

Research Article

Dual Credit Enrollment: A Multiyear Study of Gender and Ethnic Differences

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In this investigation, we ascertained the extent to which differences were present in dual credit enrollment by gender and by ethnicity for students ($n > 150,000$) enrolled in a Texas community college from the 2005-2006 through the 2011-2012 academic years. Statistical analyses revealed an increase in the numbers (i.e., from 3,069 to 3,664) and percentages (i.e., from 12.2% to 19.5%) of students who were enrolled in dual credit courses over the time period analyzed. Moreover, higher percentages of women (i.e., 20.8% in the most recent academic year) had enrolled in dual credit courses while in high school than men (i.e., 17.9% in the most recent academic year). Differences were also present as a function of ethnicity, with 33.1% Asian, 25.3% White, 17.4% Hispanic, and 7.5% Black students having been enrolled in dual credit in the most recent academic year. Differences were also revealed by gender for Hispanic and White students, but not for Asian and Black students. Implications of our findings are discussed.

1. Introduction

State efforts to promote high school success and college readiness in Texas are covered under HBI that explains how each local educational agency is required to provide opportunities for students to earn college credit while still enrolled in high school. Dual credit in Texas is one of several programs in which Texas students can earn college credit while still enrolled in high school. As dual credit programs differ in their definitions, for purposes of this paper, we are using the definition by the Texas Higher Education Coordinating Board (THECB), as a process that allows high school students to enroll in a college course and receive both high school and college credit [1]. Currently, most of the dual credit courses in Texas are offered by community colleges [2].

Dual credit has been promoted as a way to reduce college costs, to shorten the amount of time required, to obtain a degree, and to increase matriculation rates into college [1]. Correa and Kouzekanani [3] documented that dual credit courses exposed students to college while the students were still in high school, which builds experiences and allows students an easier transition into college life. Benefits were noted after dual credit courses were established in high schools.

Andrews [4] noted that above average high school students would be challenged by the college coursework in a dual credit course, which would then keep them involved in high school. Bailey et al. [5] also reported that dual credit students who were seniors tended to graduate from high school at a higher rate than students who did not take dual credit.

Whissemore [6] established that the likelihood of attaining a college degree was increased by 23% after taking a rigorous dual credit course. Furthermore, Swanson [7] associated that students who enrolled in just one challenging dual credit course significantly increased their likelihood of enrollment in college and degree attainment in college. Bailey et al. [5], Schuetz [8], Smith [9], and Windham [10] demonstrated equal or greater success in college by students who completed dual credit courses as opposed to students who did not complete dual credit courses. In another investigation, students reported that they were better prepared to enter college by having been enrolled in dual credit courses [11]. Dual credit was effective at preparing students for the next course in the progression of coursework and this preparation resulted in improved performance in that next course [10].

Andrews [11] determined that students who had taken dual credit courses had higher college GPAs than did students

who had not taken dual credit courses. Welsh et al. [12] documented statistically significant increases in cumulative GPA and positive relationships between GPA and total credit earned, when students completed dual credit courses. Sullivan-Ham [13] established the effectiveness of dual credit courses by examining GPAs after matriculating into college, as students who had enrolled in dual credit prior to their first semester obtained an average GPA of 3.11 compared to students who had not enrolled in dual credit prior to their first semester that obtained an average GPA of 2.39.

Andrews [11], Correa and Kouzekanani [3], Gertge [14], and Welsh et al. [12] stated that the greatest benefit of successful dual credit course completion was a higher GPA for students when they matriculate into college. Additional confirmation of dual credit and trends included an analysis of dual credit students and nondual credit students conducted using final exams; similar differences were documented between dual credit and nondual credit students [11]. Catron [15] and Welsh et al. [12] also noted a trend of increased woman enrollment and predominantly White students.

