

The Prior Accumulation of Dual-Credit Enrollment Hours as a Measure of First Year Persistence at a 4-Year University

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Abstract

Dual enrollment allows high school students to be dually enrolled in courses that will earn them both high school and college credits. The number of students enrolled in dual credit course programs has tripled in the past 10 years. However, there is a lack of research as to how the accumulation of dual-credit enrollment courses affects students once they arrive at a 4-year university and if there is a positive effect on first-year persistence. Therefore, the purpose of this study was to examine the effect of dual-credit enrollment on the Grade Point Average of university students by studying those who had a prior accumulation of 12 or more dual-credit enrollment hours versus those without any dual-credit enrollment hours at a large, Texas 4-year university. The study examined GPA in the first-year (contiguous Fall and Spring semester) using inferential statistics with 225 randomly selected students who arrived with 12 or more dual credit hours in school year 2008-2009, 331 in 2009-2010, and lastly 475 in 2010-2011. The same numbers of randomly selected students without any dual credit hours were selected for each of the school years, in the academic years of 2008-2009, 2009-2010, and 2010-2011. This study was conducted using a Mann Whitney U test to determine if differences exist between two groups on one dependent variable with a .05 significance level.

Dual-credit enrollment is the process by which a high school student has the opportunity to enroll in courses to earn both high school credit and college credit. This phenomenon has been around for over 20 years. However, in the last 10 years the numbers of students enrolled in dual credit has more than tripled (Texas Higher Education Coordinating Board (THECB, 2010). With the rising cost of higher education, many students are seeking dual-credit enrollment as an avenue for offsetting some of that cost by completing several college courses while still in high school. Since most dual-credit enrollment programs are partnerships between local community

colleges and K-12 districts, many school districts are expanding dual-credit enrollment programs because of the close-knit relationships it fosters with area community colleges (Hughes, 2010).

Dual-credit enrollment courses can be taught on the high school campus, the college campus, or both campuses. When courses are taught on the high school campus, the teachers are required to have master's degrees and 18 graduate hours in the course taught. Therefore, the teachers have the same required credentials as those at the community college, thus ensuring the rigor of the courses meets the standard for college course work (Smith, 2007). K-12 school districts also embrace dual-credit enrollment because the rigor of the courses prepare students better for success in college and shortens the time to graduation (Bishop-Clark et al., 2010).

Some colleges and universities that do not accept dual credit hours has caused some concern. In Texas, all public colleges and universities must accept dual credit hours. High schools must also offer at least 12 hours of dual-credit enrollment hours to its students. However, private colleges and universities do not have to accept these credits and of the public ones that do, some of the elite public universities have accepted them as electives rather than as course for course credit (THECB, 2000). Although dual credit hours are accepted at most Tier I and very selective universities, certain schools within these universities require students to take the university's English course, or College Algebra course. In these instances, the dual credit hours may be applied as an elective. Most of the schools within Tier I universities accept all of the dual-credit enrollment hours on a course for course basis (Holloway, 2010). This phenomenon is quite different from advanced placement (AP) courses. In an AP course, the student enrolls in the course and after passing it, takes a test to place out of the college course equivalent. Therefore, the student arrives at the college or university having no college credit hours. The student is not required to enroll in these basic level courses. Though AP courses have historically been highly touted and offer zero savings on the cost of higher education because the student must still complete all the necessary hours toward his or her degree (Hirsch, 2008). Therefore, dual-credit enrollment is growing tremendously.

In American society the cost of higher education is of major concern. As a result, dual-credit enrollment has become viewed as a method by which students can forgo some of the tuition and fees associated with the cost of a college education. In Texas, state law allows school districts and colleges to obtain state funding for the purposes of dual-credit enrollment courses (THECB, 2010). Thus, many K-12 districts are implementing dual-credit enrollment programs. If enough dual credit courses are completed, some students may earn in enough college credits to complete an Associate's degree. In the Garland Independent School District (ISD), located within the Dallas/Fort Worth Metroplex, the Lakeview Centennial High School has a program entitled the Lakeview Centennial Collegiate Academy. The program began in 2008 and its inaugural class graduated in May 2012. The 47 students enrolled in the program accumulated 63 dual credit hours. These students graduated with both a high school diploma and an Associate's degree. These students also earned scholarships and were accepted, with their credits, at 4-year universities. These students saved the cost of two full years of college and the debt that often accompanies it (Hirsch, 2008).

