statistically significant difference exists between AP, DC, and DCAP students and students who did not take DE courses in high school (non-DE students) regarding the Perry position, and whether a significant difference exists between the general subject content of the advanced courses.

The information gathered from this quantitative study will be instrumental in professional practice as schools aim to reform and strengthen their college-going culture. It may bring to light and address unspoken educator biases or lack of knowledge that is imposed on students when deciding upon an advanced academic pathway. Educators can utilize the results following a campus needs assessment to structure professional development, align course standards and expectations, enhance parent-school relationships, and scrutinize the provision of information delivered to students regarding their postsecondary education options and opportunities. By 2020, 38% of college students in Texas will be Latino and by 2030, Latino elementary and high school students will constitute the majority nationwide. Among Latinos, there is a 22% poverty rate and 20% have some college education, while only 12% are college graduates (Pino, Martinez-Ramos, & Smith, 2012). The El Paso border region's college-going students are an excellent representation of the Texas state population. As Covarrubias (2011) so adequately stated, "perceptions of students ultimately become so persistent and pervasive that they can impact educational outcomes for

people who are labeled by these terms, in some cases diminishing their potential” (p. 88). Educators must ensure that we are not creating limitations or raising barriers to students’ higher learning opportunities. On May 23, 2015, the Texas Legislature passed House Bill 505, which prohibits a limit on the number of DE courses in which a student can enroll. Hence, the state is supporting the expansion of DE programs, which will influence how secondary and postsecondary institutions align their college readiness initiatives. Further data on the outcomes and success of students in a US–Mexico border town who have earned college credit while in high school will aid professional development, administrative implementation of advanced academics, and provide data to parents and students as they make decisions about high school education that will impact the student’s postsecondary academic success.

Rationale for Methodology

“When knowledge is at a minimum, it is best to observe” (Kamil, 2004, p. 101). Non-experimental quantitative research, also termed observational research, is instrumental in generating theory by observing a phenomenon in its natural setting (Kamil, 2004). It is important to note that many educational research problems are better suited for non-experimental methods than experimental methods due to the difficulty or impossibility of manipulating variables (Johnson, 2001). For the purpose of this study, it is not in the best interest of students to manipulate a student’s enrollment in advanced courses. This study gathers longitudinal data from the existing database at UTEP for traditional first-time freshmen students entering the university in the fall semesters of 2008, 2009, and 2010. This large sample size will provide a cumulative average that will reduce the effects of DE program changes possibly instituted in one given year. The students will be divided into four strands that will serve as the independent variables of the study: students enrolled solely in AP courses, students enrolled solely in DC courses, students enrolled in both AP and DC courses, and students enrolled in neither AP nor DC courses while in high school. Descriptive analysis, one-way ANOVA, chi-squared goodness of fit, and chi-squared test of association will be utilized in this research. The analysis will provide an overall description of the

traditional first-time freshmen entering a public research university located in a US–Mexico border community with a majority of Hispanic students and examine any possible associations between the DE program in which the students enrolled while in high school and their postsecondary outcomes. Postsecondary outcomes, graduation rates, and completion rates, in particular, are frequently reported in research studies. Policymakers and reformers are most interested in one measurement of postsecondary outcomes: the rate of degree completion (Torraco, 2014). The low achievement rates of Hispanic students cause great concern among policymakers and educators alike as the Hispanic population is the nation’s fastest growing segment (Lozano, Watt, & Huerta, 2009). Additionally, this study measures the intellectual development of current first-time freshmen according to Perry’s position and determines whether there is a statistically significant difference between Perry’s position for students within the four strands. As Klopfenstein and Lively (2012) point out, a gap in the research exists regarding the comparison of DE programs and their long-term postsecondary effects.

Advancing Scientific Knowledge

This study intends to unearth associations within the postsecondary outcomes based on the advanced academic courses in which a student enrolls while in high school. “Practice is not only a setting for the application of knowledge, it is a source of knowledge generation” (Torraco, 2014, p. 1201). The data for this non-experimental quantitative study have been gathered from the local public university and the research findings will provide data to the local community, which may in turn be used as feedback for DE practices. This information is potentially beneficial for educators in the field as they make recommendations for college readiness initiatives. Inequities exist in college readiness counseling that negatively impact students with differential access to rigorous, college-level courses, postsecondary aspirations, and knowledge of such courses and expectations of academic advancement (Savitz-Romer, 2012). Transitional programs, DE programs, and college readiness initiatives aim to remove such inequities in access and aspiration. Future research needs to focus on the academic services provided to high school students that will

increase academic preparation for college and consequently, increase the likelihood of students earning a college degree (Burney, 2010). There is also an existing need for the development of local evaluation research models (Klopfenstein, 2003).

Research Questions

This longitudinal non-experimental quantitative study will address the following questions:

1. At the University of Texas at El Paso, what are the characteristics of the first-time freshmen sample population who were enrolled in high school AP courses, DC courses, both AP and DC courses, or no advanced academic courses?

2. Among the students who enroll at the University of Texas at El Paso immediately following high school graduation, is there a statistically significant difference in the first-year grade point average (GPA) among students who earned college credit in only AP courses, students who earned college credit in only DC courses, students who earned college credit in both AP and DC courses, and students who did not earn college credit in either program?

3. Among the students who enroll at the University of Texas at El Paso immediately following high school graduation, is there a statistically significant difference in first-year persistence among students who earned college credit in only AP courses, students who earned college credit in only DC courses, students who earned college credit in both AP and DC courses, and students who did not earn college credit in either program?

4. Among the students who enroll at the University of Texas at El Paso immediately following high school graduation, is there a statistically significant difference in graduation rates among students who earned college credit in only AP courses, students who earned college credit in only DC courses, students who earned college credit in both AP and DC courses, and students who did not earn college credit in either program?

5a. Among the students who enroll at the University of Texas at El Paso immediately following high school graduation, is there a statistically significant difference in the time to degree completion among students who earned college credit in only AP courses, students who earned

college credit in only DC courses, students who earned college credit in both AP and DC courses, and students who did not earn college credit in either program?

5b. Among the students who enroll at the University of Texas at El Paso immediately following high school graduation, is there a statistically significant difference in the time to degree completion among students who entered the university with fewer than 12 college credits, students who entered with 12-45 college credits, and students who entered with more than 45 college credits?

6. Among the students who enroll at the University of Texas at El Paso immediately following high school graduation, is there a statistically significant difference in the final GPA at graduation among students who earned college credit in only AP courses, students who earned college credit in only DC courses, students who earned college credit in both AP and DC courses, and students who did not earn credit in either program?

7. Among the students who enroll at the University of Texas at El Paso immediately following high school graduation, is there a statistically significant difference in intellectual development among students who were enrolled in only AP courses, students who were enrolled in only DC courses, students who were enrolled in both AP and DC courses, and students who did not enroll in either program?

8. Among the students who enroll at the University of Texas at El Paso immediately following high school graduation, is there a statistically significant difference in intellectual development among students who enrolled in only humanities college credit courses while in high school, students who enrolled in only math and/or science college credit courses, and students who enrolled in both types of college credit courses?

Significance of the Study

To prevent the high rates of remedial courses required of college freshmen, low rates of persistence to the second college year, and even lower rates of attaining postsecondary credentials, transition programs not only need to be systematically instituted, but need to be evaluated and the

results needs to be utilized to improve such transition programs. Forty-one percent (41%) of Hispanic undergraduates and 42% of African American undergraduates require remediation courses in college as compared to 31% of white students (Bautsch, 2013). Although 90% of high school seniors plan to attend college, only 75% actually enroll in a postsecondary institution and, regrettably, one-third of college freshmen drop out after their first year (Hoffman, 2003). Almost a third of Latino students attend college immediately after high school; however, only 10.5% earn a bachelor's degree. In addition, 63% of students of low-income status are placed in remedial courses upon entering college (Roderick, Nagaoka, & Coca, 2009). Because only about 6% of high school graduates from Texas enroll in out-of-state colleges or universities (Giani, Alexander, & Reyes, 2014), evaluating DE programs at a public research university in Texas with a demographic population that is growing and which remains underrepresented is vital for the US–Mexico border community in Texas and for any institution that serves students who are Hispanic or of low socioeconomic status.

A college-ready student must understand the structure and norms of a postsecondary education so that he/she can understand the college course expectations, engage with the content material, and then develop intellectually from the lessons as intended by the course (Conley, 2008). Savitz-Romer (2012) presents college readiness counseling as a developmental process that encourages students to aspire to postsecondary educational achievement, honing in on the individual student's interests and abilities and supporting students through the college admission process. Counselors, parents, and educators at every level tend to promote a maximization of college-level courses during high school, with the assumption that it will better prepare students for higher education (Kretchmar & Farmer, 2013). Unfortunately, research has found that high school counselors may have limited access to and knowledge about college readiness counseling, and in fact, “participants wished for feedback on students' postsecondary performance as a strategy to improve their own practice, inform curriculum decisions, and better understand the leaks in the K-16 pipeline” (Savitz-Romer, 2012, p. 107). This study will be instrumental in providing insight into and guidance on the comparative performance outcomes of high school students who

participate in DE programs in a US–Mexico border community in Texas. The majority of AP research has focused on the relationship between exam participation and the ensuing scores and college performance outcomes; however, little research has assessed the relationship between a high school student’s participation in rigorous advanced academic courses and subsequent college performance (Kretchmar & Farmer, 2013). The existing research on DC courses has predominantly been positive, however, it has not been exhaustive (Hofmann, 2012). “There is little rigorous research investigating the claimed benefits of college-level programs and even less comparing outcomes for different programs” (Klopfenstein & Lively, 2012, p. 64).

Nature of the Study

The targeted population of this study is traditional, first-time college freshmen at UTEP from the fall 2008, fall 2009, and fall 2010 who participated in AP and DC courses while in high school. In 2006, the Texas Legislature passed House Bill 1 that incorporated a mandate to all secondary schools to provide students a minimum of twelve hours of college credit through DE courses. By combining the three classes of freshmen, classes of 2008, 2009, and 2010, we can obtain a sufficiently large sample population of students who participated in DE programs. We can also evaluate graduation rates and time to degree completion, categorizing such student into one of three groups according to the duration until degree completion: four, five, or six years. The students who did not participate in any DE course while in high school will compose a fourth category. The enrollment at UTEP in fall 2008 was 20,458, and increased to 22,106 by the fall of 2010 (UTEP, 2016). UTEP enrollment is currently characterized as 86.4% undergraduate students, 80% Hispanic, and there is a 38% graduation rate for traditional first-time freshmen who enroll immediately after high school graduation (UTEP, 2016). Research data were collected from the institution and descriptive statistics were utilized to initially analyze the data for AP students, DC students, and DCAP students. A one-way ANOVA test was used to determine whether there is a statistically significant difference between the students’ first-year GPA and final GPA by group. One-way ANOVA is a suitable test for GPA findings as it contains four independent categories,

only AP, only DC, both AP and DC, and none, and GPA is a continuous, dependent variable. A chi-squared goodness-of-fit test is conducted to determine whether there is a statistically significant difference in the first-year persistence rate and the graduation rate. Finally, a chi-squared test of independence is used to determine whether there is a statistically significant difference in the time to degree completion among the groups, and in the time to degree completion based on the number of credit hours earned in high school. The second component of this study evaluated the intellectual development according to Perry's position of first-time freshmen at UTEP during the spring 2017 semester. A one-way ANOVA test is used to determine whether a statistically significant difference exists between the Perry positions for students categorized as AP, DC, DCAP, and non-DE. Lastly, a one-way ANOVA test is used to compare the intellectual development positions of students who enrolled in humanities advanced courses versus math and science advanced courses while in high school.

Definition of Terms

1. Traditional first-time freshman – a student who enrolled at a postsecondary institution the fall semester immediately following high school graduation.
2. Non-traditional student – a student who is 25 years or older, is married, or has children, who may have taken time out due to external factors, and is typically attending college part-time or is attending college along with having family obligations or a job (UTEP, 2006).
3. Advanced Placement (AP) – a high school course that follows a curriculum collaboratively developed and stipulated by the College Board and which allows a high school student to earn college credit with a score of 3, 4, or 5 on an AP exam (College Board, 2014).
4. College readiness – a term that defines the four facets in which a student must be proficient to be successful in higher education: key cognitive strategies, key content knowledge, academic behaviors, and contextual skills and awareness (Conley, 2008).

5. College readiness counseling – a process that develops students’ postsecondary aspirations and expectations, honing students’ individual interests and abilities, and providing support to students for college access and success (Savitz-Romer, 2012).
6. Credit-based Programs – also known as dual enrollment, courses that allow a high school student to simultaneously earn high school and college credit for the specified course.
7. Dual Credit – courses in which a high school student can enroll and simultaneously receive high school and college credit (Texas Higher Education Coordinating Board, 2010).
8. Dual enrollment (DE) – a term that encompasses credit-based programs such as Advanced Placement, Dual Credit, International Baccalaureate, and state articulated courses (U.S. Department of Education, 2007).
9. Grade point average (GPA) – a measure of academic performance in college according to a four-point scale that is accumulated from all semesters attended (UTEP, 2014).
10. Persistence – a student continuing from the first year of college to the second year; also termed the retention rate.
11. Retention rate – the percentage of traditional first-time, first-year students who continue to enroll at that postsecondary institution the following year (U.S. Department of Education, 2016).
12. Graduation rate – the percentage of traditional first-time, first-year undergraduate students who complete their degree program within 150% of the program’s published time; for a four-year program, students are considered graduates if they complete the program within six years (U.S. Department of Education, 2016).
13. Remedial education – courses that are required of a student enrolled at a postsecondary institution that are considered to be below college level and which require a standard fee but do not earn college credit (Bautsch, 2013).

Assumptions, Limitations, Delimitations

The primary assumption underlying this study is that the research findings gathered from these data reflect the community's overall DE processes and that the results may be extended to similar communities and other institutions serving student populations that are largely Hispanic and of low socioeconomic status. The delimitation associated with this assumption is the choice of a public, four-year research university that is located in a community that is predominantly Hispanic and has a considerable portion of the student population that is of low socioeconomic status. There are several limitations present in this study. The targeted population is traditional, first-time undergraduate students who enrolled in the fall of 2008, fall of 2009, and fall of 2010 at a public research university located in a US–Mexico border community in Texas, with 80% of its student body identifying as Hispanic. Thus, nontraditional students are not included in this study, even though the university has a history of directing their efforts to nontraditional students. International and out-of-state students are also excluded from this study as AP and/or DC courses may not have been offered to such students and DC courses are not comparable from state to state. Also, this study focused on a four-year university and excluded students who earned college credit in high school but then enrolled in a community college rather than the local public university. Finally, due to the specific demographic majority of the campus community, the research findings may not be generalized to all student populations across the nation.

Summary and Organization of the Remainder of the Study

Advanced placement and dual credit programs have been encouraged by educators and the state legislation with the notion that challenging students with college-level material in high school leads to improved academic preparation and ultimately an increase in postsecondary success. However, simply providing postsecondary options in high school does not necessarily equate to success (Hoffman, 2003). Efforts have targeted growth in DE programs, and particular attention is being placed on closing the achievement gap with underrepresented populations. Although 90% of high school seniors plan to attend college, only 75% actually enroll in a postsecondary

institution and one-third of college freshmen drop out after their first year (Hoffman, 2003). Research has provided evidence that low income and urban minority high school graduates are enrolling in college, yet the probability of earning a bachelor's degree is significantly lower for students who enroll in a community college or a less selective university (Roderick, Nagaoka, & Coca, 2009). Seventy-eight percent (78%) of schools with low minority populations offer DE options, compared to 58% of schools with high minority populations (Peters & Mann, 2009). A lack of research exists for school administrators, policymakers, and district leaders to prioritize the DE opportunities that are most efficacious in preparing students for college success (Giani, Alexander, & Reyes, 2014). Chapter 2 establishes a definition of college readiness and a synopsis of Perry's theory of intellectual and ethical development that serves as the theoretical framework for this study. Chapter 2 also presents an overview of the literature that exists on remedial education, advanced placement, dual credit, and a comparison of advanced placement and dual credit programs. Chapter 3 describes the rationale behind this non-experimental quantitative study and describes the data collection and analysis procedure conducted to determine whether an association exists between AP and DC courses and postsecondary outcomes.

Chapter 2: Literature Review

Introduction and Background

“The point of theory and of intellectual endeavor in the social sciences should be, in Foucault’s words, ‘to sap power’, to engage in struggle, to reveal and undermine what is most invisible and insidious in prevailing practices” (Ball, 1995, p. 267). Uniting theory and professional practice in education is precisely the purpose of a college readiness study that not only evaluates student achievement, but also provides instrumental insight into current and future systemic practice. The levels of postsecondary educational achievement and attainment are a matter of concern as they impact the practices of educational institutions, citizenship and governmental processes, the economy, and society as a whole. In particular, efforts to improve student academic readiness and pursuance of postsecondary education are of utmost importance. The nature of the gap between high school and college has been heavily debated and scrutinized, with ensuing emphasis on intervention efforts by both K-12 and higher education institutions.

In 1955, the College Board began its administration of the AP program that developed college-level curriculum to be instituted at the high school level in efforts to reduce the gap between secondary and higher education (College Board, 2003). In a continued effort for student success and college readiness, the Texas Legislature required that students be able to earn at least twelve semester college credit hours in high school, and in 2007, this included DC courses (American Institutes for Research, 2011). In essence, students have the opportunity to earn college credit through AP courses, IB courses, DC courses, and other local- or state-articulated courses. On a national scale, in the 2010–2011 school year, 2,036,700 public high school students were enrolled in DC courses and 3,457,100 students were enrolled in AP courses (Thomas, Marken, Gray, & Lewis, 2013). The DC and AP programs combined are providing a substantial increase in opportunities for students to engage in a college-level curriculum and earn college credit. However, although extensive research has been conducted to assess the college readiness impact of each program, limited research exists that compares both programs and their long-term effects on student achievement. As students and parents make crucial decisions affecting postsecondary

education in high school, it is important to know the evidence-based long-term effects of each advanced academic program on a student's postsecondary success and how this translates to schools' institutional processes to close the achievement gap between secondary and higher education.

The importance of this study is twofold as it compares the effectiveness of two DE programs on student achievement and completion at a postsecondary institution and advises educators and policymakers on the progress towards closing the achievement gap as mediated by college readiness efforts. It fills a need expressed by researchers, practitioners, and legislators alike: "despite the growing popularity of dual enrollment programs, little rigorous research has been conducted on their effectiveness" (U.S. Department of Education, 2007, p. 1). The High School Leadership Summit, as contracted by the U.S. Department of Education, also determined that more information was needed on the number and type of students enrolled in college-credit-based programs, whether the DE programs support the persistence of students in postsecondary institutions, and how state policies affect program practices (U.S. Department of Education, 2007). The term DE program serves as an umbrella that encompasses AP and DC courses, amongst other programs such as IB and state-articulated courses. To complement the views articulated in the High School Leadership Summit, Orr (2009) affirms that "without quality research, policy making and programmatic interventions occur in a vacuum, uninformed by the realities of those meant to benefit" (p. 2318). The importance of this study lies in determining the comparative effectiveness of two DE programs on student postsecondary degree completion as dictated by Texas school legislation and processes.