A potential negative aspect of dual credit enrollment for students could be the failing of a college level course, the consequences of which might have an effect on their graduation from high school [9]. Educators have raised various concerns about dual credit courses or programs including the extent to which individuals teaching the courses were qualified to teach the course and the extent to which the coursework constituted a college quality course [4]. To address these concerns, lawmakers in numerous states have enacted policy that compelled community colleges to have a formal plan for dual credit, before offering the program to qualified high school students [4]. Stipulated in those plans were the standards and qualifications of individuals who teach dual credit courses and course rigor.

Information on ethnicity and gender enrollment in Texas is severally lacking. This lack of research hinders student enrollment due to the institution's lack of understanding diversity issues present in dual credit enrollment [16]. Evaluation of dual credit course enrollment demographics in Texas has not been accomplished in six years, according to a literature review of several databases. The only numbers that THECB gives on enrollment are for the fall of 2007 and are for ethnicity only. In fall of 2007, students enrolling in dual credit for each ethnic group were 32,592 (50.22%) White students, 24,877 (38.32%) Hispanic students, 3,405 (5.25%) Black students, 1,921 (2.96%) Asian/Pacific Islander students, and 2,112 (3.25%) other students [17]. Updating this information would assist lawmakers and educators in correctly addressing diversity issues currently affecting enrollment in dual credit courses [16]. Further value of this research will be in addressing two new areas of demographic study for Texas: enrollments as a function of gender and gender within ethnicity.

2. Purpose of This Study

The purpose of this study was to examine the extent to which students at this particular community college had been enrolled in dual credit courses while in high school during

the 2005-2006 through the 2011-2012 academic years. A second purpose was to determine whether differences were present in dual credit enrollment as a function of gender. A third purpose was to ascertain the extent to which differences were present in dual credit enrollment as a function of ethnicity (i.e., Hispanic, Black, Asian, and White). Finally, the extent to which changes might have occurred in dual credit enrollment as a function of gender within ethnicity over the past six academic years was addressed.

3. Research Questions

The following research questions were addressed in this study. (a) What is the difference in dual credit enrollment at a Texas community college from the 2005-2006 to the 2011-2012 academic years by gender? (b) What is the difference in dual credit enrollment at a Texas community college from the 2005-2006 to the 2011-2012 academic years as a function of ethnicity (i.e., Hispanic, Black, Asian, and White)? and (c) what is the difference in dual credit enrollment at a Texas community college from the 2005-2006 to the 2011-2012 academic years by gender within ethnic groups (i.e., Hispanic, Black, Asian, and White)?

4. Method

4.1. Participants. Student data obtained from a Southwest Texas Community College for the 2004-2005 through the 2011-2012 academic years were utilized in this study. Student records totaling 164,434 were used in this study, with 24,965 (15.2%) being dual credit students and 139,469 (84.8%) being nondual credit students. Regarding gender, 73,258 (44.6%) men were present, with 10,316 (14.1%) being dual credit students 62,942 (85.9%) being nondual credit students; and 91,176 (55.4%) women were present, with 14,649 (16.1%) being dual credit students and 76,527 (83.9%) being nondual credit students. With respect to the students who took dual credit courses, 4,533 (2.7%) were Hispanic students, 1,950 (1.1%) were Black students, 391 (0.2%) were Asian students, 18,696 (11.0%) were White students, and 4,494 (2.65) were listed as Other students. Regarding the ethnicity of students who did not take dual credit courses, 34,573 (20.4%) were Hispanic students, 22,035 (13.0%) were Black students, 978 (0.6%) were Asian students, 59,801 (35.3%) were White students, and 22,082 (13.0%) were listed as Other students.

4.2. Instrumentation and Procedures. Data were obtained from this community college's Office of Institutional Effectiveness & Planning; after permission to conduct the research study was procured from the institution's review board for human subjects. After the data file was obtained from the Texas community college, it was imported and converted into an SPSS data file. In the next step of the process, we verified the accuracy of the dataset. As previously defined by the Texas Higher Education Coordinating Board, dual credit is a process that allows a high school senior or junior to enroll in a college course and receive credit for the course in both high school and college [1].

TABLE 1: Descriptive statistics for dual credit students and non-dual credit students enrolled in a Texas community college from the 2005-2006 through the 2011-2012 academic years.