As more students begin enrolling in dual-credit courses, K-12 districts, community colleges and universities need to know how this trend affects their students. These institutions will want to know whether there is a positive effect on students who arrive with dual credit hours and if this helps them endure to a greater degree than those who arrive without dual credit hours. This endurance can be represented by grade point average (GPA) and other methods. Grade

point average is a strong quantifiable identifier of success and is a superior tool of measurement of student success and persistence in college. The number of students enrolled in dual credit programs in Texas has grown from 12,000 students in 1999 to over 91,000 students in 2010 (Thevenot, 2010). During the late 1990s, enrollment in these programs was largely white and/or gifted students who wanted an accelerated curriculum. Recently, these courses have begun to draw more students from across racial lines and those not necessarily gifted, but in good standing with a solid GPA.

There are other factors that can contribute to a student's overall success, such as if the student works and how many hours per week he student works, if the student lives on campus or is a commuter student, and personal issues. Given all the various factors that may contribute to a students' success or academic demise, the GPA is a useful quantitative indicator of persistence, success, and preparedness (Casey & Childs, 2011). Therefore, GPA was the dependent variable for the purpose of this study.

Statement of the Problem

The number of students enrolled in dual-credit courses has tripled in the last decade (THECB, 2010). There is currently a lack of research in the area of the effect of having earned dual-credit enrollment hours on first year persistence at 4-year universities. This study filled this gap in the research.

Purpose of the Study

The purpose of this study was to examine the effect of dual-credit enrollment on the GPA of university students by studying those who had a prior accumulation of 12 or more dual-credit enrollment hours versus those who arrived at a large Texas 4-year university without having earned any dual-credit enrollment hours. The study examined GPA in the first-year (contiguous Fall and Spring semester) using inferential statistics with a pre-determined parameter of 1,031 randomly selected students who arrived with 12 or more dual credit hours and another 1,031 randomly selected students without any dual credit hours for the academic years of 2008-2009, 2009-2010, and 2010-2011.

Significance of the Study

A study of the prior accumulation of dual-credit enrollment hours as a measure of first year university persistence holds great significance for education and educators. As the numbers of students enrolled in dual credit programs continues to increase, the K-12 districts from which they are coming need to have solid, quantifiable data from which to make data-driven decisions. In addition, community colleges, colleges, and universities need to be aware of how the prior accumulation of dual-credit enrollment hours affects performance once these students arrive in college or at the university. This study will inform K-12 in terms of whether they should consider making more dual-credit courses available to their students. In addition, this study will aid districts in understanding the importance of forming tighter, closer relationships with community colleges. To date, a study of this sort has not been conducted.

Research Questions

The following research questions guided this study:

1. What is the end of year GPA for 1,031 first time; full-time students in academic years 2009, 2010, and 2011 that have no prior dual-credit enrollment hours?
2. What is the end of year GPA for 1,031 first time, full-time students that have accumulated 12 hours or more of dual credit in academic years 2009, 2010, and 2011?
3. Does a significant difference exist between the first time, full-time students without the prior accumulation of dual credit hours in the first-year GPA and the students with the prior accumulation of 12 or more dual-credit enrollment hours in academic years 2009, 2010, and 2011?
4. Does a significant difference exist between like ethnic groups of first time, full-time students without the prior accumulation of dual credit hours in the first-year GPA and those of the same ethnic group with the prior accumulation of 12 or more hours of dual-credit enrollment hours in academic years 2009, 2010, and 2011?
5. Does a significant difference exist between like gender groups of first time, full-time, students without the prior accumulation of dual credit hours in the first-year GPA and those of the same gender with the prior accumulation of 12 or more dual-credit enrollment hours in academic years 2009, 2010, and 2011?

Hypotheses

The following hypotheses were tested:

1. No significant difference will exist between first time, full-time students without the prior accumulation of dual credit hours in the end of first-year GPA and students with the prior accumulation of 12 or more dual-credit enrollment hours in academic years 2009, 2010, and 2011.
2. There is a significant difference between the two groups of students studied in total.
3. There is a significant difference between the like ethnic groups of students studied based on the prior accumulation of dual-credit enrollment hours.
4. There is a significant difference between the like gender groups of students studied based upon the prior accumulation of dual-credit enrollment hours.

Method of Procedure

This study utilized inferential statistics. The data for this study was based on a predetermined parameter of 50 randomly selected students who arrived on campus with 12 or more dual credit hours in the academic years 2008-2009, 2009-2010, and 2010-2011.