Theoretical Foundations

The theoretical framework that serves as the foundation of this study is Perry's theory of intellectual and ethical development that encompasses nine positions of development with three positions of deflection. Perry describes the development as centering primarily on position 5, where a student understands knowledge and personal values as relative, contextual, and contingent

(Perry, 1970). Clearly, academic preparation consists of not only amassing content knowledge but the development of how students think and apply their thinking and contracted meaning simultaneously with coursework and their academic environment. The nine positions are situated within three concepts: (i) dualism is a mode of meaning where students see the world in black and white, with right or wrong answers, and expect the authority figures to provide content information because they have the right answers; (ii) multiplicity entails a transition to a world where peers begin to be legitimate sources of knowledge and diverse views are equally valid; and (iii) the relativism concept is initiated when students begin to recognize that not all opinions hold the same value and knowledge is based on evidence and supporting arguments (Evans, Forney, Guido, Patton, & Renn, 2010). The nine positions are (1) basic duality, (2) multiplicity pre-legitimate, (3) multiplicity subordinate, (4) multiplicity correlate or relativism subordinate, (5) relativism correlate, competing, or diffuse, (6) commitment foreseen, (7) initial commitment, (8) orientation in implications of commitment, and (9) developing commitment(s); and the three positions of deflection are temporizing, escape, and retreat (Perry, 1970).

The three positions of deflection are particularly important as they reinforce utilizing the term position rather than the stage to signify a student's growth and development. The period of deflection demonstrates a static period in the continuum of student development. "A student's movement, or lack of movement, could therefore be conceived as the resultant of these opposing vectors: the urge to progress and the urge to conserve" (Perry, 1970, p. 52). The idea of progressing is associated with growth, which is positive, but also involves the student becoming a better person (Perry, 1970). Hence, a period of deflection creates a situation of two opposing forces for a student: the need and desire to grow with the resistance of change and encountering new and unforeseen forces. The three deflections that interrupt student development are described as temporizing, which is similar to a "time-out" resting period where learning plateaus, escape, which is the abandonment of responsibility, and retreat, which can be a result of a student feeling overwhelmed or over-challenged such that the student temporarily retreats to dualism (Evans et al., 2010). "The students' endeavor to orient themselves in the world through an understanding of the acts of

knowing and valuing is therefore more than intellectual and philosophical. It is a moral endeavor in the most personal sense” (Perry, 1970, p. 54). Teachers and professors teach students to progress in their critical thinking skills, to manipulate and engage with the content material in ways that are intended to challenge a student’s sense of the world around him. Within this difficult and personal task, efforts to promote and support student development across secondary and postsecondary institutions are vital.

The driving force in determining college readiness, persistence, and completion is academic preparation. With the current trend of DC offerings multiplying across the country, coupled with an increase in AP course offerings, college is now beginning in high school. “The young person’s discovery of diversity in other people’s points of view is of course part of the folklore of adolescence and of ‘growing up’ in the college years. It would seem, too, to be occurring earlier and earlier in life” (Perry, 1970). Coinciding with this notion of change, the college student population has diversified and attending college has become a societal expectation since Perry’s original study (Love & Guthrie, 1999). Perry’s theory of intellectual and ethical development is in accordance with curriculum theorists. The point of educating the public, according to Pinar (2012) is not to “become ‘accountable’, forced through ‘modes of address’ to positions of ‘gracious submission’ to the political and business status quo” (p. 249); rather it is about curriculum being constantly in flux to provide opportunities for the student to develop intellectually and socially. Although the state of Texas has implemented college readiness standards within the curriculum standards, curriculum practice remains centered around standards that are tested in the state exams. Parra (2002) found that the districts in El Paso, Texas were often compelled to only recommend and implement programs that would raise state exam scores because the exam was the standard. To standardize curriculum is to set the academic content apart from the experiences of students and educators, reinforcing a disconnect between academic environments and what students are expected to do. Parra (2002) underscores the need to teach diversity and Pinar (2012) contends that the simple alignment of secondary curriculum standards to collegiate standards is not enough and renders a closed curriculum. Therefore, complicated

conversation, critical thinking, and the connection of academic material related to students' lived experiences in both secondary and higher education will promote true student learning and engagement.

“Although one can hardly be opposed to higher test scores, it is self-reflexive interdisciplinary intellectuality – the cultivation of ‘original thought’ – that constitutes curriculum theorists’ aspiration for the process of education” (Pinar, 2012). All too often, the meaning and measurement of student success and college readiness relies upon state standardized exams, ACT or SAT exams, or the diploma graduation plan that students are completing. Perhaps because it is difficult to measure learning for all students, we rely on efficient standardized assessments. Pinar (2012) reminds us that curriculum is the joint contribution of academic studies with a student’s lived experiences that are implicated in and apply to society, politics, and culture. In fact, he proposes the concept of *currere*, described as a verb, where curriculum continuously evolves, runs its course, and encourages students to engage in complicated conversation. Currere has four moments: (i) the regressive step, where the student steps back to his/her existential experience and formulates his/her own data source; (ii) the progressive step, where the student looks towards the future and imagines what can be; (iii) the analytical step, where the student analyzes the past and the present in self-scrutiny; and finally, (iv) the synthesis step, described as bringing it all together, conceptualizing the present, and as an intense current that energizes the student. The fourth step is the ultimate learning experience and “a must” in advanced courses.

Progression in student development and ways of thinking impact a student’s college achievement and completion. Critical thinking is a transformational process a student undergoes that changes a student’s assumptions and perceptions as the student constructs his own perspective rather than just learning a skill set (Magolda, 2006). “Theorists in cognitive development suggest one kind of account – the possibility that differences in students’ thinking are related to intellectual orientations that develop during college” (Slattery, 1990, p. 333). Hence, measuring the longitudinal effects of a DE program through a postsecondary institution is based on the intellectual orientation of the student and his active learning in a college environment. It is

imperative that teachers of AP or DC courses in high school foster critical thinking and encourage students as they progress from being uncritical, dualistic thinkers to relativist thinkers. Copes (1982) points out that the diversity of twentieth century environments does not allow students to remain dualistic thinkers as the world is not conducive to absolutism. That point must be even more true in the twenty-first century in which we now live. Understanding that there are fundamental differences in the syllabus and credit earning process between AP and DC courses, there is a lack of research that compares these two DE programs and how they translate to student achievement and success at a postsecondary institution as we prepare students for a diverse and complex world.

Review of the Literature

College Readiness and Transition

The current P-16 education reform movement stems from the need to seamlessly transition students from pre-kindergarten through college. “Although more people attend a postsecondary institution today than at any other time in history, not all high school graduates are academically prepared for success in college” (Tierney, 2008, p.101). The low number of high school graduates pursuing a postsecondary education, coupled with very low retention rates at colleges and universities, demonstrate the need for joint efforts between secondary and postsecondary educators to make this transition a seamless one. Fifty-four percent (54%) of middle- and upper-income high school graduates are academically prepared for college, compared to a mere 22% of low-income students (Hoffman, Vargas, & Santos, 2008). Approximately 70% of high school graduates attend a college or university immediately after high school (Trent, Orr, Ranis, & Holdaway, 2007), yet the college retention rate for first-time students returning after their first year has remained constant at 58% (National Student Clearinghouse, 2014). Therefore, of the 70% of students who continue to a postsecondary institution, approximately half of middle- and higher-income students are academically prepared and a little over half of the students will return for their second year of

college. These statistics present a dismal picture of student success from the secondary to postsecondary level.

Efforts to increase the enrollment of high school graduates at a postsecondary institution are prevalent across secondary and postsecondary schools. Roderick, Nagaoka, and Coca (2009) focus on the aspiration–attainment gap, which shows increasing aspirations to obtain a college education for all ethnic groups, with the highest increase in the low-income group, yet no translation to an increase in degree attainment for all groups. “The bottom line is that closing the aspirations–attainment gap requires more than increasing the number of students who enroll in college. It ultimately requires improving students’ likelihood of completing degrees, and this will require improving college completion rates among students who enroll” (Roderick, Nagaoka, & Coca, 2009, p. 188). Closing educational gaps requires data analysis according to minority and income-level groups. Among African American students, 50.3% attended some college (a jump of 18 percentage points), yet only 17.8% earned a bachelor’s degree; less than a third of Latino students attended college immediately after high school, yet only 10.5% earned a bachelor’s degree; and finally, 63% of low income students were placed in remedial courses upon entering college (Roderick, Nagaoka, & Coca, 2009). A multitude of factors affect students’ decisions about postsecondary education and their postsecondary outcomes. The data analysis provides insight into the holes in educational achievement and provides a basis for further action on behalf of all stakeholders.

The concept of college readiness and its value is generally agreed upon, yet its exact definition and measurement are frequently debated. Maruyama (2012) argues that college readiness should utilize high school benchmarks that are meaningful to students, utilize various measures as opposed to a single threshold score on a single assessment, and present readiness level as a likelihood or probability rather than simply being ready or not. Conley (2008) presents the four facets of college readiness to encompass key cognitive strategies, key content, academic behaviors, and contextual skills and awareness. Students within this definition of being college-ready are able to understand what is expected in their college-level course, can engage in the

content material, can develop key cognitive strategies to utilize in learning material across disciplines, and understand the culture, expectations, and intellectual norms of a postsecondary institution's social and academic environment (Conley, 2008). Three of the four facets of college readiness are based on an academic foundation. Fortunately, the academic foundation for students is what both secondary and postsecondary institutions have direct control over.

It is important to recognize that external factors, such as a dire financial situation, can impact a student's persistence and college completion outcome. In fact, much of the student retention research utilizes Tinto's theory of college student departure to assess how a student's background characteristics and life and school experiences interact with the academic and social environment of the postsecondary institution to determine the varying degrees of persistence and completion (Adelman, 2006). Tinto (1997) asserts that "a more accurate representation would have academic and social systems appear as two nested spheres, where the academic occurs within the broader social system that pervades the campus" (p. 619). Hence, the focus remains on the intellectual development of a student within the social environment of the institution rather than an attempt to separate the two spheres. The college classroom is the prime location where the academic and social environments meet and integrate (Tinto, 1997). A goal of providing a natural progression in rigor supports enhanced classroom curriculum and instructional strategies to further prepare high school students for college. High school teachers are concerned that students are not prepared to enter their classroom, while middle school teachers voice the same concern about students coming from elementary school. College professors across the nation, regardless of the institution's selectivity, share the same sentiment in the lack of students' academic preparedness for college-level work (Conley, 2008). Adelman (2006) conducted longitudinal research that showed that Latino students, who gained 22.2 percentage points, and students of low-socioeconomic status benefitted the most from high school curriculum attainment and attending college directly after high school. Determining how to translate vertical alignment along the K-12 curriculum to success at postsecondary institutions has the greatest chance of closing the educational achievement gap.

Remedial Education

In response to the lack of alignment between a high school curriculum and college academic expectations, colleges and universities have accommodated the widespread need for remediation (Bautsch, 2013). Remedial education courses are required at a postsecondary institution when a student is deemed to be below college level in reading, writing, or math. Students have the opportunity to take placement exams before enrolling in a postsecondary institution and must pass them prior to enrolling in DC courses in high school. The data for students enrolling in remedial courses upon first entering a college or university present an abysmal picture. More than 50% of community college students and between 28%-40% of first-time undergraduates need to enroll in at least one remedial course (Bautsch, 2013). The achievement gap translates into the need for remediation according to ethnicity as well, with 41% of Hispanic students and 42% of African American undergraduates requiring remedial courses in college as compared to 31% of white students (Bautsch, 2013). Remedial education, however, is not the solution for the translation gap between high school achievement and college readiness as even students perceived to be working at the appropriate grade level and with a 3.0 high school GPA are placing into remedial college courses (Alliance for Excellent Education, 2011). Less than 25% of students placed into remedial courses at community college graduate with a certificate or degree, yet 58% of undergraduates who do not need remedial courses earn a bachelor's degree (Bautsch, 2013). Immediately upon placement into remedial courses, a student is half as likely to continue and complete their postsecondary education. Less than 50% of students complete their remedial courses, and if they placed into remedial reading, only 17% will earn a bachelor's degree as compared to 27% of students who are required to take a remedial math course (Bautsch, 2013). One of the major concerns of remedial education is that taxpayers are paying twice for the same education because the college remedial courses contain content that should have been taught in high school (Saxon & Boylan, 2001).

Advanced Placement (AP)

In 1955, as a response to the widening gap between high school and college, the AP program, coordinated by the College Board, was developed. The first decade focused on teacher training, the 1970s and 1980s were committed to increasing the number of course offerings and schools offering AP courses, and through the 1990s, the AP program targeted increased access to minority and low-income students (College Board, 2003). In addition, the College Board developed the Pre-AP Initiative and AP Vertical Teams to align curriculum and instruction starting in middle school to aid student development and better prepare students for AP courses. Currently, AP courses are provided in 34 subjects, 2.2 million students are enrolled in AP courses, and most postsecondary institutions, approximately 3,300 worldwide, receive and honor AP college credit (Davis, 2014). Secondary teachers and higher education professors collaborate on the development and grading of the AP syllabus and exam. In the 2012–2013 school year, 11,500 AP teachers and college professors graded approximately 3.9 million AP exams; 132,500 teachers taught AP courses in nearly 14,000 public schools, and 5,300 college faculty reviewed AP syllabi and curricula (Davis, 2014). The numbers represent significant growth in the AP program and its history explains how research has targeted the execution of the program to benefit students.

The significant increase in the AP program in the past decade is of particular importance to this study. The number of students taking AP exams has nearly doubled and the number of low-income AP examinees has increased from 58,489 in 2003 to 275,864 in 2013 (College Board, 2014). An increase of more than 217,000 low-income AP examinees demonstrates increased access and efforts towards equity in AP participation. This increase should also translate to better performance outcomes for low-income students in postsecondary education. However, the 10th Annual AP Report to the Nation stated that nearly 300,000 students in the class of 2013 who were academically ready and had the potential to succeed in an AP course never took an AP course (College Board, 2014). A plethora of research has been conducted that validates the finding that students who complete AP courses succeed in college at higher rates than students who do not

complete AP courses. However, limited research has examined the current increase in both AP and DC programs and how they compare in relation to students' postsecondary outcomes.

To earn college credit through an AP class, a student must take the AP exam at the end of the year and earn a minimum score of 3 on a 1-to-5 point scale. From 2003 to 2013, there was a 7.9 percentage point increase in students scoring 3 or above on AP exams, and for the class of 2013, 20.1% of public high school graduates in the nation scored 3 or higher on an AP exam (College Board, 2014). Although research indicates that students who complete AP courses significantly outperform students who do not complete AP courses, studies vary in focus in terms of AP participation and earning college credit. Scott, Tolson, and Lee (2010) found that 37% of the participants they studied entered the university with AP credit, and students with AP credit outperformed those without AP credit regarding first semester GPA and SAT score, regardless of gender and ethnicity. They also found that the fall semester GPAs were significantly different for each score on the AP exam in mathematics, biology, and political science, but that in English language, they were significantly different for scores 3, 4, and 5, but not for 1 and 2 (Scott, Tolson, & Lee, 2010). "One additional serendipitous finding was that students earning credit for course work through advanced placement outperformed students who earned credit through university administered departmental exams" (Scott, Tolson, & Lee, 2010, p. 29). Additional research is required to look at the participation and academic performance rates as compared by AP credits and local university credits.

Mattern, Shaw, and Xiong (2009) discovered that an AP student, regardless of score, was more likely to return for their second year of college even though the first-year GPA for AP students who scored 1 or 2 was not significantly different from the GPA of non-AP students. This presents the juxtaposition of the benefits of the AP program as determined by participation through course enrollment and passing the AP exam for credit. It is important to note that the College Board sets a passing score of 3, 4, and 5, yet it is the individual college or university that determines how they award credit. Judson and Hobson (2015) concluded that although the growth in participation in the AP program and exam taking is substantial, particularly for Hispanic students and students

in ninth and tenth grades, the pass rates have declined, and this is more so for Hispanic students and those in lower grade levels. A plausible explanation is that there is a “societal ethos promoting rigorous curriculum and urging the need for secondary schools to help students become college-ready” and in doing so, AP “has moved from being a choice among very ambitious advanced students to being a staple of high school curricula” (Judson & Hobson, 2015, p. 70). The implications of their findings demonstrate a move towards AP participation as a valuable aspect of preparing students academically for higher education rather than concentrating solely on scores and credit as determined by a particular postsecondary institution. In their study of two sample groups, Mattern, Marini, and Shaw (2013) confirmed that AP students who completed at least one AP exam, regardless of the score, were more likely to graduate from college in four years as compared to non-AP students, with 58% of AP students graduating in four years, compared to 38% of non-AP students.

Dual Credit (DC)

The DC program provides a high school student the opportunity to simultaneously receive high school and college credit for an academic or technical course that is most often taught on the high school campus (Texas Higher Education Coordinating Board, 2010). Across the nation, DC programs have experienced substantial growth. During the 2010–2011 school year, DC enrollment was approximately 1,277,100 students in the United States, with 87% of the institutions indicating that the teachers of such courses taught at the high school campus also met the minimum qualifications of a college assistant professor (Marken, Gray, & Lewis, 2013). DC courses are generally available to juniors and seniors, with 40% of institutions reporting that tenth grade students were eligible, and 25% of institutions allowing ninth grade students to enroll (Marken, Gray, & Lewis, 2013). The findings from DC courses geared primarily to high school upperclassmen with a smaller, but increasing, population of underclassmen, are remarkably similar to the AP enrollment data. Marken, Gray, and Lewis (2013) noted that only 4% of institutions geared their DC program towards at-risk students in danger of failing. Hence, students enrolled in

DC courses are deemed academically prepared for college. “A search of journals and ERIC documents since about 1980 reveals that much of the writing that has been done on dual credit has been to promote a specific program, to report how a college created and nurtured its program, to advise parents of "gifted" children of their options, or to complete government-required studies of state-mandated programs” (McMannon, 2000, p. 17). DC and college transition research has limited program evaluation data, particularly in the comparison of the two growing DE programs.

DC offerings result from a partnership between a secondary school and the postsecondary institution within the parameters as set by the state legislature. Therefore, DC courses and enrollment trends vary by state. For the purpose of this study and the location of the postsecondary institution under research, other studies of the DC program in Texas are of most value. To enroll in a DC course in Texas, a student must meet the minimum standards on the Texas Success Initiative (TSI), the Preliminary SAT (PSAT), or the Preliminary ACT (PLAN). Texas students may also meet a minimum score on the state assessment; however, that variable is constantly at risk of changing due to the recent conversion from the Texas Assessment of Knowledge and Skills (TAKS) exam to the State of Texas Assessments of Academic Readiness (STAAR) End-of-Course (EOC) exam and the reduction in proctored EOC exams required for graduation. From 2005 to 2010, Texas experienced a 143% growth in students earning college credit in DC courses, reaching a high of 65,712 students, with 96% of the courses provided by community and technical colleges (Texas Education Agency & Shapley Research Associates, 2011). By the fall of 2015, enrollment in DC courses in Texas reached an all-time high of 133,342 students (Texas Higher Education Coordinating Board, 2015). The number of students enrolled in DC programs across Texas has more than doubled every five years.