Academic year	Dual credit	Nondual credit
2005-2006		
Number of students	3,069	23,092
Percent of total	12.2	87.8
2006-2007		
Number of students	2,846	19,169
Percent of total	12.8	87.2
2007-2008		
Number of students	3,201	19,728
Percent of total	14.0	86.0
2008-2009		
Number of students	3,226	20,388
Percent of total	13.7	86.3
2009-2010		
Number of students	8,959	41,690
Percent of total	17.7	82.3
2010-2011		
Number of students	4,403	18,822
Percent of total	19.0	81.0
2011-2012		
Number of students	3,664	15,102
Percent of total	19.5	80.5

5. Results

To ascertain whether differences in dual credit enrollment at a Texas community college from the 2005-2006 to the 2011-2012 academic years were present, Pearson chi-squares were conducted. This statistical procedure is viewed as optimal to use because frequency data were present for gender and ethnic group membership. As such, chi-squares are the statistical procedure of choice when one variable is categorical (i.e., gender) and the other variable involves a frequency count. A Bonferroni correction, a method that allows many comparison statements to be made at the same time assuring an overall confidence coefficient is maintained, was used because multiple outcome measures were analyzed. In this case, the adjusted alpha level was set at .025 (i.e., .05/2) [18]. Descriptive statistics for dual credit students and nondual credit students enrolled in a Texas community college from the 2005-2006 through the 2001-2012 academic years are included in Table 1.

5.1. Differences between Men and Women. Regarding the first research question in which the focus was placed on differences between men and women in their dual credit enrollment for each of the years, the result for the 2005-2006 academic year was statistically significant, $\chi^2(1) = 7.04$, $P = .008$. The effect size for this finding was .02 (Cramer's V), trivial [19]. In Table 2, 12.2% of women were enrolled in dual credit, compared with 11.1% of men. Readers should note that these percentages will not add to 100% because

TABLE 2: Average percentages of dual credit enrollment by gender for the 2005-2006 through the 2011-2012 academic years.

Academic year	Men	Women
2005-2006	11.1	12.2
2006-2007	11.6	13.7
2007-2008	12.7	15.1
2008-2009	12.9	14.3
2009-2010	16.5	18.6
2010-2011	17.0	20.5
2011-2012	17.9	20.8

TABLE 3: Summary of results on dual credit course enrollment by gender for the 2005-2006 through the 2011-2012 academic years.

Academic year	Statistically significant	Cramer's V	Effect size	Enrolled more often
2005-2006	Yes	.02	Trivial	Women
2006-2007	Yes	.03	Trivial	Women
2007-2008	Yes	.04	Trivial	Women
2008-2009	Yes	.02	Trivial	Women
2009-2010	Yes	.03	Trivial	Women
2010-2011	Yes	.04	Trivial	Women
2011-2012	Yes	.04	Trivial	Women

what was analyzed were the percentages of women and of men who were enrolled at this community college who had been enrolled in dual credit courses while in high school. For the 2006-2007 academic year, the result was statistically significant, $\chi^2(1) = 22.30$, $P < .001$. The effect size for this finding was .03 (Cramer's V), trivial [19]. In Table 2, 13.7% of women were enrolled in dual credit, compared with 11.6% of men. For the 2007-2008 academic year the result was again statistically significant, $\chi^2(1) = 27.50$, $P < .001$, Cramer's $V = .04$, trivial effect size [19]. Similar to the previous two years, a higher percentage of women were enrolled in dual credit than those of men.

For the 2008-2009 academic year the result was statistically significant, $\chi^2(1) = 10.37$, $P = .001$, Cramer's $V = .02$, trivial effect size [19]. Again, a higher percentage of women were enrolled in dual credit than that of men. For the 2009-2010 academic year the result was again statistically significant, $\chi^2(1) = 39.35$, $P < .001$, Cramer's $V = .03$, trivial effect size [19]. A higher percentage of women were enrolled in dual credit than that of men. For the 2010-2011 academic year the result was again statistically significant, $\chi^2(1) = 44.26$, $P < .001$, Cramer's $V = .04$, trivial effect size [19]. A higher percentage of women were enrolled in dual credit than that of men. For the 2011-2012 academic year the result was statistically significant, $\chi^2(1) = 23.88$, $P < .001$, Cramer's $V = .04$, trivial effect size [19]. Being commensurate with all of the previous academic years, a higher percentage of women had been enrolled in dual credit courses while in high school than that of men. Average percentages of dual credit enrollment by gender for the 2005-2006 through the 2011-2012 academic years are included in Table 2.