The sample included 1,031 randomly selected students who had earned 12 or more dual-credit enrollment hours prior to matriculation at the university. This data set was compared with another set of 1,031 randomly selected students who had not previously earned any dual-credit

enrollment hours. The GPA data and evidence of dual-credit enrollment hours or the lack thereof were also collected.

The data were collected from the Office of Institutional Research, Planning, and Effectiveness (OIRPE) at a large 4-year university in Texas. A Mann Whitney U test was conducted to determine if differences exist between two groups with one dependent variable.

Limitations and Delimitations

The following limitations and delimitations guided this study:

1. Only quantifiable statistical data, specifically GPA and whether the student earned 12 or more hours of dual credit or had zero dual credit hours was collected.
2. The study focused on an examination of the direct effect of having had dual-credit enrollment hours on first-year, (contiguous Fall and Spring semesters), full-time GPA, which is the most quantifiable characteristic possible.
3. The data received from a large 4-year university in Texas was reliable.
4. Other attributes that may contribute to persistence such as education level of parents, family income, precollege grades, and test scores were not studied.
5. There are eight ethnic groups in the study; however, four had so few members as to not render meaningful or useful statistical results.

Hypotheses 1 & 2

In the 2008-2009 academic year, the median GPA for students who arrived at the university with a prior accumulation of 12 or more dual-credit enrollment hours was 2.90. Conversely, the GPA for those students who arrived at the university without having any dual-credit enrollment hours was a 2.68. The 2010 school year produced similar results with a 3.06 GPA for the students with a history of dual credit hours as opposed to a 2.78 for those with no history of dual credit hours. Results for the 2010-2011 school year also produced similar findings on students who had 12 or more hours of dual credit. These students earned a 3.14 GPA. Those without dual credit achieved a 2.83 GPA. Unequivocally, across all 3 years of the study, those students who came to the university having 12 or more hours of dual credit had a higher GPA. This holds both statistical significance and practical significance in the absence of other possible contributing factors. These other contributing factors include pre-college test scores, family income, level of parents education, institutional factors such as special programming toward the goal of retention, study strategy workshops, and the like. The findings from this study clearly demonstrate, in the absence of other potentially contributing factors, students who enrolled in dual-credit courses in high school achieved a higher GPA in their first year of enrollment at a four-year university.

Hypothesis 3

The large amount of data examined in this study was stratified for ethnicity and gender. Therefore, the researcher performed a Mann Whitney U test to analyze the differences in GPA

within like ethnicities and genders. There was no statistical difference among Asian students with dual credit hours and those without dual credit hours. An exception to this finding was in the 2010-2011 academic year. Asian students with dual-credit enrollment hours earned a GPA of 3.40 versus a 3.09 GPA earned by those without dual-credit enrollment hours. Of all the ethnic groups, the data demonstrated that dual credit enrollment had the least significant effect on Asian students. Significance was found only in the last year of the study. The precollege test scores, grades, class rank, and study habits of these students, were not a part of this study and may have contributed to this finding.

White-Anglo students with a history of dual-credit enrollment found significant differences in each of the years studied. The 2008-2009 academic year resulted in a 2.95 GPA for White-Anglo students with 12 or more dual-credit enrollment hours compared to a 2.60 for those without dual-credit enrollment hours. In the 2009-2010 school year, White-Anglo students with a history of dual-credit enrollment hours achieved a 3.12 versus a 3.0 of those without any dual-credit enrollment hours. Finally, in 2010-2011, White-Anglo students with dual-credit enrollment hours scored a 3.21 GPA while those with no dual-credit enrollment hours earned a 2.98. Clearly, in the absence of any other contributing factors, White-Anglo students with dual-credit performed better than those who matriculated without any dual-credit hours.

The Black-African American students, overall, appeared to be positively affected by earning dual-credit enrollment hours prior to matriculating to the university. There was a statistically significant difference in the GPA of Black-African American students in the 2008-2009 school year. Those with dual-credit had a 2.85 GPA and those without dual-credit earned a 2.26 GPA. In the 2009-2010 school year, a statistical significance was found in GPA of those Black-African American students with dual-credit enrollment hours and those without dual-credit enrollment hours. The Black-African American students who arrived with dual-credit enrollment hours achieved a 2.72 GPA and those with no dual-credit enrollment hours earned only a 2.22. The 2010-2011 academic year proved statically insignificant for the Black-African American students' GPAs. The GPAs were the highest for the Black-African American students versus the previous two years. Although no statistically significant difference was found in the GPA of those with dual-credit enrollment hours versus those without dual-credit enrollment hours, there is still practical significance. The Black-African American students with dual-credit enrollment hours achieved a 2.91 GPA compared to those without dual-credit enrollment hours who earned a 2.78. Therefore, Black-African American students enrolled in dual-credit courses in high school benefitted in their first-year, full-time college performance with the exclusion of other aforementioned potentially contributing factors.