DC courses are offered in multiple academic subjects, which is similar to AP courses; however, the specific content of the courses is determined by the partnering college and the qualifications of the DC course teacher, and may extend to career and technical courses. Of all students enrolled in DC courses, approximately 70% are taking a course in a core academic subject, while 20% are enrolled in a career or technical articulated course (Texas Education Agency [TEA],

2011). In terms of the core academic subjects, 31% of students undertake a social studies DC course, 26% enroll in an English language arts course, 8% in a mathematics course, and 4% in a science course (TEA, 2011). Therefore, most academically prepared students are eligible to take a social studies or English course, with a limited number of students taking math or science DC courses. In addition, white students are overrepresented in DC programs in Texas, with 46% enrollment compared to their representation as only 35% of all Texas high school students. Hispanic and African American students are underrepresented in DC programs in Texas, with 39.6% Hispanic student enrollment in DC courses, while representing 46% of Texas high school students, and 9.6% African American student enrollment in DC courses, while composing 14% of the Texas high school student population. Economically disadvantaged students are also underrepresented in DC courses in Texas, with 36% DC enrollment while representing approximately 50% of all Texas high school students (TEA, 2011).

A logical justification for the increased benefit of DC programs centers on encouraging students to make a seamless transition from high school to college and ultimately earn a degree. “States have made changes in the purpose, structure, and visibility of these programs in the past five years, moving them from their sole use as an escape from high school for advanced students and reconceiving them as an effective route to college and technical education for a wide range of students” (Hoffman, Vargas, & Santos, 2008, p.17). DC programs can help prepare students for academic success in college-level courses, lower the cost of their postsecondary education, allow students to engage within a collegiate social and academic environment that provides extra-curricular options in high school, and provide students with realistic information about college expectations (U.S. Department of Education, 2007). To further aid in the provision of DE opportunities, Texas passed House Bill 1, which stipulated that every school district must implement a program by the fall of 2008 that allows students to earn at least twelve semester college credit hours in high school (Texas State Legislature, 2006). The increase in DE opportunities for students and the continued need for college transitional initiatives is uncontested;

however, legislatures, practitioners, and students will benefit from research that looks at the postsecondary outcomes of the multiple DE programs from which high school students may select.

The number of college freshmen who had attempted DC courses almost doubled between 2004 and 2010, from 25,341 to 48,785, respectively (Texas Higher Education Coordinating Board [THECB], 2016). Despite the increase, the percentage of students persisting to the second year of college decreased from 89% in 2004 to 85% in 2010, and the number of students who graduate with a baccalaureate degree in four years or less decreased slightly from 33% in 2004 to 31% in 2010 (THECB, 2016). The most recent data show us that of the 48,785 students who attempted DC courses in high school and entered college in the fall of 2010, 47% earned a bachelor's degree within five years. Hence, more students are attempting DC courses in high school and more are graduating from college despite the slight decrease in that proportion. Including the fifth year of college in the graduation rate allows that number to increase 16 percentage points. Giani, Alexander, and Reyes (2014) found that in Texas, Hispanic students were more likely to take and pass a DC course than white students. Unfortunately, the authors found that other underrepresented groups did not experience the same likelihood. This study indicated that there is a cumulative benefit from the completion of DC courses, that core academic DC courses are more likely to prepare students for college-level work than other DC courses, and that although all DC courses had a positive correlation with enrolling in college, first-year persistence, and degree completion, DC math courses made a significant impact on the attainment of a bachelor's degree (Giani, Alexander, & Reyes, 2014).

Advanced Placement and Dual Credit Comparison

AP and DC programs both began to provide high-achieving high school students an opportunity to challenge themselves with college-level courses while still in high school. As the initiatives to create a seamless transition from secondary to higher education expand and the college student populations become more diverse, researchers and practitioners must evaluate the effectiveness of the programs that have been implemented. "Therefore, there is a growing need for

differentiation of programs, which drives school participation in an assortment of programs” (Cetin, Moore, & Bowman, 2014, p. 28). AP, with its national curriculum, intends to make students more marketable to colleges and universities around the world (Cetin, Moore, & Bowman, 2014). On the other hand, most advocates for DC programs stress the importance of targeting a wider range of students to promote college readiness and completion (Hoffman, 2003). “We also address how perceptions of AP’s superiority have arisen from its popularity in top-ranked suburban high schools, perceptions that have influenced education policies and have led to the use of AP in schools where dual enrollment may be a better fit for students” (Klopfenstein & Lively, 2012, p. 59). Perhaps because of its long history and outcomes with high-achieving students in affluent schools, the AP program has maintained a status of superiority. However, thorough research has yet to indicate when or whether either the AP or DC program is a “better fit for students” as Klopfenstein & Lively (2012) presented.

One of the most distinct differences between the AP and DC programs is the manner in which students earn college credit. Essentially, AP students are able to enroll in AP courses of their choosing and earn college credit upon taking the exam at the end of the year and obtaining a score of three, four, or five. DC courses require students to meet minimum entrance requirements as dictated by the state; however, the students do not have to pass an exam at the end of the year, but can earn college credit by passing the course. Often, schools decide to offer DC rather than AP courses because the college credit is guaranteed upon passing the course rather than being dependent on high-stakes AP testing (Cetin, Moore, & Bowman, 2014). Although numerous factors affect how a school district offers DE programs, demographics have a significant impact on the student enrollment in Texas. Students who enrolled in DC courses in high school are most likely from rural areas, are economically disadvantaged, applied for financial aid, and had lower GPAs in high school and college than students who enrolled in AP courses in high school (Klopfenstein & Lively, 2012). One of the access problems associated with AP courses is that minority students are often concentrated in schools that either do not offer AP courses or are not enrolled in AP courses as they are not, or perceived to not be, academically prepared (Hoffman,

2003). Approximately 67% of public high schools in the United States offer AP courses and 71% offer DC courses (Peters & Mann, 2009). Thus, AP and DC offerings vary significantly across the nation despite their similar goals.

The area of contention most under speculation and of importance to this study is the curriculum of AP and DC courses. The AP program has been deemed the first national curriculum whereas DC courses are contingent upon the local college and the syllabus created by a professor of that college. An AP course syllabus is composed of content recommended by a diverse group of professors from around the nation, which results in a course that covers a broad range of topics and thus has little room for in-depth exploration (Klopfenstein & Lively, 2012). The broad content of the course correlates to the AP exam and serves the College Board's purpose in assuring all universities that a student who has passed the AP exam has met the standard for an introductory course in that subject at any college or university worldwide (Klopfenstein & Lively, 2012). Discordantly, the DC syllabus is established by a professor at a local college and then approved by the associated college. For courses taught in a high school setting, the subjects are contingent upon the course offerings available at that local college and the credentials of the high school DC course teacher. Accordingly, DC courses are less likely to be subject to the criticism of breadth of content over depth of knowledge as a DC professor has the flexibility to choose particular topics to cover in depth without having to worry about an end of the year exam (Klopfenstein & Lively, 2012). This difference in curriculum and its foundations has led to speculation about both programs. "Among high school respondents who provided comparative ratings of AP courses and courses for dual credit, 42% reported that AP courses and courses for dual credit were equally rigorous, 45% reported that AP courses were more rigorous than courses for dual credit, and 13% reported that courses for dual credit were more rigorous than AP courses" (American Institutes for Research, 2011, p. 5). Cetin, Moore, and Bowman (2014) discovered that in an analysis of district policies for DE programs, the majority provided general information, listed the legal school board policies, or highlighted the benefit of DE programs for college readiness. Additional research to compare the DE programs can inform educators, parents, policymakers, and the community.

Chapter 3: Methodology

Introduction

This study uses a non-experimental method to gather and analyze quantitative data. Quantitative research is best suited when the researcher is attempting to understand the relationship among variables or to determine how an outcome can be different amongst various groups (Creswell & Clark, 2011). The literature on AP programs is thorough and extensive; whereas research on DC programs is increasing, which corresponds to the recent adoption and expansion of DC courses. However, limited research exists on comparisons between the two advanced academic programs. Although the targeted audience of AP and DC programs are different student populations, these advanced course programs unintentionally compete for the same students. The few studies that compare the AP and DC programs focus primarily on student characteristics and outcomes from a higher education standpoint. A significant need exists to comparatively examine the long-term effects of AP and DC initiatives on the postsecondary achievement of students who live in a community that is predominantly Hispanic and of low socioeconomic status within a US–Mexico border city.

The information gathered from this quantitative study can inform professional practice as schools aim to reform and strengthen their college-going culture. It may bring to light unspoken educator biases or lack of knowledge that is imposed on students when deciding upon an advanced academic pathway. Educators can utilize the results following a campus needs assessment to structure professional development, align course standards and expectations, enhance parent–school relationships, and scrutinize the provision of information being delivered to students regarding their postsecondary education options and opportunities. By 2020, 38% of college students in Texas will be Latino and by 2030, Latino students will constitute the majority of elementary and high school students nationwide. The poverty rate amongst Latinos is 22%, with 20% having some college education and a mere 12% having college degrees (Pino, Martinez-Ramos, & Smith, 2012). The El Paso border region’s college-going students are an excellent representation of the Texas state population. As Covarrubias (2011) so adequately stated,

“perceptions of students ultimately become so persistent and pervasive that they can impact educational outcomes for people who are labeled by these terms, in some cases diminishing their potential” (p. 88). Educators must ensure that we are not creating limitations or raising barriers to students’ higher learning opportunities. On May 23, 2015, the Texas Legislature passed House Bill 505, which prohibits a limit on the number of DC courses in which a student can enroll. Hence, the state is supporting the expansion of DC programs, which will impact how secondary and postsecondary institutions align their college readiness initiatives. Further data on the outcomes and success of students in a US–Mexico border town who have earned college credit in high school will aid professional development and the administrative implementation of advanced academics and provide data to parents and students as they make high school educational decisions that will impact the students’ postsecondary success.

Statement of the Problem

Insight into the advanced academic programs available within a US–Mexico border region and the corresponding educational outcomes for students within that region sheds light on the current state of college readiness initiatives, particularly for students of Hispanic heritage and low socioeconomic status. The El Paso, Texas border region has a 76.6% Hispanic population, with 38.5% of its children living below the poverty level (City-Data Forum, 2014). Only 60% of its high school graduates attend a postsecondary institution directly after high school and only 17% leave El Paso in pursuit of higher learning (EPCAE, 2011). Conley (2008) asserts that a student is deemed college ready when he/she is proficient in four areas: key cognitive strategies, key content knowledge, academic behavior, and contextual skills and awareness. This definition of college readiness coincides with Perry’s (1970) theory of intellectual and ethical development that provides the positions of a college student’s intellectual progress as the student moves from being a dualistic thinker, believing in absolute truth, to a relativistic thinker. To highlight academic preparedness, 54% of high school graduates from middle- and upper-income backgrounds are academically prepared for college, compared to a mere 22% of graduates from low-income

backgrounds (Hoffman, Vargas, & Santos, 2008), and the college retention rate of first-time students returning after their first year has remained constant at 58% (National Student Clearinghouse, 2014). AP and DC programs have seen a significant increase in enrollment following official support from local and state policies. Although research on the DC program is expanding, along with continued research on the AP program, primarily by the College Board, a pronounced need exists for research that compares the two DE programs and their long-term effects on the attainment of postsecondary credentials. This study not only seeks to evaluate the long-term performance outcomes of college students who had enrolled in two college credit-based programs in high school and subsequently enrolled in a four-year public research university within a community that is significantly Hispanic and of low socioeconomic status, but also to determine the intellectual development of current first-time freshmen students enrolled at this university.

Research Questions

This longitudinal non-experimental quantitative study will address the following questions:

1. At the University of Texas at El Paso, what are the characteristics of the sample population of first-time freshmen students who were enrolled in high school AP courses, DC courses, both AP and DC courses, or none?
2. Among the students who enroll at the University of Texas at El Paso immediately following high school graduation, is there a statistically significant difference in the first-year GPA among students who earned credit only in AP courses, students who earned credit only in DC courses, students who earned credit in both AP and DC courses, and students who did not earn credit in either?
3. Among the students who enroll at the University of Texas at El Paso immediately following high school graduation, is there a statistically significant difference in first-year persistence among students who earned credit only in AP courses, students who earned credit only in DC courses, students who earned credit in both AP and DC courses, and students who did not earn credit in either?

4. Among the students who enroll at the University of Texas at El Paso immediately following high school graduation, is there a statistically significant difference in graduation rates among students who earned credit only in AP courses, students who earned credit only in DC courses, students who earned credit in both AP and DC courses, and students who did not earn credit in either?

5a. Among the students who enroll at the University of Texas at El Paso immediately following high school graduation, is there a statistically significant difference in time to degree completion among students who earned credit only in AP courses, students who earned credit only in DC courses, students who earned credit in both AP and DC courses, and students who did not earn credit in either?

5b. Among the students who enroll at the University of Texas at El Paso immediately following high school graduation, is there a statistically significant difference in the time to degree completion among students who entered the university with fewer than 12 college credits, students who entered with 12-45 college credits, and students who entered with more than 45 college credits?

6. Among the students who enroll at the University of Texas at El Paso immediately following high school graduation, is there a statistically significant difference in the final GPA at graduation among students who earned credit only in AP courses, students who earned credit only in DC courses, students who earned credit in both AP and DC courses, and students who did not earn credit in either?

7. Among the students who enroll at the University of Texas at El Paso immediately following high school graduation, is there a statistically significant difference in intellectual development among students who enrolled only in AP courses, students who enrolled only in DC courses, students who enrolled in both AP and DC courses, and students who did not enroll in either?

8. Among the students who enroll at the University of Texas at El Paso immediately following high school graduation, is there a statistically significant difference in intellectual

development among students who, while in high school, enrolled only in humanities college credit courses, students who enrolled only in math and/or science college credit courses, and students who enrolled in both?

Research Methodology

“When knowledge is at a minimum, it is best to observe” (Kamil, 2004, p. 101). Non-experimental quantitative research, also termed observational research, is instrumental in generating theory by observing a phenomenon in its natural setting (Kamil, 2004). It is important to note that many educational research problems are better suited for non-experimental methods rather than experimental due to the difficulty, or impossibility, of manipulating variables (Johnson, 2001). For the purpose of this study, it is not in the best interest of students to manipulate a student’s enrollment in advanced courses. This study intends to unearth associations within the postsecondary outcomes based on the advanced academic courses in which a student enrolled while in high school. This information may be extremely beneficial for educators in the field as they make recommendations for college readiness initiatives.

Research Design

This non-experimental quantitative study has two components. The first component addressed research questions two through five and intended to draw participants from UTEP who enrolled in their freshman year directly after high school graduation and participated in AP or DC courses while in high school. The cohorts that were to be measured were the freshmen classes of 2008, 2009, and 2010, categorized into four different strands as the following four independent variables: students who earned college credit solely in AP courses during high school (AP students), students who earned college credit solely in DC courses during high school (DC students), students who earned a combination of both DC and AP credits during high school (DCAP students), and students who did not earn college credit in either program during high school (non-DE students). Descriptive statistics are used to measure the range and mean of high school GPAs for each strand, the number of college credits students have upon entering the university

according to the strand, and the socioeconomic status, ethnicity, and respective size of each strand. A one-way ANOVA is used to determine whether a statistically significant difference exists between the first-year and final college GPA by strand. A chi-squared goodness-of-fit test is used to compare the persistence rate and graduation rate corresponding to each strand. To conclude, a chi-squared test of association is used to compute whether an association exists between the high school advanced academic program in which students were enrolled and the long-term postsecondary outcomes as measured by the time to degree completion and whether there is an association between the time to degree completion and the number of college credit hours obtained during high school. As the principal investigator was undergoing the IRB review process, the institution conducted data analyses that answered the research questions.

The second component of this study assessed the intellectual development position of current first-time freshmen at UTEP during the spring 2017 semester. The Learning Environment Preferences (LEP) survey created by Dr. William Moore in accordance with Perry's theory of intellectual and ethical development was distributed to all first-time freshmen students by email, prompting an online survey response through Survey Monkey. The LEP survey response results were returned to Dr. Moore and scored by the Center for the Study of Intellectual Development (CSID). A one-way ANOVA is used to determine whether a statistically significant difference exists between the four groups/strands once scores were received.

Population and Sample Selection

The target population of this study is the traditional first-time, first-year students at UTEP during the spring 2017 semester. Hence, nontraditional, international, and out-of-state freshmen students are excluded from this study as their high school DE programs may not be comparable with the programs implemented in Texas. There were 3,150 students who fit the criteria of first-time freshmen from the US–Mexico border region of El Paso, Texas. These students were sent an email with the LEP survey link and the assurance that all their responses would be anonymous. The last page of the survey asked students to indicate whether they had enrolled in AP courses and

to check whether they had participated in AP English, AP social studies, AP math, and/or AP science, as well as to indicate whether they were not enrolled in AP courses, or had enrolled in an AP course that was not listed. Students were also asked to indicate whether they had participated in DC English, DC social studies, DC math, and/or DC science, as well as to indicate whether they were not enrolled in a DC course, or had enrolled in a DC course that was not listed. This study focused on the primary core content subject areas as these courses are not only requirements for high school graduation but are the focal point for K-12 advanced academics. The DC program, in particular, has undergone a surge in articulated career and technical education courses that vary significantly by trade. To minimize the external effects of outlying DC or AP courses, student enrollment in the four core subject areas is of primary importance to this study.

Instrumentation

This non-experimental quantitative study attempted to collect data from a census of the existing database at UTEP. The type of data requested according to student characteristics were whether the student earned college credit solely in AP courses, solely in DC courses, in both AP and DC courses, or did not participate in either AP or DC courses, along with the student's ethnicity, socioeconomic status, high school GPA, and number of college credits earned prior to enrolling at UTEP. In addition, to conduct the one-way ANOVA, the dependent variable of first-year GPA and the final graduation GPA were requested. To conduct the chi-squared goodness-of-fit test, the proportions of the dependent variable of persistence rate and the graduation rate were also requested. As previously stated, the institution conducted a Dual Credit Exploratory Analysis in collaboration with The Texas Higher Education Coordinating Board to determine the impact of DC courses.

Permission was granted by Dr. William Moore (Appendix A) through the CSID to utilize the LEP survey. The LEP instrument, developed by Dr. Moore, is a quantitative, recognition-task survey that was based on the qualitative research conducted through the Measure of Intellectual Development essay instrument designed to assess the nine positions of Perry's theory of

intellectual and ethical development (Moore, 2014). The LEP comprises 5 sections, each of which is presented in one web page. The first section, the Ideal Learning Environment, has 13 statements that a respondent must classify as not at all significant, somewhat significant, moderately significant, or very significant. From these 13 statements, the respondent ranks the top three statements for that section according to the most significant statement. The second section examines the role of the instructor, the third section assesses the role of the student and peers, the fourth section focuses on the classroom atmosphere and activities, and the final section determines the evaluation procedures in the ideal learning environment. The three ranked items for each section were relayed back to Dr. Moore for score processing by the CSID.