TABLE 4: Average percentages of dual credit enrollment by ethnicity for the 2005-2006 through the 2011-2012 academic years.

Academic year	Hispanic	Black	Asian	White
2005-2006	6.7	5.4	3.2	14.5
2006-2007	8.8	5.6	17.6	16.4
2007-2008	9.6	7.9	28.6	18.5
2008-2009	9.5	7.4	15.7	16.4
2009-2010	13.8	10.9	21.1	21.0
2010-2011	14.6	9.7	30.1	23.9
2011-2012	17.4	7.5	33.1	25.3

Delineated in Table 3 is a summary of results and effect sizes for gender differences in dual credit course enrollment. Effect sizes were trivial in all cases. Women were enrolled more often in dual credit courses than men in all seven years.

5.2. Differences by Ethnicity. Regarding the second research question in which the focus was placed on differences among ethnic groups (i.e., Hispanic, Black, Asian, and White) in dual credit enrollment for each of the years, the result for the 2005-2006 academic year was statistically significant, $\chi^2(3) = 382.39$, $P < .001$, Cramer's $V = .13$, small effect size [19]. In Table 4, 14.5% of Whites were enrolled in dual credit, compared with 6.7% of Hispanics, 5.4% of Blacks, and 3.2% of Asians. Similar to the analyses for women and for men, readers will note that these percentages will not add to 100% because what was analyzed were the percentages of White, Hispanic, Black, and Asian students who were enrolled at this community college who had been enrolled in dual credit courses while in high school. For the 2006-2007 academic year, the result was statistically significant, $\chi^2(3) = 328.94$, $P < .001$, Cramer's $V = .13$, small effect size [19]. In Table 4, 17.6% of Asians were enrolled in dual credit, compared with 16.4% of Whites, 8.8% of Hispanics, and 5.6% of Blacks. For the 2007-2008 academic year, the result was statistically significant, $\chi^2(3) = 336.77$, $P < .001$, Cramer's $V = .14$, small effect size [19]. Being commensurate with the previous academic year a higher percentage of Asians were enrolled in dual credit than that of Whites, Hispanics, and Blacks.

For the 2008-2009 academic year the result was again statistically significant, $\chi^2(3) = 254.83$, $P < .001$, Cramer's $V = .12$, small effect size [19]. In this academic year a higher percentage of Whites were enrolled in dual credit, compared with Asian, Hispanics, and Blacks. For the 2009-2010 academic year the result was statistically significant, $\chi^2(3) = 553.49$, $P < .001$, Cramer's $V = .11$, small effect size [19]. In this academic year a higher percentage of Asians were enrolled in dual credit, compared with Whites, Hispanics, and Blacks. For the 2010-2011 academic year the result was statistically significant, $\chi^2(3) = 528.03$, $P < .001$, Cramer's $V = .16$, small effect size [19]. In this academic year a higher percentage of Asians were enrolled in dual credit, compared with Whites, Hispanics, and Blacks. For the 2011-2012 academic year the result was statistically significant, $\chi^2(3) = 602.19$, $P < .001$, Cramer's $V = .19$, small effect size [19]. As with the previous two academic years a higher percentage of Asian students

TABLE 5: Summary of results on dual credit course enrollment by ethnic group for the 2005-2006 through the 2011-2012 academic years.