A statistical difference was found in the GPA for Hispanic-Latino students enrolled in dual-credit courses in high school had an advantage compared to those who did not enroll in dual-credit courses in high school. For example, in all but the 2008-2009 school year, Hispanic-Latino students with a prior accumulation of dual-credit enrollment hours scored higher than those without any dual-credit enrollment hours. In the 2008-2009 school year, Hispanic-Latino students with dual credit earned a 2.60 GPA while those without dual credit achieved a 2.66. The researcher found it surprising that in this school year the GPA of the Hispanic-Latino students with dual credit was actually lower than those with no dual credit. This anomaly occurred only within this population and the female student population, and only within the 2008-2009 school year. The reasons for these anomalous results are unknown, but personal and pre-college factors such as the level of parents' education, family income, pre-college test scores, and more may

have contributed (Braxton, Hirschy, & McClendon, 2004). Additionally, institutional practices may have also contributed to this enigmatic finding. However, the other years appeared to be beneficial for Hispanic-Latino students. School year 2009-2010 resulted in a 2.98 GPA for Hispanic-Latino students with dual-credit and a 2.49 for those without dual-credit. Similarly, in 2010-2011, Hispanic-Latino students who had a history of 12 or more dual-credit hours scored a 2.93 GPA versus those without dual-credit hours who earned a 2.66.

The data for the remaining ethnic groups' were too few to make solid, confident conclusions. However, enrollment in dual-credit courses appears to be beneficial for these groups with the exclusion of other possibly contributing factors. The remaining ethnic groups included Native Hawaiian-Pacific Islander, Native American-Native Alaskan, Multiethnic, and unspecified.

Hypothesis 4

The data provided very exciting results by gender. These results appeared to hold clear, strong, advantages in first year, full-time performance of both male and female students with a prior accumulation of dual-credit enrollment hours, when not taking into consideration any factor other than GPA. Academic year 2008-2009 found that males who enrolled in dual-credit courses earned a 2.89 GPA, while those males who did not enroll in dual-credit courses in high school achieved a 2.52. Male students in 2009-2010 who had dual-credit hours scored a 2.98 GPA over those without dual-credit hours who earned a 2.80. Lastly, male students in the 2010-2011 academic year with 12 or more hours of dual-credit earned a 3.11. Those male students who had no dual-credit enrollment hours in high school earned a 2.83 GPA during their first year of matriculation. Again, the data show a distinct advantage for first year, full-time performance for male students who took dual-credit enrollment hours while in high school with exclusion of personal, family attributes and institutional practices.

Interestingly, for female students, the data indicate dual-credit enrollment was an advantage for college first year performance. For example, in the 2008-2009 school year, there was not only no significant difference, but like the Hispanic-Latino population in 2008-2009, female students without dual-credit hours actually scored higher than those with dual-credit hours. The GPA of female students without dual-credit was 2.93, while the median GPA with dual-credit was 2.91. This too is an anomalous result like the Hispanic-Latino student group of 2008-2009. The reason for this enigma may be due to personal and family attributes and/or how female students were affected at the university by institutional practices. Determining the reason why this occurred is outside the scope of this study. Female students with 12 or more hours of dual-credit enrollment in the 2009-2010 academic year; however, achieved a 3.17 GPA over those without dual-credit enrollment who had a 2.75. Likewise, in 2010-2011, female students with dual-credit enrollment hours earned a 3.16 GPA, as opposed to those female students who had no dual-credit enrollment hours 2.82 GPA. Even with the anomalous results of the 2008-2009 school year, there is still practical significance for the benefits of dual-credit enrollment on first year, full-time performance. The study revealed statistical significance in the school years of 2009-2010 and 2010-2011 when assessing GPA only.