The LEP utilizes the Cognitive Complexity Index (CCI) within a formula to determine a single score that ranges from 200 (a stable position 2) to 500 (a stable position 5) (Moore, 2000). The nine positions of Perry's theory are situated within three concepts: dualism is a mode of meaning where student sees the world in black and white, with right or wrong answers, and expects the authority figures to provide content information because they have the right answers; multiplicity entails a transition to a world where peers begin to be legitimate sources of knowledge and diverse views are equally valid; and the relativism concept is initiated when a student begins to recognize that not all opinions hold the same value and knowledge is based on evidence and supporting arguments (Evans, Forney, Guido, Patton, & Renn, 2010). The nine positions are thus (1) Basic Duality, (2) Multiplicity Pre-Legitimate, (3) Multiplicity Subordinate, (4) Multiplicity Correlate or Relativism Subordinate, (5) Relativism Correlate, Competing, or Diffuse, (6) Commitment Foreseen, (7) Initial Commitment, (8) Orientation in Implications of Commitment, and (9) Developing Commitment(s); and the three positions of deflection are temporizing, escape, and retreat (Perry, 1970). Moore (2000) justifies the instrument's scoring process to center on positions 2-5 because cognitive-structural change does not extend past position five, and positions six through nine are best captured by qualitative research methods.

Validity & Reliability

The external validity of this study is conveyed by the findings being generalizable to the incoming traditional first-year freshmen at UTEP; they are generalizable to similar institutions in US–Mexico border communities; and are generalizable to institutions serving Hispanic populations. This study measures the postsecondary outcomes of students who participated in DE courses during high school. Research was conducted to evaluate the association between two DE programs and, in effect, provide insight into the progress made to ease the transition to and completion of higher education. The reliability of this study depends on the ability to replicate the study. This study may be replicated at any postsecondary institution and can yield an analysis that informs the community of the outcomes of their DE program and the effectiveness of the efforts to support the transition of high school students to college.

The reliability of the LEP instrument was assessed through the process of test–retest and internal consistency, which involved calculating the alpha coefficient for each domain and each position within each domain (Moore, 2000). Likewise, Moore (2000) assessed the validity of the LEP instrument through criterion group differences, concurrent validity, and construct validity. “Because the LEP has an inherent ‘ceiling effect’ in that it makes no effort to assess beyond Perry position five, it is particularly important that older, graduate students and/or even faculty be given the LEP to see how well the instrument reflects the cognitive perspectives of individuals presumably more complex in Perry terms than the normal range of the undergraduate population” (Moore, 2000, p.13). The LEP instrument is aimed towards undergraduate students, based on qualitative research and Perry’s theoretical framework, and is a reliable and economical assessment. The objective format of the instrument is significant as it is applied at different universities around the country not only to determine student development outcomes but to elicit informative feedback on student preferences for learning environments across the role of an instructor, the role of the student, the classroom atmosphere and activities, the ideal learning environment, and evaluation procedures.

Data Collection Procedures

The data were gathered from the UTEP database on traditional first-year freshmen students from 2000 to 2016. As the institution conducted the Dual Credit Exploratory Analysis, information was requested regarding their findings for first-year and final GPAs, the persistence rate, graduation rate, and time to degree completion. For the second portion of the study that encompasses the LEP instrument, 3,150 first-time freshmen received an email that invited them to participate in a survey to identify their ideal learning environment in five sections. The electronic survey was conducted through Survey Monkey, which provided an instant compilation of the response data. Students indicated whether each of the thirteen items in each section was not at all significant, somewhat significant, moderately significant, or very significant. The last question on the section page asked students to rank the top three most significant items. Students were sent a friendly reminder email to encourage their participation. Once the timeframe of the survey elapsed, the top 3 ranked items for each of the five domains were compiled according to the anonymous respondent IDs and sent to the CSID to be scored according to Perry's positions two through five.

Data Analysis Procedures

The Center for Institutional Evaluation, Research, and Planning (CIERP) at UTEP provided the Dual Credit Exploratory Analysis findings as they applied to research questions two through five. The initial analysis of the LEP survey data was descriptive as students were separated into the AP, DC, DCAP, and non-DE strands by ethnicity and by gender. In addition, students were asked to specify whether they had enrolled in an AP English, AP social studies, AP math, AP science, and/or an AP course that is not in a core subject, or in no AP course; whether they had enrolled in DC English, DC social studies, DC math, DC science, and/or a DC course that is not in a core subject, or in no DC course. Descriptive analysis was conducted within the 13-question stems in each domain and how significant students perceived them to be in their ideal learning environment. The top three very significant rankings for each domain were sent to the CSID, and the scoring process indicated a student's position according to Perry's theory of intellectual and

ethical development. The score ranged from 200 to 500, with 200 indicating a stable position 2 and 500 indicating a stable position 5. The seventh research question addressed the intellectual development position of the student sample population and whether a statistically significant difference existed between the four strands. Accordingly, a one-way ANOVA was used to compute whether a statistically significant difference existed between the four strands. The one-way ANOVA provided a five-number summary to include the lowest position for the strand, the highest position, the middle 50%, the lower 25%, and the upper 75%. This information was displayed in a box and whiskers plot, where the x-axis was defined by the four strands: AP, DC, DCAP, and non-DE, and the y-axis listed the five-number summary of the student score position. If the p value was less than .05, a statistically significant difference existed between the strands. The same procedures were followed to determine whether a statistically significant difference existed between the position of students only enrolled in advanced humanities courses as defined by English and social studies, students only enrolled in advanced math and/or science courses, and students enrolled in both types of advanced courses while in high school, as proposed in question eight.

Ethical Considerations

The ethical considerations for this study protected all student information by not requesting any personal information. Data analysis was presented and included in the dissertation research analysis but did not specify any particular individual. Rather, a cumulative average of sixteen cohort years provided a large sample size that may be generalizable to similar postsecondary institutions or student populations with similar demographics and dual enrollment systems. The number of LEP survey respondents was sufficient for an appropriate representative sample of students who self-identified in each of the four strands.

Limitations

There are several limitations present in this study. The targeted population is traditional, first-time undergraduate students who enrolled at a public research university located in a US–

Mexico border community with 80% of its student body identifying as Hispanic. Using this target population removed nontraditional students from this study, even though the university has a history of directing their efforts to nontraditional students. International and out-of-state students were also excluded from this study as AP and/or DC courses may not have been offered to them and the DC courses are not comparable by state. Also, this study focuses on a four-year university and so excludes students who have earned college credit in high school but continue to a community college rather than the local public university. This limitation extends to DC courses that are specialized within a specific field and community or technical college. Finally, due to the specific demographic majority of the campus community, the research findings may not be generalized to all student populations across the nation.

Summary

A review of the literature has demonstrated that AP and DC programs have experienced significant growth in enrollment and that success in these courses has led to positive postsecondary outcomes for these students. The review of the literature has also demonstrated a need for future research in the comparison of DE programs and to integrate theory and practice for educational reform. This study intended to utilize existing data from a public research university located in a US–Mexico border community to assess the association between AP and DC courses and traditional first-time college students' persistence, first-year and final GPAs, graduation rate, and time to degree completion. The study also researched the intellectual development position of first-time freshmen during the spring 2017 semester and assessed the association between the four strands. A non-experimental quantitative study is best suited to determine the association through a one-way ANOVA as conducted using SPSS statistical software.

Chapter 4: Results

Introduction

This chapter presents the findings as determined by the CIERP office at UTEP regarding a statistically significant difference in the postsecondary outcomes between students enrolled in high school AP courses, DC courses, AP and DC courses, or neither. Furthermore, a description of the findings based on the LEP response survey completed by first-time freshmen at UTEP is presented. The LEP instrument was developed by Dr. Moore and measures the intellectual development position of a student by the CCI, ranging from 200 to 500. The following research questions are addressed:

1. At the University of Texas at El Paso, what are the characteristics of the sample population of first-time freshmen who were enrolled in high school AP courses, DC courses, both AP and DC courses, or neither?

2. Among the students who enroll at the University of Texas at El Paso immediately following high school graduation, is there a statistically significant difference in the first-year GPA among students who earned credit only in AP courses, students who earned credit only in DC courses, students who earned credit in both AP and DC courses, and students who did not earn credit in either?

3. Among the students who enroll at the University of Texas at El Paso immediately following high school graduation, is there a statistically significant difference in first-year persistence among students who earned credit only in AP courses, students who earned credit only in DC courses, students who earned credit in both AP and DC courses, and students who did not earn credit in either?

4. Among the students who enroll at the University of Texas at El Paso immediately following high school graduation, is there a statistically significant difference in graduation rates

among students who earned credit only in AP courses, students who earned credit only in DC courses, students who earned credit in both AP and DC courses, and students who did not earn credit in either?

5a. Among the students who enroll at the University of Texas at El Paso immediately following high school graduation, is there a statistically significant difference in the time to degree completion among students who earned credit only in AP courses, students who earned credit only in DC courses, students who earned credit in both AP and DC courses, and students who did not earn credit in either?

5b. Among the students who enroll at the University of Texas at El Paso immediately following high school graduation, is there a statistically significant difference in time to degree completion among students who entered the university with fewer than 12 college credits, students who entered with 12-45 college credits, and students who entered with more than 45 college credits?

6. Among the students who enroll at the University of Texas at El Paso immediately following high school graduation, is there a statistically significant difference in the final GPA at graduation among students who earned credit only in AP courses, students who earned credit only in DC courses, students who earned credit in both AP and DC courses, and students who did not earn credit in either?

7. Among the students who enroll at the University of Texas at El Paso immediately following high school graduation, is there a statistically significant difference in intellectual development among students who enrolled only in AP courses, students who enrolled only in DC courses, students who enrolled in both AP and DC courses, and students who did not enroll in either?

8. Among the students who enroll at the University of Texas at El Paso immediately following high school graduation, is there a statistically significant difference in intellectual development among students who, while in high school, enrolled only in humanities college credit courses, students who enrolled only in math and/or science college credit courses, and students who enrolled in both?

Descriptive Data

The first research question addresses the descriptive characteristics of the sample population for a twofold research design. Concerning the postsecondary outcomes of first-time freshmen students enrolled at UTEP during the fall semesters from 2006 to 2014, the sample size comprised a total of 14,530 students, with 3,176 having taken a DE course (CIERP, 2017). Most of the students who took DE courses (58%) graduated from high school in the top quartile. Most of the non-DE students (58%) graduated from high school in the middle quartiles (CIERP, 2017). During this same period, from the 2006 fall semester to fall 2014, a total of 6,275 of the students had participated in advanced academics while in high school through the AP, DC, or a combination of both AP and DC programs.

Table 1. Dual Credit by High School Percentile Category

Dual Credit		High School Percentile Category					Total
		Top Quartile		Upper Middle (75 th to 50 th)	Lower Middle (50 th to 25 th)	Bottom (25 th to 1 st)	
		Top 10 (100 th to 90 th)	11- 25 (89 th to 75 th)				
No	Frequency	1068	2332	3782	2791	1381	11354
	%	9%	21%	33%	25%	12%	
Yes	Frequency	841	1017	895	333	90	3176
	%	26%	32%	28%	10%	3%	
Total	Frequency	1909	3349	4677	3124	1471	14530
	%	13%	23%	32%	21%	10%	100%

Table 2. Advanced Academics by High School Percentile Category

		High School Percentile					Total
Program		Top Quartile		Upper Middle (75 th to 50 th)	Lower Middle (50 th to 25 th)	Bottom (25 th to 1 st)	
		Top 10 (100 th to 90 th)	11-25 (89 th to 75 th)				
AP	N	684	529	361	143	36	1753
	%	39.02%	30.18%	20.59%	8.16%	2.05%	
DCAP	N	550	253	103	31	3	940
	%	58.51%	26.91%	10.96%	3.30%	0.32%	
DC	N	961	1172	986	383	80	3582
	%	26.83%	32.72%	27.53%	10.69%	2.23%	
Total	N	2195	1954	1450	557	119	6275

A larger share of low-income students took advantage of the opportunity to enroll in DC, AP, or both DC and AP courses, ranging from 60% to 65% for all three groups. Female students enrolled in advanced academics at a higher rate than male students. Of the students who did not enroll in an AP or DC course, 51% were male and 49% were female. However, male students composed 44.62% of the group that took only AP courses, which is a higher rate than the 35.42% of male students who took both DC and AP courses or the 37.95% of male students who took only DC courses (CIERP, 2017).

Table 3. Advanced Academics by Low Income Status

Program		Low Income		Total
		N	Y	
AP	N	583	1074	1657
	%	35.18%	64.82%	
DCAP	N	340	574	914
	%	37.2%	62.8%	
DC	N	1364	2050	3414
	%	39.95%	60.05%	

Total	N	2287	3698	5985
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Table 4. Student Characteristics in Dual Credit Program

Dual Credit		Gender		Total
		F	M	
No	Frequency	5551	5803	11354
	%	49%	51%	
Yes	Frequency	1966	1210	3176
	%	62%	38%	
Total	Frequency	7517	7013	14530
	%	52%	48%	100%

Table 5. Student Characteristics by Advanced Academic Program

		Gender		Total
		F	M	
AP	N	973	784	1757
	%	55.38%	44.62%	
DCAP	N	609	334	943
	%	64.58%	35.42%	
DC	N	2229	1363	3592
	%	62.05%	37.95%	
Total	N	3811	2481	6292

A total of 3,150 first-time freshmen at UTEP during the spring 2017 semester were identified and were sent an invitation to complete the LEP survey. Students were asked to share their thoughts on their ideal learning environment and the respective role of the teacher, role of the student, classroom atmosphere and activities, and evaluation procedures. Of the 158 students who submitted a response, 104 students completed the LEP survey in its entirety. The respondents comprised 66% (69) female students and 34% (35) male students. Most of the sample population,

86.5% (90), identified as Hispanic, and 15.38% identified as White/Caucasian, with some overlap between the two groups. Two percent (2%) of students identified as Black or African American.

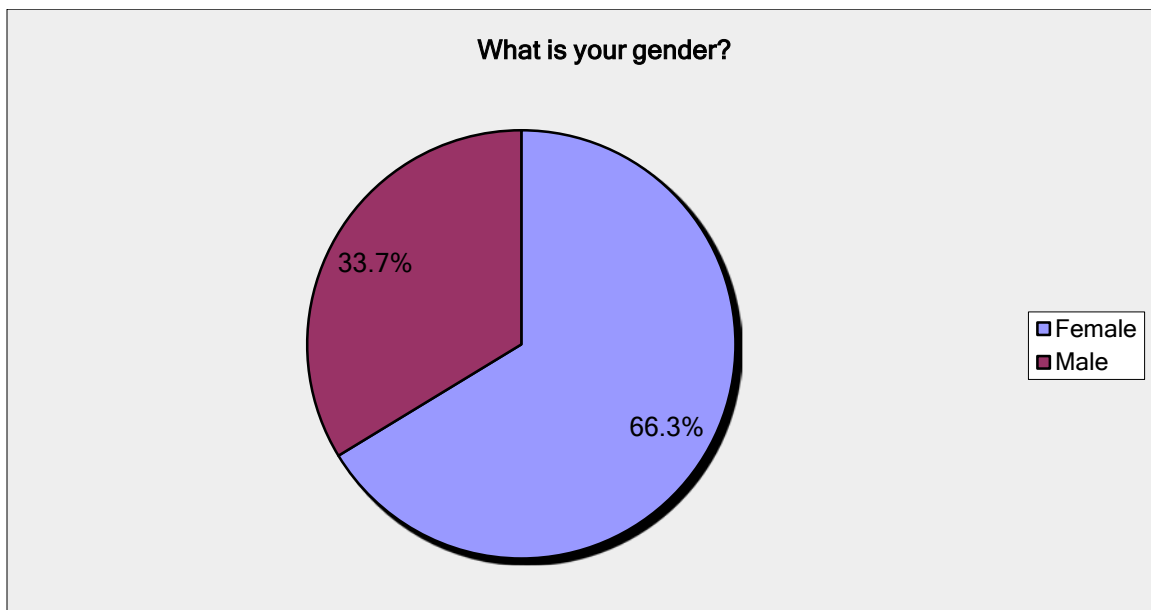


Figure 1. Respondents by Gender

Upon completion of the 5 LEP survey domains, students were asked to disclose whether they had enrolled in an AP or DC course in high school. AP and DC courses were defined as English, social studies, science, math, or a subject that is not a core content area. For the purpose of this study, English and social studies are identified together as humanities courses and math and science courses are grouped together to address the 8th research question. Thirty-one students (29.81%) had enrolled in a DC English course; 26 students (25%) had enrolled in a DC social studies course; 17 students (16.35%) had enrolled in a DC math course; and 16 students (15.38%) had enrolled in a DC science course. Fifty-nine students (56.73%) had not enrolled in a DC course; and 19 students (18.27%) had enrolled in a DC course that was not in a core content area.

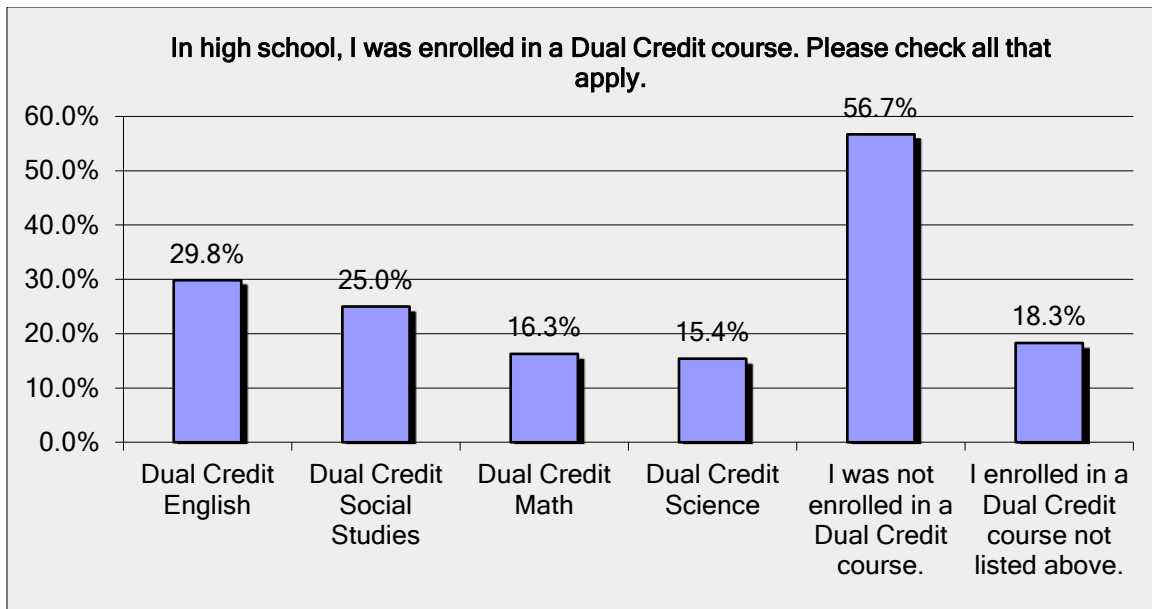


Figure 2. Respondents Who Were Enrolled in a DC Course

Forty students (38.46%) had enrolled in an AP English course; 37 students (35.58%) had enrolled in an AP social studies course; 36 students (34.62%) had enrolled in an AP math course; and 41 students (39.42%) had enrolled in an AP science course while in high school. Only 35 students (33.65%) stated that they did not enroll in an AP course in high school; and 13 students (12.5%) had enrolled in an AP course that was not in a core content area.