Academic Year	Statistically significant	Cramer's V	Effect size	Enrolled more often
2005-2006	Yes	.13	Small	White
2006-2007	Yes	.13	Small	Asian
2007-2008	Yes	.14	Small	Asian
2008-2009	Yes	.12	Small	White
2009-2010	Yes	.11	Small	Asian
2010-2011	Yes	.16	Small	Asian
2011-2012	Yes	.19	Small	Asian

had been enrolled in dual credit courses while in high school than that of White, Hispanic, and Black students. Average percentages of dual credit enrollment by ethnicity for the 2005-2006 through the 2011-2012 academic years are included in Table 4.

Revealed in Table 5 is a summary of results and effect sizes for dual credit student enrollment by ethnic group. Effect sizes were consistently small. Asian students were enrolled more often in dual credit courses in five of the seven years, with White students being enrolled more often in dual credit courses in the other two years.

5.3. Differences by Gender within Ethnic Groups. In this section, the focus is placed on differences between men and women in their dual credit enrollment by ethnicity for each school year. Results for each ethnic group will be reported separately.

Hispanic Students. Regarding differences between Hispanic men and women in their dual credit enrollment, the result for the 2005-2006 academic year was statistically significant, $\chi^2(1) = 6.48$, $P = .01$, Cramer's $V = .03$, trivial effect size [19]. In Table 7, 7.5% of Hispanic women were enrolled in dual credit, compared with 5.7% of men. For these analyses of dual credit enrollment of women and of men within each of the four ethnic groups, percentages will not add to 100% because what was analyzed were the percentages of women and of men within each ethnic group who were enrolled at this community college who had been enrolled in dual credit courses while in high school. For the 2006-2007 academic year, the result was not statistically significant, $\chi^2(1) = 1.56$, $P = .21$. For the 2007-2008 academic year, the result was not statistically significant, $\chi^2(1) = 2.74$, $P = .098$. For the 2008-2009 academic year the result was statistically significant, $\chi^2(1) = 22.34$, $P < .001$, Cramer's $V = .02$, trivial effect size [19]. Again, a higher percentage of Hispanic women were enrolled in dual credit than that of men. For the 2009-2010 academic year, the result was statistically significant, $\chi^2(1) = 21.40$, $P < .001$, Cramer's $V = .04$, trivial effect size [19]. A higher percentage of Hispanic women were enrolled in dual credit than that of men. For the 2010-2011 academic year the result was statistically significant, $\chi^2(1) = 22.54$, $P < .001$, Cramer's $V = .06$, trivial effect size [19]. A higher percentage

TABLE 6: Average percentages of dual credit enrollment by ethnicity and gender for the 2005-2006 through the 2011-2012 academic years.

Ethnicity by academic year	Men	Women
2005-2006		
Hispanic	5.7	7.5
Black	5.2	5.5
Asian	0.0	5.9
White	13.5	15.4
2006-2007		
Hispanic	8.2	9.2
Black	4.4	6.3
Asian	20.0	14.3
White	15.0	17.6
2007-2008		
Hispanic	8.8	10.2
Black	6.9	8.6
Asian	14.3	35.7
White	16.9	19.9
2008-2009		
Hispanic	7.6	11.3
Black	6.3	8.1
Asian	15.8	15.7
White	15.8	16.9
2009-2010		
Hispanic	12.2	15.0
Black	10.0	11.4
Asian	15.5	25.5
White	20.0	21.8
2010-2011		
Hispanic	12.2	16.5
Black	8.5	10.3
Asian	29.1	30.9
White	21.5	25.9
2011-2012		
Hispanic	15.3	19.0
Black	7.3	7.6
Asian	29.9	36.4
White	22.7	27.5

of Hispanic women were enrolled in dual credit than that of men. For the 2011-2012 academic year the result was statistically significant, $\chi^2(1) = 13.36, P < .001$, Cramer's $V = .05$, trivial effect size [19]. A higher percentage of Hispanic women were enrolled in dual credit than were men. Delineated in Table 7 is a summary of results, including effect sizes, for Hispanic students' dual credit course enrollment by gender.