Overall, this study showed enrollment in dual-credit hours in high school provides solid preparation for first-year, full-time performance at a four-year university. Dual-credit enrollment proved to be beneficial with regard to earning a higher GPA for students across multiple years,

multiple ethnicities and genders. Today, all high schools in the state of Texas must offer dual-credit enrollment hours. Students should seriously consider the opportunity to enroll in these courses based on the evidence with the exclusion of other factors. This preparation has a direct impact on student success in college. High schools need to do a better job marketing their dual credit courses and make certain students and parents are aware of the benefits for students.

Summary of Findings

In each of the academic years examined, a significant difference was found in the median GPA between students who enrolled in a university with 12 or more dual-credit enrollment hours versus those who enrolled in a university without any dual-credit enrollment hours. Students with 12 or more dual-credit hours achieved higher GPAs. Dual-credit enrollment is an exciting educational phenomenon. The dramatic increase of students taking dual-credit enrollment is indicative of great change taking place in American education. The results of this study have shown that when solely considering GPA, students who arrive at a university with a prior accumulation of dual-credit enrollment tend to have a higher GPA than those who arrive without a prior accumulation of dual-credit enrollment hours. In addition to the higher GPA, the cost savings of 12 hours is tremendous for students and families who would otherwise have to pay the tuition and fees (Hirsch, 2008).

Implications for Practice

The findings from this study indicate that high schools need to increase dual-credit enrollment opportunities for their students in order to prepare them for greater success in higher education. High schools that take advantage of the various educational technologies available will be able to increase not only the number of students enrolled in dual credit, but the number of graduates who are successful in their first-year, full-time performance in college. The ultimate goal of high school education is to prepare students for the future, whether it be for college or for a career field right out of high school. This study has demonstrated that dual-credit enrollment is applicable to students who wish to go on to higher education and to those who wish to seek certifications that may be applied towards their career. Dual-credit enrollment aids educators in this ultimate goal.

Recommendations for Further Research

Further study in the area of dual-credit enrollment is highly recommended, particularly for students of an economically disadvantaged background. Further studies into the effects of dual credit for the various racial/ethnic groups listed in this study is recommended. A study covering a larger time span within one ethnic group could offer many wonderful implications for both high schools and colleges with large minority populations. There are several institutions of higher education in south Texas that are partnering heavily with local area high schools to ensure the students earn dual-credit enrollment hours. A study of the South Texas College in McAllen, one such institution, would be invaluable for our increasing Hispanic/Latino population and could advise curricular changes and improvements for students in ESL and Bilingual

programming. Some curricular improvements may be in broadening their approach to dual credit for ESL student populations. Hispanic serving institutions could prepare for students who do not have dual-credit enrollment by entering them into a special one hour college preparatory course that informs them of the tutorial and help options available to ensure their performance is comparable to that of their students who are arriving with dual-credit enrollment hours. Studies that examine the effects of dual credit and/or the difference in GPA of students at Historically Black Colleges and Universities (HBCUs) who had dual-credit enrollment hours versus those who did not would help inner city high schools determine improved dual credit programming possibilities. In turn, HBCU campuses could use the data from the study to inform curricular improvements and to be prepared for differences in students who have experienced the rigor of college level work and those who have not. These improvements may be in the area of available tutorials, tutorial or study sessions within dorms, organizing dorm assignments by like majors and offering tutorials specific to those majors, or adding a course that is geared to helping students understand college life and how to be successful in college, etc. Studies that investigate added attributes within ethnic groups or gender groups such as parents' levels of education, family income, study habits, precollege test scores, in addition to practices at the institution geared toward retention and persistence improvement would be helpful to the field as well.

The unmistakable advantage of dual-credit enrollment demonstrated in the GPA differences among the dual credit White/Anglo along with the male and female student population serves as an overall indicator of the benefit of dual-credit enrollment for all students groups when not identifying any other factors other than GPA. Future studies designed to examine dual credit along gender lines is strongly encouraged. Similarly, a future study involving the independent variables of rural vs. urban or socio-economic status along with the prior accumulation of dual-credit enrollment hours and the dependent variable of GPA would be helpful to the field. Finally, expanded studies on dual-credit are strongly recommended across various student populations. Educators must amass greater amounts of data on dual-credit enrollment to make informed, up-to-date programmatic decisions that best prepare students. Future studies in the benefits of dual credit for students on various trade school tracks or Associate Degree-to-career and certification tracks are highly recommended. There is a great debate currently regarding Advancement Placement versus dual-credit enrollment. Therefore, a study comparing which program is most beneficial to high school students is needed.

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