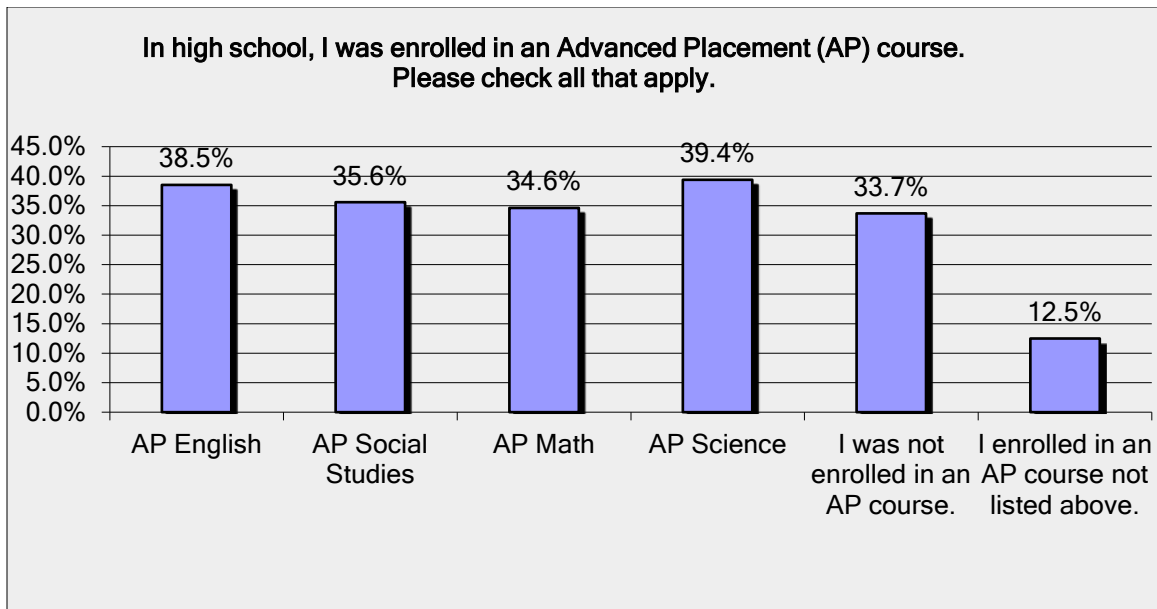


Figure 3. Respondents Who Were Enrolled in an AP Course

Data Analysis

The LEP instrument consists of five components: the ideal learning environment, role of the instructor, role of the student and peers, classroom atmosphere and activities, and evaluation procedures. Each component integrates thirteen concepts for which a respondent was asked to indicate as being not at all significant, somewhat significant, moderately significant, or very significant in their ideal learning environment. Students were asked not to focus on a particular class but on the overall ideal learning environment. Of the ideal learning environment component, four concepts that were rated as very significant by more than half the respondents were (i) provide me with an opportunity to learn methods and solve problems (59.24%); (ii) allow me a chance to think and reason, applying facts to support my opinions (55.06%); (iii) emphasize learning simply for the sake of learning or gaining new expertise (50.96%); and (iv) emphasize a good positive relationship among the students and between the students and teacher (56.05%). The only concept that had the majority of students (68.99%) rate it as insignificant or only somewhat significant was to focus more on having the right answers than on discussing methods or how to solve problems.

Table 6. Ideal Learning Environment

My ideal learning environment would:	Not at all significant	Somewhat significant	Moderately significant	Very significant	Total	Weighted Average
1. Emphasize basic facts and definitions.	2.53% 4	15.82% 25	46.20% 73	35.44% 56	158	3.15
2. Focus more on having the right answers than on discussing methods or how to solve problems.	25.32% 40	43.67% 69	23.42% 37	7.59% 12	158	2.13
3. Insure that I get all the course knowledge from the professor.	3.16% 5	18.99% 30	36.08% 57	41.77% 66	158	3.16
4. Provide me with an opportunity to learn methods and solve problems.	1.91% 3	7.01% 11	31.85% 50	59.24% 93	157	3.48
5. Allow me a chance to think and reason, applying facts to support my opinions.	1.90% 3	10.76% 17	32.28% 51	55.06% 87	158	3.41
6. Emphasize learning simply for the sake of learning or gaining new expertise.	3.18% 5	14.65% 23	31.21% 49	50.96% 80	157	3.30
7. Let me decide for myself whether issues discussed in class are right or wrong, based on my own interpretations and ideas.	5.70% 9	26.58% 42	32.91% 52	34.81% 55	158	2.97
8. Stress the practical applications of the material.	5.73% 9	15.29% 24	43.95% 69	35.03% 55	157	3.08
9. Focus on the socio-psycho, cultural and historical implications & ramifications of the subject matter.	7.59% 12	27.85% 44	34.18% 54	30.38% 48	158	2.87
10. Serve primarily as a catalyst for research and learning on my own, integrating the knowledge gained into my thinking.	4.46% 7	24.20% 38	45.86% 72	25.48% 40	157	2.92
11. Stress learning and thinking on my own, not being spoonfed learning by the instructor.	8.28% 13	26.75% 42	37.58% 59	27.39% 43	157	2.84
12. Provide me with appropriate learning situations for thinking about and seeking personal truths.	3.85% 6	14.74% 23	40.38% 63	41.03% 64	156	3.19
13. Emphasize a good positive relationship among the students and between the students and teacher.	0.64% 1	12.10% 19	31.21% 49	56.05% 88	157	3.43

The role of the instructor component had three concepts that were rated as very significant by the majority of first-time freshmen at UTEP who responded to the survey: 71.97% of the students believe that an instructor must give clear directions and guidance for all course activities and assignments; 65.91% of the students would like an instructor to put a lot of effort into the class, making it interesting and worthwhile; and 54.55% of students deem it very significant for an instructor to teach all the facts and information a student is supposed to learn. The one concept that 61.36% of the students considered to be insignificant or only somewhat significant was an instructor having a minimal role in the class and turning over much of the control of course content and discussions to students.

Table 7. Role of the Instructor in Ideal Learning Environment

Role of the instructor	Not at all significant	Somewhat significant	Moderately significant	Very significant	Total	Weighted Average
1. Teach me all the facts and information I am supposed to learn.	0.00% 0	13.64% 18	31.82% 42	54.55% 72	132	3.41
2. Use up-to-date textbooks and materials and teach from them, not ignore them.	5.30% 7	17.42% 23	41.67% 55	35.61% 47	132	3.08
3. Give clear directions and guidance for all course activities and assignments.	0.00% 0	3.79% 5	24.24% 32	71.97% 95	132	3.68
4. Have only a minimal role in the class, turning much of the control of course content and class discussions over to the students.	18.18% 24	43.18% 57	27.27% 36	11.36% 15	132	2.32
5. Be not just an instructor, but more an explainer, entertainer and friend.	6.11% 8	22.90% 30	37.40% 49	33.59% 44	131	2.98
6. Recognize that learning is mutual--individual class members contribute fully to the teaching and learning in the class.	3.82% 5	22.90% 30	38.93% 51	34.35% 45	131	3.04
7. Provide a model for conceptualizing living and learning rather than solving problems.	5.30% 7	25.76% 34	42.42% 56	26.52% 35	132	2.90

Role of the instructor	Not at all significant—	Somewhat significant—	Moderately significant—	Very significant—	Total—	Weighted Average—
8. Utilize his/her expertise to provide me with a critique of my work.	3.03% 4	10.61% 14	44.70% 59	41.67% 55	132	3.25
9. Demonstrate a way to think about the subject matter and then help me explore the issues and come to my own conclusions.	0.76% 1	14.50% 19	42.75% 56	41.98% 55	131	3.26
10. Offer extensive comments and reactions about my performance in class (papers, exams, etc.).	3.03% 4	18.94% 25	34.85% 46	43.18% 57	132	3.18
11. Challenge students to present their own ideas, argue with positions taken, and demand evidence for their beliefs.	2.27% 3	18.94% 25	38.64% 51	40.15% 53	132	3.17
12. Put a lot of effort into the class, making it interesting and worthwhile.	0.76% 1	6.06% 8	27.27% 36	65.91% 87	132	3.58
13. Present arguments on course issues based on his/her expertise to stimulate active debate among class members.	4.55% 6	14.39% 19	40.91% 54	40.15% 53	132	3.17

The role of the student and peers was the third component of the LEP survey instrument. The top three concepts that half of the students indicated as being very significant were having one's own expectation of taking learning seriously and being personally motivated to learn the subject (51.72%); wanting to learn how to learn in that particular subject, which includes the particular methods and procedures for that subject (50%); and taking good notes on class presentations and being able to reproduce that information on an exam (46.96%). The concept that the highest proportion of students (55.18%) rated as not at all significant was to enjoy having their friends for class and other than that, other students do not contribute to their take-away from the course.

Table 8. Role of the Student in Ideal Learning Environment

Role of the student	Not at all significant –	Somewhat significant –	Moderately significant –	Very significant –	Total –	Weighted Average –
1. Study and memorize the subject matter--the teacher is there to teach it.	7.76% 9	25.86% 30	37.93% 44	28.45% 33	116	2.87
2. Take good notes on what's presented in class and reproduce that information on the tests.	2.61% 3	16.52% 19	33.91% 39	46.96% 54	115	3.25
3. Enjoy having my friends in the class, but other than that classmates don't add much to what I would get from a class.	15.52% 18	39.66% 46	20.69% 24	24.14% 28	116	2.53
4. Hope to develop my ability to reason and judge based on standards defined by the subject.	3.45% 4	18.10% 21	43.10% 50	35.34% 41	116	3.10
5. Prefer to do independent research allowing me to produce my own ideas and arguments.	8.70% 10	23.48% 27	41.74% 48	26.09% 30	115	2.85
6. Expect to be challenged to work hard in the class.	3.48% 4	15.65% 18	45.22% 52	35.65% 41	115	3.13
7. Prefer that my classmates be concerned with increasing their awareness of themselves to others in relation to the world.	9.48% 11	26.72% 31	38.79% 45	25.00% 29	116	2.79
8. Anticipate that my classmates would contribute significantly to the course learning through their own expertise in the content.	10.43% 12	22.61% 26	45.22% 52	21.74% 25	115	2.78
9. Want opportunities to think on my own, making connections between the issues discussed in class and other areas I'm studying.	3.45% 4	19.83% 23	33.62% 39	43.10% 50	116	3.16
10. Take some leadership, along with my classmates, in deciding how the class will be run.	16.52% 19	23.48% 27	35.65% 41	24.35% 28	115	2.68
11. Participate actively with my peers in class discussions and ask as many questions as necessary to fully understand the topic.	11.21% 13	19.83% 23	37.07% 43	31.90% 37	116	2.90
12. Expect to take learning seriously and be personally motivated to learn the subject.	0.86% 1	8.62% 10	38.79% 45	51.72% 60	116	3.41
13. Want to learn methods and procedures related to the subject--learn how to learn.	2.59% 3	12.07% 14	35.34% 41	50.00% 58	116	3.33

The classroom atmosphere and activities in the ideal learning environment constituted the fourth component of the survey. The concept rated as very significant by 61.68% of students was to have a well-structured and organized course with clear expectations; 58.88% of students cited that specific and detailed instructions for assignments and activities are very significant in their ideal learning environment; and almost half of the students (48.6%) want to ensure that step-by-step procedures are in place to arrive at the correct answer. The concept that was rated as not at all significant by the highest percentage of students (24.3%) was for a course to be loosely structured with students having the responsibility of creating structure.

Table 9. Classroom Atmosphere and Activities in Ideal Learning Environment

Classroom atmosphere & activities	Not at all significant	Somewhat significant	Moderately significant	Very significant	Total	Weighted Average
1. Be organized and well-structured--there should be clear expectations set (like a structured syllabus that's followed).	1.87% 2	9.35% 10	27.10% 29	61.68% 66	107	3.49
2. Consist of lectures (with a chance to ask questions) because I can get all the facts I need to know more efficiently that way.	3.74% 4	10.28% 11	49.53% 53	36.45% 39	107	3.19
3. Include specific, detailed instructions for all activities and assignments.	0.00% 0	11.21% 12	29.91% 32	58.88% 63	107	3.48
4. Focus on step-by-step procedures so that if you did the procedure correctly each time, your answer would be correct.	0.93% 1	11.21% 12	39.25% 42	48.60% 52	107	3.36
5. Provide opportunities for me to pull together connections among various subject areas and then construct an adequate argument.	3.74% 4	24.30% 26	35.51% 38	36.45% 39	107	3.05
6. Be only loosely structured, with the students themselves taking most of the responsibility for what structure there is.	24.30% 26	32.71% 35	27.10% 29	15.89% 17	107	2.35

Classroom atmosphere & activities	Not at all significant	Somewhat significant	Moderately significant	Very significant	Total	Weighted Average
7. Include research papers, since they demand that I consult sources and then offer my own interpretation and thinking.	12.26% 13	36.79% 39	33.02% 35	17.92% 19	106	2.57
8. Have enough variety in content areas and learning experiences to keep me interested.	1.87% 2	12.15% 13	42.06% 45	43.93% 47	107	3.28
9. Be practiced and internalized but be balanced by group experimentation, intuition, comprehension, and imagination.	4.67% 5	24.30% 26	39.25% 42	31.78% 34	107	2.98
10. Consist of a seminar format, providing an exchange of ideas so that I can critique my own perspectives on the subject matter.	11.21% 12	23.36% 25	41.12% 44	24.30% 26	107	2.79
11. Emphasize discussions of personal answers based on relevant evidence rather than just right and wrong answers.	7.48% 8	22.43% 24	43.93% 47	26.17% 28	107	2.89
12. Be an intellectual dialogue and debate among a small group of peers motivated to learn for the sake of learning.	12.26% 13	19.81% 21	37.74% 40	30.19% 32	106	2.86
13. Include lots of projects and assignments with practical, everyday applications.	6.60% 7	32.08% 34	36.79% 39	24.53% 26	106	2.79

The fifth and final component of the survey asked students to rate the significance of evaluation procedures. The percentage of responses between the four levels of significance appears to be more distributed within the thirteen concepts. Half of the students (49.52%) indicated that it is very significant to have straightforward exams that only cover what has been taught in the course. Although almost equally distributed across the levels of significance, the one concept that had the largest percentage of students stating that it is not at all significant was not including grades because an objective standard to evaluate students' thinking does not exist.

Table 10. Evaluation Procedures in Ideal Learning Environment

Evaluation procedures	Not at all significant	Somewhat significant	Moderately significant	Very significant	Total	Weighted Average
1. Include straightforward, not "tricky," tests, covering only what has been taught and nothing else.	6.67% 7	14.29% 15	29.52% 31	49.52% 52	105	3.22
2. Be up to the teacher, since s/he knows the material best.	6.67% 7	22.86% 24	44.76% 47	25.71% 27	105	2.90
3. Consist of objective-style tests because they have clear-cut right or wrong answers.	1.92% 2	19.23% 20	45.19% 47	33.65% 35	104	3.11
4. Be based on how much students have improved in the class and on how hard they have worked in class.	3.81% 4	20.95% 22	38.10% 40	37.14% 39	105	3.09
5. Provide an opportunity for me to judge my own work along with the teacher and learn from the critique at the same time.	4.76% 5	14.29% 15	37.14% 39	43.81% 46	105	3.20
6. Not include grades, since there aren't really any objective standards teachers can use to evaluate students' thinking.	20.00% 21	27.62% 29	28.57% 30	23.81% 25	105	2.56
7. Include grading by a prearranged point system (homework, participation, tests, etc.), since I think it seems the most fair.	2.86% 3	13.33% 14	43.81% 46	40.00% 42	105	3.21
8. Represent a synthesis of internal and external opportunities for judgment and learning enhancing the quality of the class.	8.65% 9	30.77% 32	33.65% 35	26.92% 28	104	2.79
9. Consist of thoughtful criticism of my work by someone with appropriate expertise.	1.90% 2	20.95% 22	32.38% 34	44.76% 47	105	3.20
10. Emphasize essay exams, papers, etc. rather than objective-style tests so that I can show how much I've learned.	8.57% 9	34.29% 36	34.29% 36	22.86% 24	105	2.71
11. Allow students to demonstrate that they	2.91% 3	19.42% 20	41.75% 43	35.92% 37	103	3.11

Evaluation procedures	Not at all significant	Somewhat significant	Moderately significant	Very significant	Total	Weighted Average
can think on their own and make connections not made in class.						
12.Include judgments of the quality of my oral and written work as a way to enhance my learning in the class.	5.77% 6	29.81% 31	34.62% 36	29.81% 31	104	2.88
13.Emphasize independent thinking by each student, but include some focus on the quality of one's arguments and evidence.	7.77% 8	15.53% 16	36.89% 38	39.81% 41	103	3.09

During the principal investigator's proposal and IRB approval process, the institution conducted an analysis on the postsecondary outcomes of students enrolled in advanced academics in high school within the far west Texas region. This analysis also complemented the Texas Higher Education Coordinating Board's (THECB) Dual Credit Report that was published March 16, 2017. Across the board, UTEP and the state found that the postsecondary outcomes of students who enrolled in DE courses while in high school surpassed the postsecondary outcomes of students who did not enroll in DE courses. The manner in which the CIERP office at UTEP conducted the analysis focused on statistically significant differences between students who enrolled in DE courses and those who did not ("non-DE students" or "regular students") and then focused on the comparison between students who enrolled in AP, DC, and both DC and AP courses while in high school.

The second research question posed: Among the students who enroll at the University of Texas at El Paso immediately following high school graduation, is there a statistically significant difference in the first-year GPA among students who earned credit only in AP courses, students who earned credit only in DC courses, students who earned credit in both AP and DC courses, and students who did not earn credit in either? A statistically significant difference in the first-year

GPA, at a 5% level, existed between students who took DE courses and non-DE/regular students. Students who took advanced academic courses for college credit while in high school had an average GPA of 2.87 at the end of their freshmen year, while regular students had an average GPA of 2.5 (CIERP, 2017). DCAP students had the highest GPA of 3.23 at the end of their first year, compared to AP students, who had the second highest GPA of 3.05 and DC students, who had an average GPA of 2.75, which was the lowest among students who took advanced academic courses in high school (CIERP, 2017).

The third research question posed: Among the students who enroll at the University of Texas at El Paso immediately following high school graduation, is there a statistically significant difference in first-year persistence among students who earned credit only in AP courses, students who earned credit only in DC courses, students who earned credit in both AP and DC courses, and students who did not earn credit in either? Once again, students who enrolled in advanced academic programs for college credit while in high school outperformed regular students, with a 77% reenrollment rate among the former category, compared to a 62% reenrollment rate among the latter category. A logistic regression model was conducted and determined that after controlling other factors, having taken advanced academic programs for college credit was a statistically significant factor in explaining first-year retention rates (CIERP, 2017). “DC students are 1.5 (95% CI 1.3-1.6) times more likely to be retained” (CIERP, 2017, p. 4). Coinciding with the GPA findings, DCAP students outperformed AP students, who outperformed DC students. “DCAP students are 1.8 (95% CI 1.4-2.4) times more likely to be retained than AP students and, 2.6 times more likely (95% CI 2.10-3.38) than DC students. DC students are .69 (95% CI 0.59-0.80) times less likely to be retained than AP students” (CIERP, 2017, p. 3).