Black. Regarding differences between Black men and women in their dual credit enrollment, the result for the 2005-2006 academic year was not statistically significant, $\chi^2(1) = 0.16, P = .69$. For the 2006-2007 academic year, the result was not statistically significant, $\chi^2(1) = 4.82, P = .03$. A Bonferroni correction was used, as explained before, resulting in an

TABLE 7: Summary of Hispanic students' results on dual credit course enrollment by gender for the 2005-2006 through the 2011-2012 academic years.

Academic year	Statistically significant	Cramer's V	Effect size	Enrolled more often
2005-2006	Yes	.03	Trivial	Women
2006-2007	No	N/a	N/a	Women
2007-2008	Yes	N/a	N/a	Neither
2008-2009	Yes	.02	Trivial	Women
2009-2010	Yes	.04	Trivial	Women
2010-2011	Yes	.06	Trivial	Women
2011-2012	Yes	.05	Trivial	Women

adjusted level of statistical significance of 0.025. For the 2007-2008 academic year, the result was not statistically significant, $\chi^2(1) = 2.45, P = .12$. For the 2008-2009 academic year, the result was not statistically significant, $\chi^2(1) = 3.91, P = .05$. For the 2009-2010 academic year, the result was not statistically significant, $\chi^2(1) = 3.46, P = .06$. For the 2010-2011 academic year, the result was not statistically significant, $\chi^2(1) = 3.21, P = .07$. For the 2011-2012 academic year, the result was also not statistically significant, $\chi^2(1) = 0.11, P = .74$. Differences were not present between Black men and women in their percent of dual credit enrollment.

Asian. Regarding differences between Asian men and women in their dual credit enrollment, the result for 2005-2006 academic year was not statistically significant, $\chi^2(1) = 0.85, P = .36$. Results were not statistically significant for the 2006-2007 school year, $\chi^2(1) = 0.18, P = .67$; for the 2007-2008 academic year, $\chi^2(1) = 2.10, P = .15$; for the 2008-2009 academic year, $\chi^2(1) = 0.00, P = .99$; for the 2009-2010 academic year, $\chi^2(1) = 3.77, P = .05$; for the 2010-2011 academic year, $\chi^2(1) = 0.42, P = .52$; and for the 2011-2012 academic year, $\chi^2(1) = 4.50, P = .03$. Differences were not present between Asian men and women in their percent of dual credit enrollment.

White. Regarding differences between White men and women in their dual credit enrollment, the result for the 2005-2006 academic year was statistically significant, $\chi^2(1) = 9.74, P = .002$, Cramer's $V = .03$, trivial effect size [19]. In Table 8, 15.4% of White women were enrolled in dual credit, compared with 13.5% of men. For the 2006-2007 academic year, the result was statistically significant, $\chi^2(1) = 13.00, P < .001$, Cramer's $V = .04$, trivial effect size [19]. In Table 8, 17.6% of White women were enrolled in dual credit, compared with 15.0% of men. For the 2007-2008 academic year, the result was statistically significant, $\chi^2(1) = 15.08, P < .001$, Cramer's $V = .04$, trivial effect size [19]. Similar to the previous two years, a higher percentage of White women were enrolled in dual credit than that of men. For the 2008-2009 academic year the result was not statistically significant, $\chi^2(1) = 2.19, P = .14$. For the 2009-2010 academic year, the result was statistically significant, $\chi^2(1) = 10.30, P = .001$, Cramer's

TABLE 8: Summary of White students' results on dual credit course enrollment by gender for the 2005-2006 through the 2011-2012 academic years.

Academic year	Statistically significant	Cramer's V	Effect Size	Enrolled more often
2005-2006	Yes	.03	Trivial	Women
2006-2007	Yes	.04	Trivial	Women
2007-2008	Yes	.04	Trivial	Women
2008-2009	No	N/a	N/a	Neither
2009-2010	Yes	.02	Trivial	Women
2010-2011	Yes	.05	Trivial	Women
2011-2012	Yes	.06	Trivial	Women

$V = .02$, trivial effect size [19]. Again, a higher percentage of White women were enrolled in dual credit than that of men. For the 2010-2011 academic year the, result was statistically significant, $\chi^2(1) = 23.60$, $P < .001$, Cramer's $V = .05$, trivial effect size [19]. Again, a higher percentage of White women were enrolled in dual credit than that of men. For the 2011-2012 academic year, the result was statistically significant, $\chi^2(1) = 20.52$, $P < .001$, Cramer's $V = .06$, trivial effect size [19]. A higher percentage of women were enrolled in dual credit than that of men. Table 6 contains the average percentages of dual credit enrollment by ethnicity and gender for the 2005-2006 through the 2001-2012 academic years. Delineated in Table 8 is a summary of results, including effect sizes, for White students' dual credit course enrollment by gender.