Table 11. First-Year Retention by Advanced Academics

Program		N	Y	Total
AP	N	287	1470	1757
	%	16.33%	83.67%	
AP&DC	N	116	827	943
	%	12.30%	87.70%	
DC	N	819	2773	3592
	%	22.80%	77.20%	
Total	N	1222	5070	6292
	Percent	19.42%	80.58%	100

The fourth research question posed: Among the students who enroll at the University of Texas at El Paso immediately following high school graduation, is there a statistically significant difference in graduation rates among students who earned credit only in AP courses, students who earned credit only in DC courses, students who earned credit in both AP and DC courses, and students who did not earn credit in either? Graduation rates were first determined by four years and for students who enrolled at UTEP in the fall semesters between 2006 and 2011. Logistic regression was conducted and, after controlling for all covariates, enrollment in an advanced academic program while in high school was found to be a significant factor for the likelihood of graduating from college within four years. The college graduation rate among students who had enrolled in advanced academics in high school was 20%, compared to 6% of regular students; hence, the former category of students are 2.4 times more likely to graduate in four years or less compared to the latter category of students (CIERP, 2017). The logistic regression conducted between DC and AP programs demonstrated that there is no significant difference between these two programs. However, the combination of DCAP was a significant factor and DCAP students were 1.5 times more likely than AP students to graduate from college in four years or less, and 1.8 times more likely than DC students (CIERP, 2017).

Table 12. Four-Year Graduation Rate by Advanced Academics

Program		No	Yes	Total
AP	N	735	273	1008
	%	72.92%	27.08%	
AP&DC	N	254	174	428
	%	59.35%	40.65%	
DC	N	1463	373	1836
	%	79.68%	20.32%	
Total	N	2452	820	3272

The six-year graduation rate was determined by examining students who enrolled at UTEP in the fall semesters between 2006 and 2009. After controlling for all covariates in the logistic regression conducted, the graduation rate within six years or less was a significant factor, with 49% of students who had enrolled in advanced academic programs graduating from college within six years, compared to 29% of non-DE/regular students (CIERP, 2017). Thus, students in the former category are 1.6 times more likely to graduate from college within six years or less compared to students in the latter category. Similar to previous findings, the combination of DC and AP was a significant factor, while a statistically significant difference did not exist between students who took solely DC courses or solely AP courses. For the likelihood of graduating from college within 6 or fewer years, DCAP students were 2.1 times more likely than AP students and 2.1 times more likely than DC students (CIERP, 2017).

Table 13. Six-Year Graduation Rate by Advanced Academics

Program		No	Yes	Total
AP	N	283	343	626
	%	45.21%	54.79%	
AP&DC	N	67	170	237
	%	28.27%	71.73%	
DC	N	565	538	1103
	%	51.22%	48.78%	
Total	N	915	1051	1966

The fifth research question was twofold: Among the students who enroll at the University of Texas at El Paso immediately following high school graduation, is there a statistically significant difference in time to degree completion and by the number of college credits earned in high school among students who were earned credit only in AP courses, students who earned credit only in DC courses, students who earned credit in both AP and DC courses, and students who did not earn credit in either? The first part of the research question was answered above with the four- and six-year graduation rates for the time to degree completion. The information to answer the second portion of the question regarding the number of credits attained, along with the sixth research question regarding the final GPA, was not provided by the CIERP office at UTEP.

The seventh research question posed: Among the students who enroll at the University of Texas at El Paso immediately following high school graduation, is there a statistically significant difference in intellectual development among students who were enrolled only in AP courses, students who were enrolled only in DC courses, students who were enrolled in both AP and DC courses, and students who did not enroll in either? The analysis cohort of the second portion of the research design comprised first-time freshmen enrolled at UTEP during the spring 2017 semester. Of the 104 students who completed the LEP survey in its entirety, 36 students identified as having taken solely AP courses, 10 students as having taken solely DC courses, 28 students as having taken a combination of DC and AP courses, and 30 as regular students who did not enroll in a college credit course in high school. The Perry positions scored for each group show a normal distribution, with the majority of the students (58.65%) in a solid position 3 or transitioning from position 3 to 4. A one-way ANOVA test was conducted to determine whether there was a statistically significant difference between the Perry positions, indicating intellectual development across the four student groups. At $F(3,100)=.242$, the p value was .867; therefore, we do not reject

the null hypothesis, and we find that there is no significant difference between the intellectual development according to the Perry position between the sample populations of AP students, DC students, DCAP students, and non-DE/regular students.

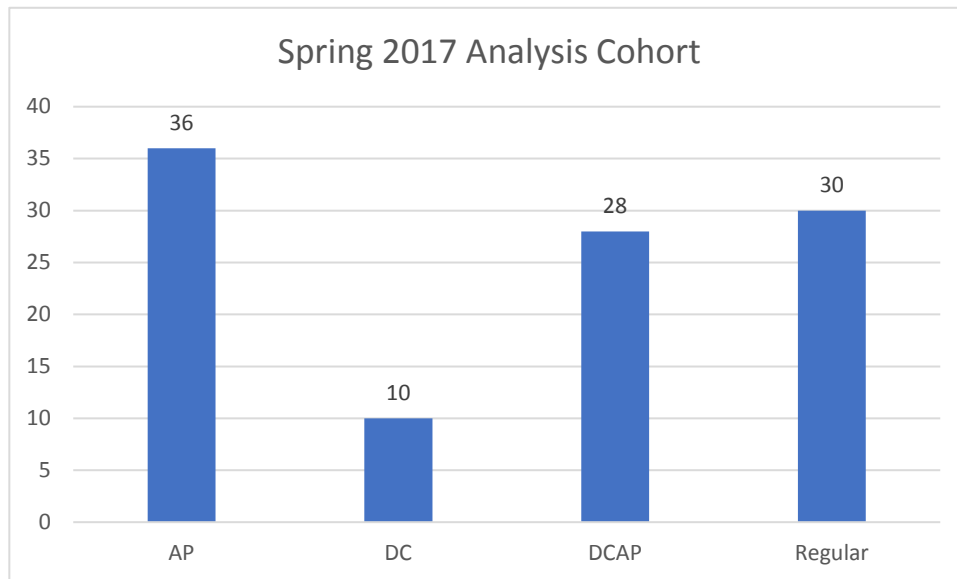


Figure 4. LEP Survey Analysis Cohort

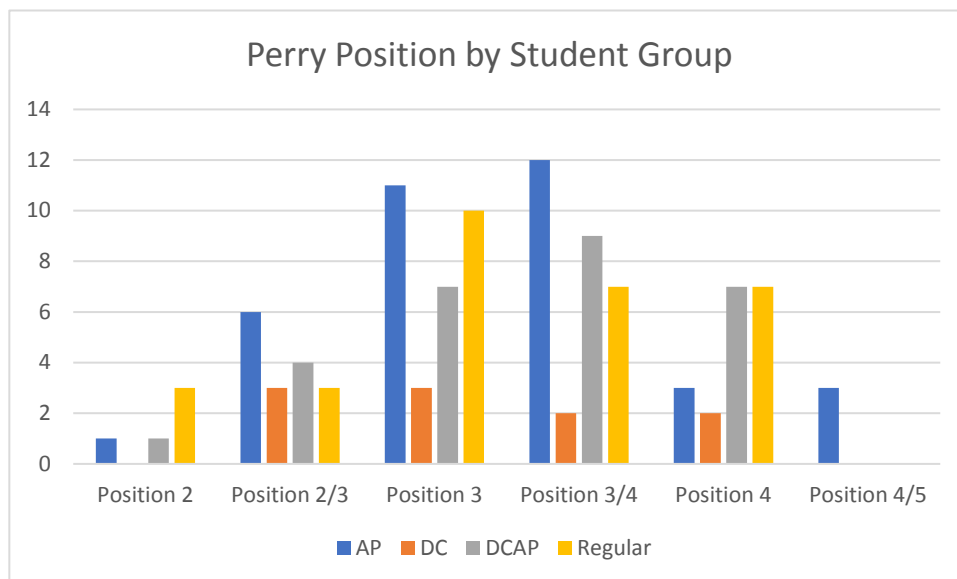


Figure 5. Perry Position by Student Group

Table 14. Perry Position One-Way ANOVA

ANOVA					
Perry					
	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	.260	3	.087	.242	.867
Within Groups	35.738	100	.357		
Total	35.998	103			

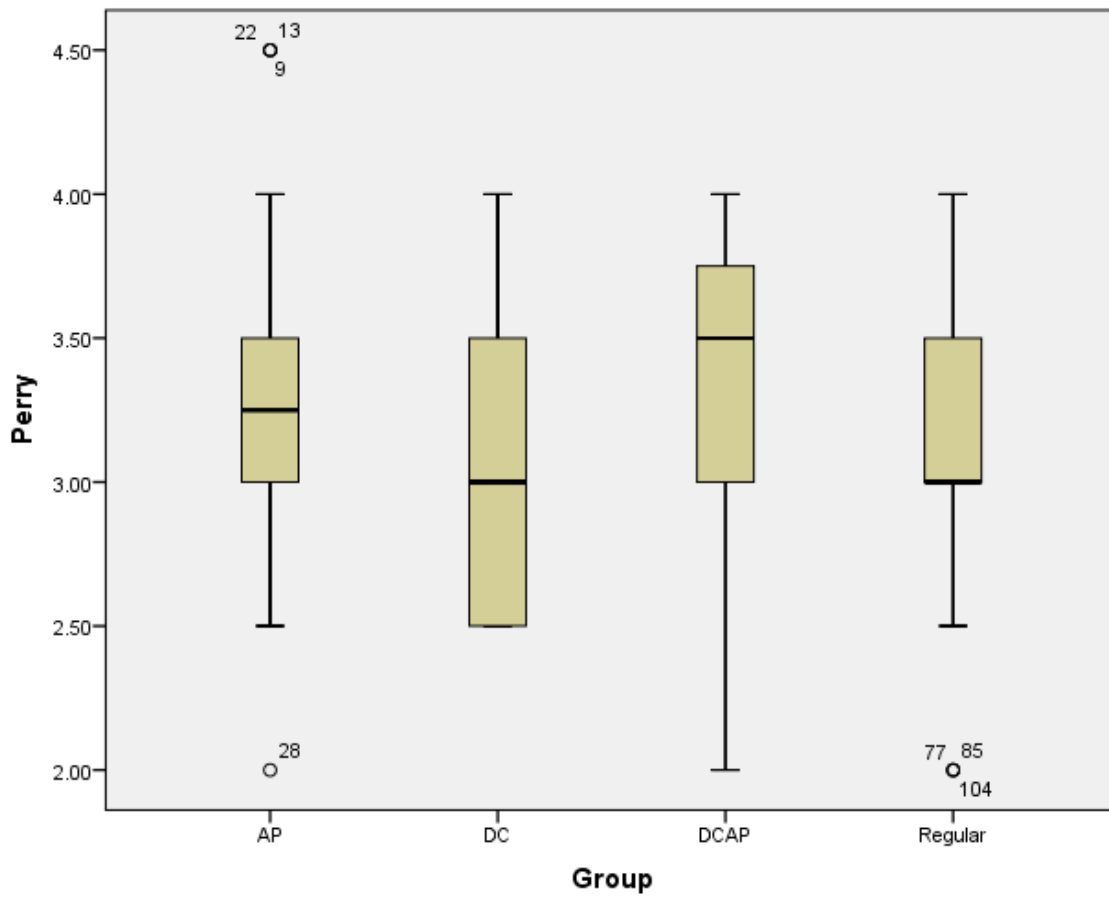


Figure 6. Median Perry Positions by Student Group

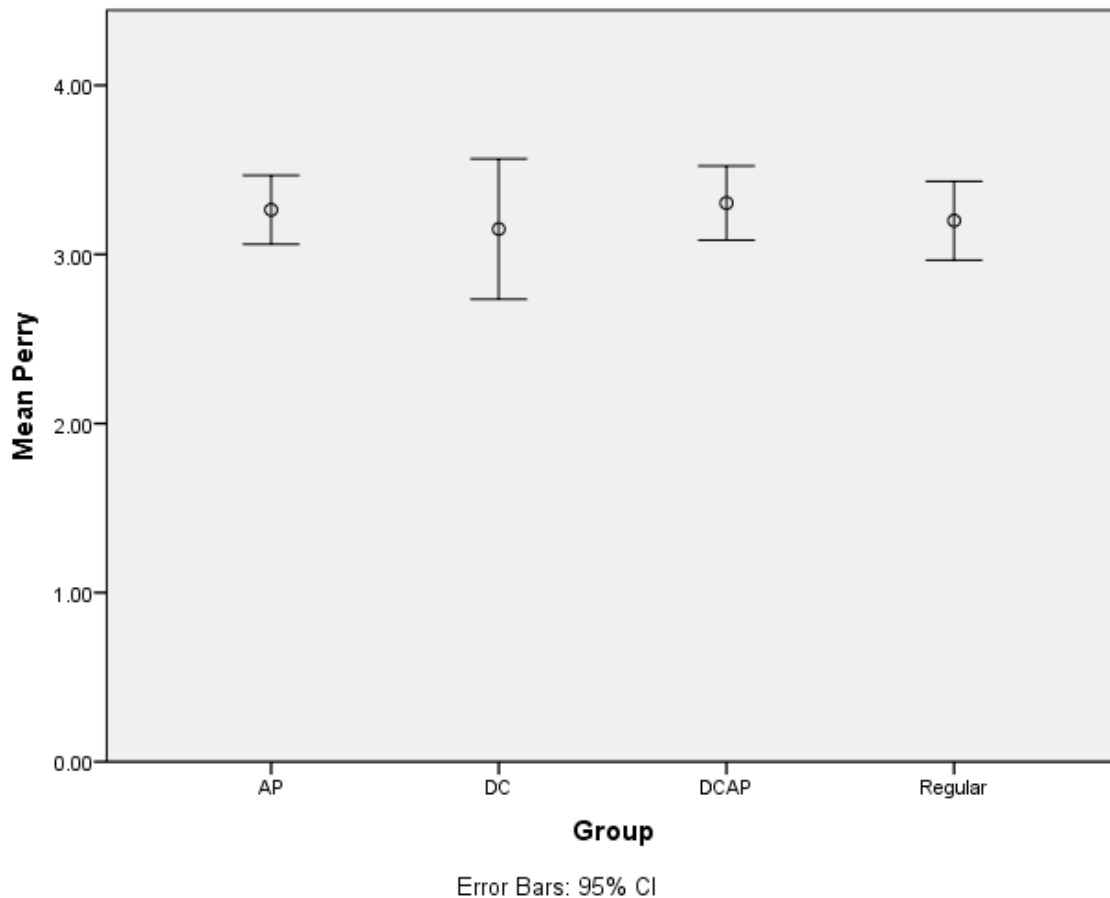


Figure 7. Mean Perry Positions by Student Groups

The eighth and final research question posed: Among the students who enroll at the University of Texas at El Paso immediately following high school graduation, is there a statistically significant difference in intellectual development among students who enrolled only in humanities college credit courses, students who enrolled only in math and/or science college credit courses, and students who enrolled in both? A one-way ANOVA test was conducted to determine whether there was a statistically significant difference between students who did or did not enroll in math and science AP or DC courses according to the Perry position. With a p value of .583, we do not reject the null hypothesis; therefore, we determine that there is no statistically significant difference.

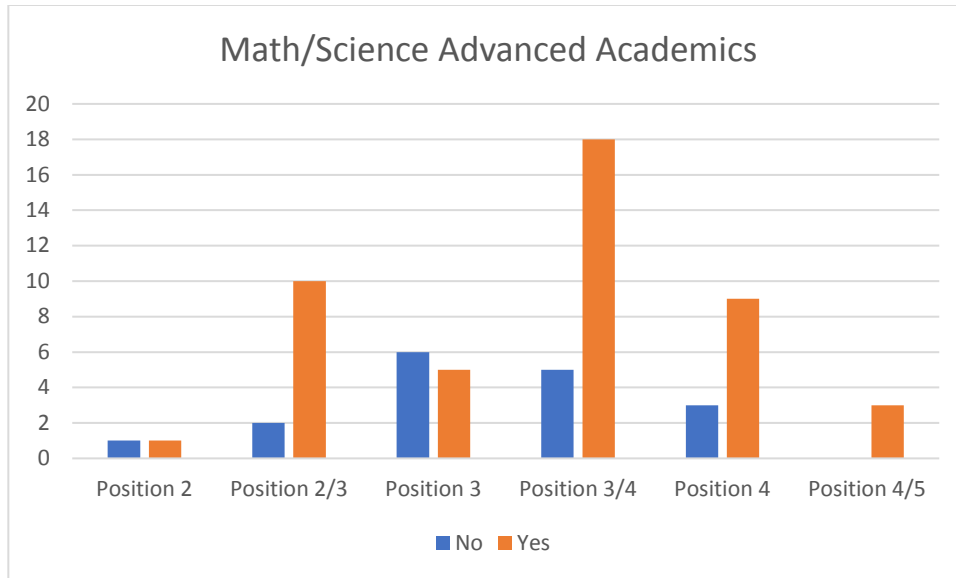


Figure 8. Math/Science Enrollment by Perry Position

Table 15. One-Way ANOVA Math/Science

ANOVA					
Perry					
	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	.103	1	.103	.305	.583
Within Groups	23.918	71	.337		
Total	24.021	72			

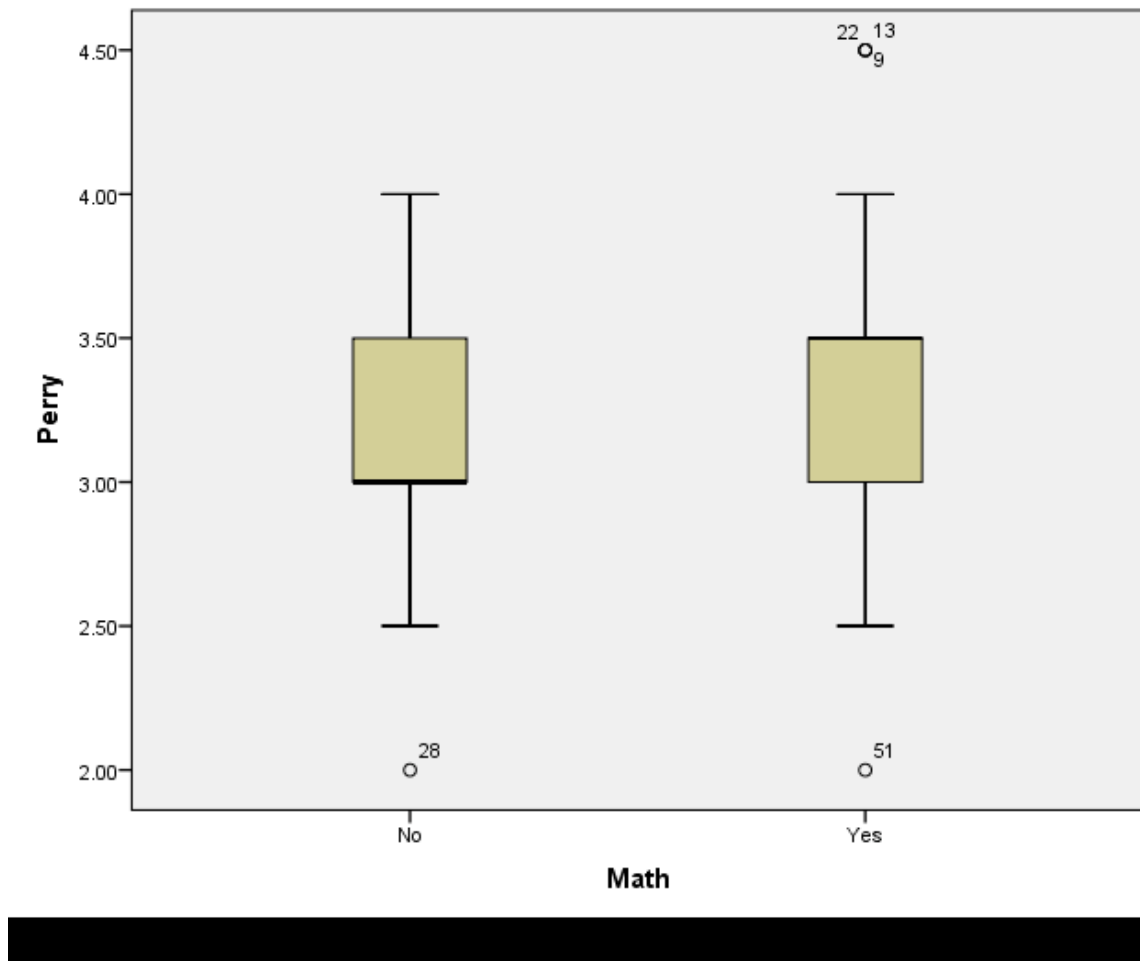


Figure 9. Median Math/Science One-Way ANOVA

A one-way ANOVA was conducted to determine whether there was a statistically significant difference between students who enrolled in humanities, defined by English or social studies courses for the purpose of this study, and the Perry position. With a p value of .769, we do not reject the null hypothesis; therefore, we do not find a statistically significant difference.

Table 16. One-Way ANOVA Humanities

ANOVA					
Perry					
	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	.029	1	.029	.087	.769

Within Groups	23.991	71	.338		
Total	24.021	72			

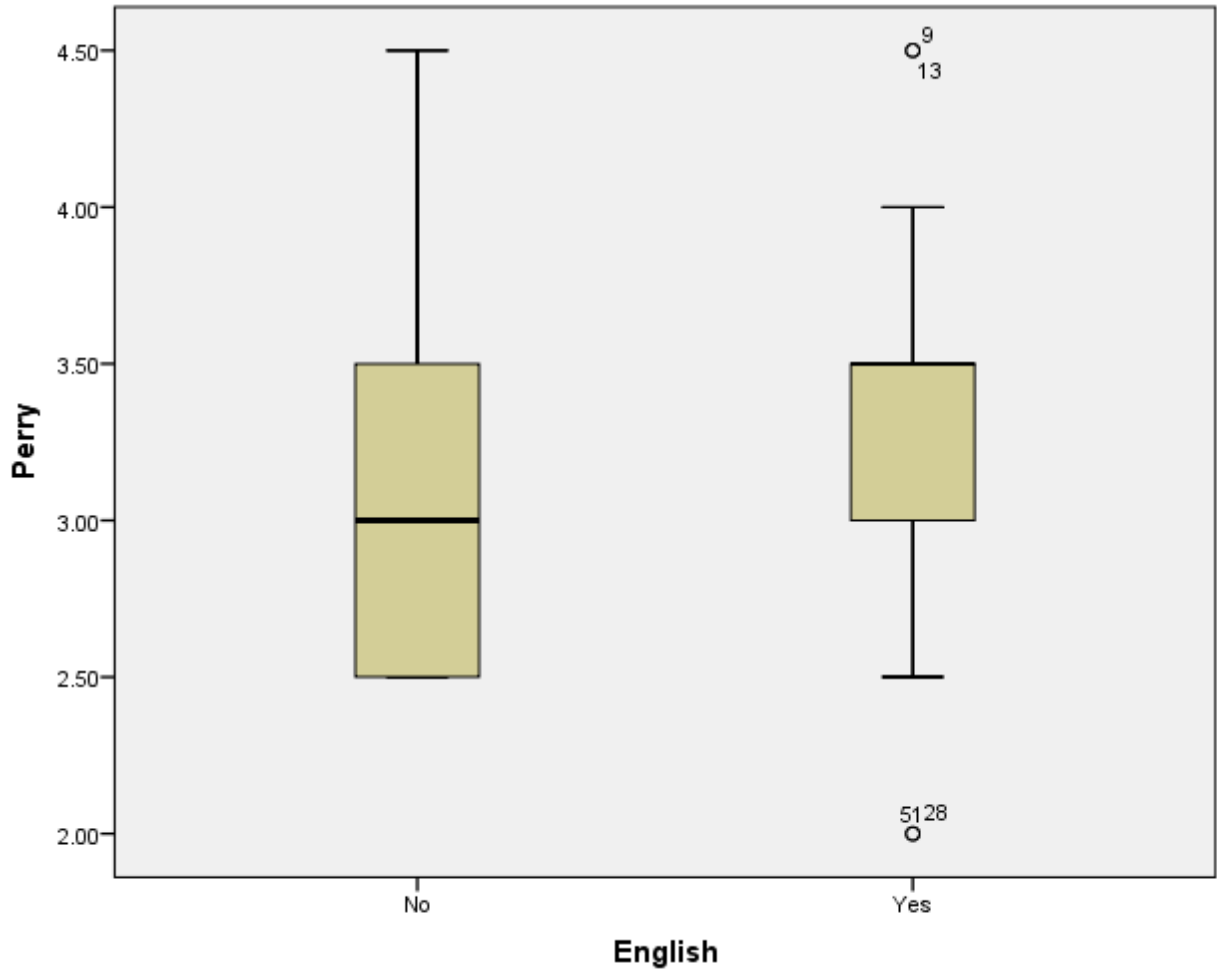


Figure 10. Median Humanities One-Way ANOVA

Finally, a one-way ANOVA was conducted to determine whether there was a statistically significant difference between enrollment in humanities and math/science courses for college credit across AP, DC, and DCAP student groups. With a p value of .801, we do not reject the null hypothesis; therefore, we determine that there is no statistically significant difference.

Table 17. One-Way ANOVA Course Content Across Student Groups

ANOVA					
Perry					
	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	.152	2	.076	.223	.801
Within Groups	23.869	70	.341		
Total	24.021	72			

Chapter 5: Conclusion

Introduction

“If an archaeologist were to search among the artifacts of high school reform, she would find layer upon fragmented layer of improvements – but with only tangential relationships with one another” (Hoffman, 2003, p. 43). A plethora of programs and policies initiated in good faith by educators significantly impact the educational opportunities provided to students. Kretchmar and Farmer (2013) point out that in education, more so than in any other profession, practices and systems implemented within our schools have been handed to us over the years and for the most part, remain uncontested. Coinciding with this notion, Goldrick-Rab, Carter, and Wagner (2007) contend that “there are disproportionately few evaluations of program effectiveness, and thus the question of ‘what works’ is rarely adequately addressed in higher education. In other words, we have often failed to adequately connect theory to practice” (p. 2472). In an era of educational reform where an obvious disconnect exists in the transition between academic environments, collaboration amongst researchers and practitioners is vital to fill the gaps in knowledge. The rapid unprecedented growth of both AP and DC programs within the past decade demonstrates efforts to add layers of improvement. However, with little reliable and valid feedback to use to adequately improve program implementation, K-12 educators and higher education officials will continue to spin their wheels. It thus remains to determine the degree to which dual enrollment programs will increase the percentage of students who attain postsecondary credentials, with an emphasis on minority and disadvantaged populations (Hoffman, 2003).

Summary of the Study

Due to the differing nature of the AP and DC curricula and the process by which high school students earn college credit, most of the existing research focuses on the impact of individual programs, which presents the need for future research on the relative effectiveness of the different programs (Perna, Rowan-Kenyon, Bell, Thomas, & Li, 2008). The purpose of this non-experimental quantitative study is to evaluate the characteristics and postsecondary outcomes

of students who took only advanced placement courses in high school, students who took only dual credit courses in high school, and students who took both advanced placement and dual credit courses in high school, evaluating their success at a research university located in a US–Mexico border community in Texas. In addition, this study aims to determine the intellectual development of current first-time freshmen enrolled at this university and explore the statistical significance of the intellectual development position according to the student group. “There is little empirical research on the impact of dual enrollment on student persistence and achievement, and even less on student development” (Hoffman, Vargas, & Santos, 2008). Theories on cognitive student development in college all stem from William Perry’s work. Perry’s theory of intellectual and ethical development outlines nine different positions of student understanding, where the fifth position is when a student understands that finding a simple right answer is rare rather than the norm (Love & Guthrie, 1999).

This non-experimental quantitative study addressed the following research questions:

1. At the University of Texas at El Paso, what are the characteristics of the first-time freshmen sample population who were enrolled in high school AP courses, DC courses, both AP and DC courses, or none?
2. Among the students who enroll at the University of Texas at El Paso immediately following high school graduation, is there a statistically significant difference in the first-year GPA among students who earned credit only in AP courses, students who earned credit only in DC courses, students who earned credit in both AP and DC courses, and students who did not earn credit in either?
3. Among the students who enroll at the University of Texas at El Paso immediately following high school graduation, is there a statistically significant difference in first-year persistence among students who earned credit only in AP courses, students who earned credit only in DC courses, students who earned credit in both AP and DC courses, and students who did not earn credit in either?

4. Among the students who enroll at the University of Texas at El Paso immediately following high school graduation, is there a statistically significant difference in graduation rates among students who earned credit only in AP courses, students who earned credit only in DC courses, students who earned credit in both AP and DC courses, and students who did not earn credit in either?

5a. Among the students who enroll at the University of Texas at El Paso immediately following high school graduation, is there a statistically significant difference in the time to degree completion among students who earned credit only in AP courses, students who earned credit only in DC courses, students who earned credit in both AP and DC courses, and students who did not earn credit in either?

5b. Among the students who enroll at the University of Texas at El Paso immediately following high school graduation, is there a statistically significant difference in the time to degree completion among students who entered the university with fewer than 12 college credits, students who entered with 12-45 college credits, and students who entered with more than 45 college credits?

6. Among the students who enroll at the University of Texas at El Paso immediately following high school graduation, is there a statistically significant difference in the final GPA at graduation among students who earned credit only in AP courses, students who earned credit only in DC courses, students who earned credit in both AP and DC courses, and students who did not earn credit in either?

7. Among the students who enroll at the University of Texas at El Paso immediately following high school graduation, is there a statistically significant difference in intellectual development among students who enrolled only in AP courses, students who enrolled only in DC courses, students who enrolled in both AP and DC courses, and students who did not enroll in either?

8. Among the students who enroll at the University of Texas at El Paso immediately following high school graduation, is there a statistically significant difference in intellectual

development among students who enrolled only in humanities college credit courses, students who enrolled only in math and/or science college credit courses, and students who enrolled in both?

Summary of the Findings

Concerning the postsecondary outcomes of first-time freshmen students enrolled at The University of Texas at El Paso during the fall semesters from 2006 to 2014, the sample size comprised a total of 14,530 students, with 3,176 having taken an advanced academic course for college credit while in high school (CIERP, 2017). During that same period, from the 2006 fall semester to fall 2014, a total of 6,275 students had participated in advanced academics in high school through AP, DC, or a combination of both DC and AP programs. Students who had participated in advanced academic programs for college credit while in high school had an average GPA of 2.87 at the end of their freshmen year, while students who did not participate in these programs had an average GPA of 2.5 (CIERP, 2017). DCAP students had the highest GPA (3.23) at the end of their first year, compared to AP students who had the second highest GPA (3.05) and DC students who had the next highest GPA average (2.75) (CIERP, 2017). Students who participated in advanced academic programs for college credit while in high school outperformed the students who did not, with 77% of students in the former category reenrolling after the first year of college, compared to 62% of students in the latter category. Among the students who participated in advanced academic programs for college credit while in high school, 87.7% of DCAP students reenrolled for their second year, 83.67% of AP students reenrolled, and 77.2% of DC students reenrolled. The four-year graduation rate was 20% for students who participated in advanced academic programs while in high school, compared to 6% for the students who did not; hence, students in the former category are 2.4 times more likely to graduate in four years or less compared to students in the latter category (CIERP, 2017). DCAP students, with a 40.65% four-year graduation rate, are 1.5 times more likely than AP students to graduate in four years or less, with a 27.08% four-year graduation rate, and 1.8 times more likely than DC students, with a 20.32% four-year graduation rate (CIERP, 2017). Lastly, the rate of graduation within six or fewer

years was a significant factor: it was 49% for students who participated in advanced academic programs while in high school, compared to 29% for students who did not participate in advanced academic programs (CIERP, 2017). DCAP students, with a 71.73% six-year graduation rate, were 2.1 times more likely to graduate in 6 or fewer years than AP students, with a 54.79% six-year graduation rate, and 2.1 times more likely than DC students, with a 48.78% six-year graduation rate (CIERP, 2017).

A total of 3,150 first-time freshmen at the University of Texas at El Paso during the spring 2017 semester were identified and sent an invitation to complete the LEP survey. Of the 158 students who submitted a response, 104 students completed the LEP survey in its entirety. Thirty-six students identified as solely AP students, ten students as solely DC, twenty-eight students as a combination of DC and AP, and thirty students as not having enrolled in a college credit course in high school. The Perry positions scored for each group shows a normal distribution, with the majority of students (58.65%) in a solid position 3 or transitioning from position 3 to 4. A one-way ANOVA test concluded that a statistically significant difference does not exist among the groups regarding intellectual development according to the Perry positions of the sample population, nor is there a difference according to the content subjects of the credit-based courses.

Conclusion and Implications

It is of great importance to note that across the board, students who participate in advanced academic programs for college credit while in high school are experiencing postsecondary success at higher rates than students who do not enroll in such programs. More importantly, there is no significant difference between students who enrolled solely in AP courses and those who enrolled solely in DC courses for any of the researched topics. However, the combination of DC and AP programs made a significant impact as students who enrolled in both DC and AP programs excelled at higher rates than those who enrolled solely in the AP program or solely in the DC program. Giani, Alexander, and Reyes (2014) highlight that a lack of research exists for school administrators, policymakers, and district leaders to prioritize the dual enrollment opportunities

that are most efficacious at preparing students for college success. The existing research validates the positive outcomes of AP and DC programs but by individual program and not as a comparison to each other. Practitioners' views are constantly in flux as they determine the advanced academic opportunities that will be available to all students at the secondary level and how to promote one program over another. The findings of this study, correlated with the institution's further analysis, demonstrate that it is in the students' best interests to promote a combination of advanced academic courses within each student's graduation plan. Although the prevailing notion among high school educators is to promote one program over another, including an existing bias for the AP program over the DC program, the analytic results for this region at The University of Texas at El Paso establishes that DCAP students' postsecondary outcomes far surpass those of the AP, DC, or non-dual enrollment/regular students.

The fact that students at The University of Texas at El Paso who had enrolled in advanced academic programs while in high school experienced greater postsecondary success than students who did not enroll in such programs, is also reflected in the state's findings that were determined within the same time period. Interestingly, the Upper Rio Grande region that includes the El Paso metropolitan area has the highest rates of participation in dual enrollment academic programs, with more than 40% enrollment as compared to 13% in the Gulf Coast region and 16% in the metroplex region (THECB, 2017). The top ten DC courses delivered in Texas from 2012 to 2015 were all arts and humanities courses except for one: College Algebra. DC English 1301 was taken by 97,417 students, DC U.S. History was taken by 61,372 students, and DC Math 1314 College Algebra was taken by 31,335 students (THECB, 2017). Coinciding with these findings, only 16.3% of LEP survey respondents reported their enrollment in a DC math course; whereas 34.6% of students reported their participation in an AP math course. Additionally, LEP respondents reported that the AP course they took that had the highest percentage (39.4%) among respondents was science, and yet science did not make the top ten of the DC state list. This may be due in part to difficulty in associating DC science courses with instructor credentials and lab hours that may not sync completely with high school scheduling.

Despite the positive postsecondary outcomes achieved by students enrolled in high school advanced academics, a concern lies in the low achievement rates that prevail in public universities across the nation. Although enrollment in advanced academic programs in high school is a significant factor in the four-year graduation rate at The University of Texas at El Paso, the 4-year graduation rate of DC students was only 20% versus 6% for non-DE/regular students. Thus, only a fifth of DC students will graduate from college in four years, and these are our students who are deemed college-ready in high school. Among DCAP students, 40.65% graduate from college in four years. As educators at the secondary level, it is disheartening to know that not even half of our students who have earned college credit through a combination of AP and DC courses will graduate from college in four years. The six-year graduation rate appears to be more promising as 71.73% of DCAP students graduate within six years, but approximately half of AP or DC students and only 29% of non-DE/regular students graduate within six years. With the removal of dual enrollment restrictions along with a surge in the number of students enrolling in DC and AP courses, the anticipated result is to continue seeing an increase in postsecondary achievement.

The distribution of the 104 LEP survey respondents was well reflective of the general population and seems appropriate as secondary schools had well-established AP programs long before the development and expansion of DC programs. Of the 104 respondents, only ten had enrolled solely in DC courses, while 28 had enrolled in both DC and AP courses, 36 had enrolled solely in AP courses, and 30 had not enrolled in either program. High school campuses attempt to recruit high school teachers who are also DC certified, yet are bound by the certifications the current teaching staff has or by staffing formulas for adding teaching positions. Transportation, funding, logistics, and community college requirements make a concurrent high school/DC course instructor an optimal choice for DC program development. THECB (2017) found that 41% of DC courses across the state were taught by an instructor who was concurrently employed as a high school teacher, and the number of DC courses offered online was growing. Hence, as advanced academic programs are further developed, it is appropriate that approximately 10% of the sample population had enrolled solely in DC courses.

Although the expectation was that a significant difference in outcomes of postsecondary education and intellectual development would exist between students who enrolled in DC and AP courses, AP courses only, DC courses only, or neither program, as the data demonstrated in previous research questions, this difference did not exist among the Perry positions of the sample population. Perry (1970) concluded that the majority of college freshmen were at position 4: late multiplicity by the end of their first year in college. This stage encompasses the student's encounter with the unknown and accepting that everyone has a right to an opinion by understanding there is no longer a right answer and the authority figure does not know all. Among the sample population, most students (58.65%) were in a solid position three or transitioning from three to four. Only 21.15% of the sample population was in a solid position four or transitioning from four to five. Position three is termed multiplicity subordinate. Multiplicity is characterized by diverse views where all the right answers are not yet known and opinions are valid from a multiplistic perspective (Evans et al., 2010). Hence, students begin to acknowledge their peers' diverse views as legitimate and move away from black and white dualistic forms of thinking. "As individuals move through multiplicity, their conception of the student role shifts from that of one who works hard to learn to one who learns to think more independently" (Evans et al., 2010, p. 86). "In position 4, the 'not yet known' notion of position 3 often becomes a new certainty of 'we'll never know for sure', and thus what is most important is one's own thinking" (Moore, 2014, p. 1).

Of the thirteen questions in each domain, students had to identify each concept as not at all significant, somewhat significant, moderately significant, or very significant. Among the top five concepts rated as very significant, one concept for each domain was to provide me with an opportunity to learn methods and solve problems, an instructor must give clear directions and guidance for all course activities and assignments, students' own expectation of taking learning seriously and being personally motivated to learn the subject, a well-structured and organized course with clear expectations, and straightforward exams that only cover what has been taught in the course. Clear expectations appear to be the primary requirement of a student's ideal learning environment in which they are given the opportunity to learn methods and solve problems.

Recommendations

On May 23, 2015, the Texas Legislature passed House Bill 505, which prohibits a limit of the number of dual enrollment (DE) courses in which a student can enroll. Since then, secondary campuses have begun adjusting to such opportunities and are becoming proactive in the development of DE programs as well as identifying students who are eligible to enroll in DE courses. Various school districts in the region are starting to prep and test eighth-grade students for the TSI test to qualify for DE courses beginning in ninth grade. Among Texas high school graduates who participated in a DE course while in high school, 72% enrolled in college the year immediately after graduation, versus 47% of students who did not enroll in a DE course (THECB, 2017). “While enrollment rates in two-year colleges are similar among students who do and do not take a DC course in high school, enrollment rates in four-year colleges are nearly three times as high for students who take a DC course in high school” (THECB, 2017, p. 59). A recommendation for The University of Texas at El Paso is to conduct further analysis on DE trends and the number of earned DE hours per student as House Bill 505 is sure to impact student enrollment in courses that earn college credit while in high school. College now starts in high school. For both K-12 and higher education institutions, it is vital to continue assessing DC and AP students’ postsecondary outcomes in the next decade as these programs significantly evolve.

Lastly, this study’s primary limitation was in the sample size and timing of the delivery of the LEP survey. Approximately 5% of the first-time freshmen at The University of Texas at El Paso responded to the survey. Although it was not mandatory and responses were anonymous, a larger sample size would have benefited the study. Additionally, this LEP instrument was delivered to students a month before the end of the second semester of their first year. The results of this study indicate that a statistically significant difference does not exist among students at the end of their first year in college. To determine the full impact of advanced academics and truly assess the intellectual development process among students, the LEP survey can be administered by secondary schools at the end of their high school career or by higher education institutions at the beginning of the students’ first semester of enrollment. The results of this objective instrument can

also be informative for instructors at both levels to assess their students' developmental progress and inform the practice of teaching. College readiness efforts, as demonstrated by advanced academics, facilitate and encourage students' postsecondary achievement.

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Appendix A



THE UNIVERSITY OF TEXAS AT EL PASO
Office of the Vice President for Research and Sponsored Projects
Institutional Review Board
El Paso, Texas 79968-0587
phone: 915 747-8841 fax: 915 747-5931

FWA No: 00001224

DATE: February 3, 2017

TO: Elda Armendariz, M.A. Educational Administration

FROM: University of Texas at El Paso IRB

STUDY TITLE: [1013221-1] Advanced Placement versus Dual Credit: The Long-Term Effects of Advanced Academics on Post-Secondary Success and Completion at a Public Four-Year Research University in a Border City

IRB REFERENCE #: College of Education

SUBMISSION TYPE: New Project

ACTION: DETERMINATION OF EXEMPT STATUS

DECISION DATE: February 3, 2017

REVIEW CATEGORY: 45 CFR 46.101(b)(4)

Thank you for your submission of New Project materials for this research study. University of Texas at El Paso IRB has determined this project is EXEMPT FROM IRB REVIEW according to federal regulations.

Exempt protocols do not need to be renewed. Please note that it is the Principal Investigator's responsibility to resubmit the proposal for review if there are any modifications made to the originally submitted proposal. This review is required in order to determine if "Exemption" status remains.

We will put a copy of this correspondence on file in our office.

If you have any questions, please contact the IRB Office at (915) 747-8841 or irb.orsp@utep.edu. Please include your study title and reference number in all correspondence with this office.

cc:

Appendix B

LEP/MID AGREEMENT/PERMISSION FORM

William S. Moore, Ph.D.
505 Farwell Ct. NW
Olympia, WA 98502
360-528-1809 (voice) wsmoore51@comcast.net (email)

The Measure of Intellectual Development (**MID**) (Knefelkamp & Widick, 1974) and the Learning Environment Preferences (**LEP**) (Moore, 1987) can only be reproduced with written permission; a signed copy of this form constitutes such permission. Please complete, sign and return this form (via mail or email); a signed copy will be returned to you for your files.

I agree to the following items as conditions for my use of the Measure of Intellectual Development and/or the Learning Environment Preferences:

- 1) I understand that this permission only applies to the research project described herein; I will not release the instruments to others or use the instruments in any subsequent studies without permission from Dr. Moore;
- 2) For the **MID**:
 - a. Essays will be scored by Dr. Moore or by approved raters in order to insure high levels of accuracy and consistency. If approved outside raters are used, I understand that for reliability purposes Dr. Moore will rate a percentage of the sample (from 10-25% depending on individual circumstances).
 - b. For scoring purposes, I will send the originals or high-quality copies of the **MID** essays (and a cover sheet with student demographic information) and I understand that Dr. Moore will retain these copies for his Perry scheme data bank.
- 3) For the **LEP**:
 - a. Unless specific alternate arrangements are made, I will send **LEP** answer sheets (or responses in an electronic spreadsheet file—Excel template available on request) to Dr. Moore for scoring.
 - b. If I submit the LEP responses electronically, the scores will be added to the electronic file and the file will be returned to me.
- 4) Upon request, I will provide Dr. Moore with a copy of any research report or publication produced based on this data.

In return, Dr. Moore agrees to:

- 1) Rate the **MID** instruments for a fee of \$3.50 per essay for single-rating, \$6.50 per essay for full reconciled ratings (two raters per essay);
- 2) Score the **LEP** answer sheets for a fee of \$1.00 per instrument;
- 3) For the **MID**, provide a summary sheet (or electronic file) of both individual and reconciled

(if applicable) ratings; for the **LEP**, a summary sheet (or electronic file) including all provided demographic information, position sub-scores, and the overall CCI (Cognitive Complexity Index) score;

4) Provide any additional follow-up necessary for the interpretation of the instrument scores or summary sheets.

5) SPECIAL NOTES/REVISIONS OF TERMS:

Instrument/s Requested: (check all that apply)

MID _____ Indicate preferences: 1) Essay Form/s: A ____ AP ____ Q____ Other*? _____

2) Rating options:

Single-rated? _____

Double-rated? _____

Single-rated, with double-rated sub-sample? _____

LEP _____

*Essays A, AP, and Q are the primary essays used for measuring general epistemological issues related to the Perry scheme. Alternative essays are available for research on other specific domains, e.g., careers, decision-making, specific academic disciplines (math, humanities, science). For more information about these essays, or potential work on other variant essays, contact Dr. Moore.

Name of Principal Researcher

Signature

Institution

Date

Address

Phone

City/State/Zip Code

Email address

William S. Moore, Ph.D.

Date

Please attach a brief description of your assessment project: basic purpose, hypotheses, population/s sampled, sample size, and time frame for data collection and analyses.

Appendix C

LEARNING ENVIRONMENT PREFERENCES

This survey asks you to describe what you believe to be the most significant issues in your **IDEAL LEARNING ENVIRONMENT**. Your opinions are important to us as we study how students think about teaching and learning issues. We ask, therefore, that you take this task seriously and give your responses some thought. We appreciate your cooperation in sharing what you find most important in a learning environment.

The survey consists of five sections, each representing a different aspect of learning environments. In each section, you are presented with a list of specific statements about that particular area. Try not to focus on a specific class or classes as you think about these items; focus on their significance in an *ideal* learning environment *for you*.

We ask that you do two things for each section of the instrument:

1. Please **rate** each item of the section (using the 1-4 scale provided below) in terms of its significance or importance to your learning.
2. Review the list for your top-rated items (those you rated 4, or 3 if you have no items rated 4) and **rank** the three most important items to you as you think about your *ideal learning environment* by writing the *item numbers* on the appropriate spaces at the bottom of the answer sheet.

Please mark your answers on the separate answer sheet provided, and be sure to indicate both your ratings of individual items **and** *your ranking of the top 3 items in each section*. It is very important that you indicate your top three choices for each question area by writing the ITEM NUMBER in the spaces provided (1st choice, 2nd choice, 3rd choice).

Rating Scale:

1	2	3	4
Not at all significant	Somewhat significant	Moderately significant	Very significant

Before you begin, you may be asked to provide us with some background information. This information will be used to examine group differences; your name or social security number may be used at some point in the future if a follow-up survey is required. **ALL RESPONSES WILL BE KEPT CONFIDENTIAL**. Again, thank you very much for sharing with us your ideas about learning.

DOMAIN ONE:
COURSE CONTENT/VIEW OF LEARNING

MY IDEAL LEARNING ENVIRONMENT WOULD:

1. Emphasize basic facts and definitions.
2. Focus more on having the right answers than on discussing methods or how to solve problems.
3. Insure that I get all the course knowledge from the professor.
4. Provide me with an opportunity to learn methods and solve problems.
5. Allow me a chance to think and reason, applying facts to support my opinions.
6. Emphasize learning simply for the sake of learning or gaining new expertise.
7. Let me decide for myself whether issues discussed in class are right or wrong, based on my own interpretations and ideas.
8. Stress the practical applications of the material.
9. Focus on the socio-psycho, cultural and historical implications and ramifications of the subject matter.
10. Serve primarily as a catalyst for research and learning on my own, integrating the knowledge gained into my thinking.
11. Stress learning and thinking on my own, not being spoonfed learning by the instructor.
12. Provide me with appropriate learning situations for thinking about and seeking personal truths.
13. Emphasize a good positive relationship among the students and between the students and teacher.

PLEASE BE SURE TO REVIEW THE ABOVE LIST AND MARK YOUR THREE MOST SIGNIFICANT ITEMS (BY ITEM NUMBER) IN THE LINES PROVIDED ON THE ANSWER SHEET.

Rating Scale:

1	2	3	4
Not at all significant	Somewhat significant	Moderately significant	Very significant

**DOMAIN TWO:
ROLE OF INSTRUCTOR**

IN MY IDEAL LEARNING ENVIRONMENT, THE TEACHER WOULD:

1. Teach me all the facts and information I am supposed to learn.
2. Use up-to-date textbooks and materials and teach from them, not ignore them.
3. Give clear directions and guidance for all course activities and assignments.
4. Have only a minimal role in the class, turning much of the control of course content and class discussions over to the students.
5. Be not just an instructor, but more an explainer, entertainer and friend.
6. Recognize that learning is mutual—individual class members contribute fully to the teaching and learning in the class.
7. Provide a model for conceptualizing living and learning rather than solving problems.
8. Utilize his/her expertise to provide me with a critique of my work.
9. Demonstrate a way to think about the subject matter and then help me explore the issues and come to my own conclusions.
10. Offer extensive comments and reactions about my performance in class (papers, exams, etc.).
11. Challenge students to present their own ideas, argue with positions taken, and demand evidence for their beliefs.
12. Put a lot of effort into the class, making it interesting and worthwhile.
13. Present arguments on course issues based on his/her expertise to stimulate active debate among class members.

PLEASE BE SURE TO REVIEW THE ABOVE LIST AND MARK YOUR THREE MOST SIGNIFICANT ITEMS (BY ITEM NUMBER) IN THE LINES PROVIDED ON THE ANSWER SHEET.

Rating Scale:

1	2	3	4
Not at all significant	Somewhat significant	Moderately significant	Very significant

**DOMAIN THREE:
ROLE OF STUDENT/PEERS**

IN MY IDEAL LEARNING ENVIRONMENT, AS A STUDENT I WOULD:

1. Study and memorize the subject matter--the teacher is there to teach it.
2. Take good notes on what's presented in class and reproduce that information on the tests.
3. Enjoy having my friends in the class, but other than that classmates don't add much to what I would get from a class.
4. Hope to develop my ability to reason and judge based on standards defined by the subject.
5. Prefer to do independent research allowing me to produce my own ideas and arguments.
6. Expect to be challenged to work hard in the class.
7. Prefer that my classmates be concerned with increasing their awareness of themselves to others in relation to the world.
8. Anticipate that my classmates would contribute significantly to the course learning through their own expertise in the content.
9. Want opportunities to think on my own, making connections between the issues discussed in class and other areas I'm studying.
10. Take some leadership, along with my classmates, in deciding how the class will be run.
11. Participate actively with my peers in class discussions and ask as many questions as necessary to fully understand the topic.
12. Expect to take learning seriously and be personally motivated to learn the subject.
13. Want to learn methods and procedures related to the subject--learn how to learn.

PLEASE BE SURE TO REVIEW THE ABOVE LIST AND MARK YOUR THREE MOST SIGNIFICANT ITEMS (BY ITEM NUMBER) IN THE LINES PROVIDED ON THE ANSWER SHEET.

Rating Scale:

1	2	3	4
Not at all significant	Somewhat significant	Moderately significant	Very significant

DOMAIN FOUR:
CLASSROOM ATMOSPHERE/ACTIVITIES

IN MY IDEAL LEARNING ENVIRONMENT, THE CLASSROOM ATMOSPHERE AND ACTIVITIES WOULD:

1. Be organized and well-structured--there should be clear expectations set (like a structured syllabus that's followed).
2. Consist of lectures (with a chance to ask questions) because I can get all the facts I need to know more efficiently that way.
3. Include specific, detailed instructions for all activities and assignments.
4. Focus on step-by-step procedures so that if you did the procedure correctly each time, your answer would be correct.
5. Provide opportunities for me to pull together connections among various subject areas and then construct an adequate argument.
6. Be only loosely structured, with the students themselves taking most of the responsibility for what structure there is.
7. Include research papers, since they demand that I consult sources and then offer my own interpretation and thinking.
8. Have enough variety in content areas and learning experiences to keep me interested.
9. Be practiced and internalized but be balanced by group experimentation, intuition, comprehension, and imagination.
10. Consist of a seminar format, providing an exchange of ideas so that I can critique my own perspectives on the subject matter.
11. Emphasize discussions of personal answers based on relevant evidence rather than just right and wrong answers.
12. Be an intellectual dialogue and debate among a small group of peers motivated to learn for the sake of learning.
13. Include lots of projects and assignments with practical, everyday applications.

PLEASE BE SURE TO REVIEW THE ABOVE LIST AND MARK YOUR THREE MOST SIGNIFICANT ITEMS (BY ITEM NUMBER) IN THE LINES PROVIDED ON THE ANSWER SHEET.

Rating Scale:

1	2	3	4
Not at all significant	Somewhat significant	Moderately significant	Very significant

DOMAIN FIVE: EVALUATION PROCEDURES

EVALUATION PROCEDURES IN MY IDEAL LEARNING ENVIRONMENT WOULD:

1. Include straightforward, not "tricky," tests, covering only what has been taught and nothing else.
2. Be up to the teacher, since s/he knows the material best.
3. Consist of objective-style tests because they have clear-cut right or wrong answers.
4. Be based on how much students have improved in the class and on how hard they have worked in class.
5. Provide an opportunity for me to judge my own work along with the teacher and learn from the critique at the same time.
6. Not include grades, since there aren't really any objective standards teachers can use to evaluate students' thinking.
7. Include grading by a prearranged point system (homework, participation, tests, etc.), since I think it seems the most fair.
8. Represent a synthesis of internal and external opportunities for judgment and learning enhancing the quality of the class.
9. Consist of thoughtful criticism of my work by someone with appropriate expertise.
10. Emphasize essay exams, papers, etc. rather than objective-style tests so that I can show how much I've learned.
11. Allow students to demonstrate that they can think on their own and make connections not made in class.
12. Include judgments of the quality of my oral and written work as a way to enhance my learning in the class.
13. Emphasize independent thinking by each student, but include some focus on the quality of one's arguments and evidence.

PLEASE BE SURE TO REVIEW THE ABOVE LIST AND MARK YOUR THREE MOST SIGNIFICANT ITEMS (BY ITEM NUMBER) IN THE LINES PROVIDED ON THE ANSWER SHEET.

Rating Scale:

1	2	3	4
Not at all significant	Somewhat significant	Moderately significant	Very significant

LEARNING ENVIRONMENT PREFERENCES ANSWER SHEET

STUDENT CODE NUMBER: _____

Rating Scale:	1	2	3	4
	Not at all significant	Somewhat significant	Moderately significant	Very significant

For each domain, record your rating of each item (using the rating scale described above) on the lines by the appropriate item numbers.

DOMAINS

Course Content/ View of Learning	Role of Instructor	Role of Student/Peers	Classroom Atmosphere	Evaluation Procedures
1. _____	1. _____	1. _____	1. _____	1. _____
2. _____	2. _____	2. _____	2. _____	2. _____
3. _____	3. _____	3. _____	3. _____	3. _____
4. _____	4. _____	4. _____	4. _____	4. _____
5. _____	5. _____	5. _____	5. _____	5. _____
6. _____	6. _____	6. _____	6. _____	6. _____
7. _____	7. _____	7. _____	7. _____	7. _____
8. _____	8. _____	8. _____	8. _____	8. _____
9. _____	9. _____	9. _____	9. _____	9. _____
10. _____	10. _____	10. _____	10. _____	10. _____
11. _____	11. _____	11. _____	11. _____	11. _____
12. _____	12. _____	12. _____	12. _____	12. _____
13. _____	13. _____	13. _____	13. _____	13. _____

Now record your **TOP THREE CHOICES** for each domain area by writing the **ITEM NUMBERS**, not your ratings, of these choices in the spaces provided below. (For example, if you consider item # 2 the most significant issue for your own learning related to the domain of "Role of Instructor," write "2" next to "1st" under that domain below.)

<u>COURSE CONTENT</u>	<u>ROLE OF INSTRUCTOR</u>	<u>ROLE OF STUDENT/PEERS</u>	<u>CLASSROOM ATMOSPHERE</u>	<u>EVALUATION PROCEDURES</u>
1ST _____	1ST _____	1ST _____	1ST _____	1ST _____
2ND _____	2ND _____	2ND _____	2ND _____	2ND _____
3RD _____	3RD _____	3RD _____	3RD _____	3RD _____

Vita

Elda Armendariz is a native El Pasoan and graduated from Ysleta High School. She earned her Bachelor of Arts degree with a double major in International Relations and Spanish with a specialization in Latin American and Caribbean Studies from Stanford University in 2006. In 2010, she received her Master of Education degree in Educational Administration from the University of Texas at El Paso. In 2012, she joined the doctoral program in Educational Leadership and Administration at the University of Texas at El Paso.

Elda first served as a Program Coordinator for Think College Now with the El Paso Collaborative for Academic Excellence housed at The University of Texas at El Paso. This experience motivated her to pursue her career in K-12 education and concentrate on easing the transition for secondary students as they navigate to an academic environment at a postsecondary institution. While pursuing her doctoral degree, Elda worked as an Assistant Principal at Canutillo High School with the Canutillo Independent School District. Her focus was on college readiness, student leadership, and instructional leadership with an emphasis on vertical alignment. She also served as the District Director for AVID. She is currently serving as an Assistant Principal at Irvin High School with the El Paso Independent School District.

Contact Information: eacosta2006@gmail.com

This thesis/dissertation was typed by Elda Armendariz.