6. Discussion

In previous studies (e.g., [5, 8-11, 20]), students who completed dual credit courses were as successful as or more successful in their freshman college courses than those students who did not complete dual credit courses. What is lacking in the research literature is information on current trends in dual credit enrollment in Texas. Accordingly, we conducted this empirical study to address that void in the extant literature.

Over 160,000 student records were used for the research questions addressed herein. Women tended to enroll in dual credit courses at much higher rates than men, 12.2% as compared to 11.1% in 2005-2006 academic year. Dual credit enrollment while in high school had increased for White, Asian, and Hispanic student groups; however, Black student dual credit enrollment had decreased for the last two years of data analyzed in this study. For the last six years, Black student enrollment in dual credit while in high school was the lowest. Interestingly, Asian enrollment increased all years except one; however, their enrollment has out-paced and is currently a higher percentage than any other ethnic group for the last two years. Average dual credit enrollment by student percentages by ethnicity for the 2005-2006 through the 2011-2012 academic years is shown in Figure 1.

Comparing the results of the last year of our study with the numbers from the THECB for 2007 revealed the following changes. In fall of 2007, Texas dual credit enrollment was

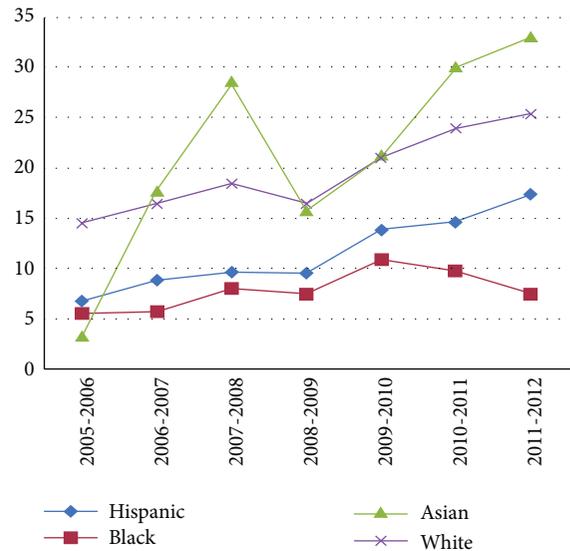


FIGURE 1: Average dual credit enrollment by student percentages by ethnicity for the 2005-2006 through the 2011-2012 academic years.

50.22% White students as compared with 25.3% White students in 2011; 38.32% Hispanic students as compared with 17.4% Hispanic students in 2011; 5.25% Black students as compared with 7.5% Black students in 2011; and 2.96% Asian students as compared with 33.1% in 2011. These results reflect dramatic changes in dual credit enrollment, changes that warrant investigation.

Dual credit enrollment differences by ethnicity showed the order of enrollment, from highest to lowest percentage, in the 2005-2006 year was White, Hispanics, Black, and Asian. Then a change occurred in dual credit enrollment the following years with Asian enrollment being the largest percent followed by White, Hispanic, and Blacks. In all years Black students had the lowest dual credit enrollment percent, with the exception of the 2005-2006 academic year. Interestingly, when gender and ethnicity were analyzed, Hispanic and White students dual credit enrollment showed statistically significant differences, with both Hispanic women and White women having higher rates of dual credit enrollment than Hispanic men and White men. Gender differences were not present for Black or Asian students. Higher dual credit enrollment by White students and by women revealed in this investigation is in agreement with studies by Catron [15], THECB [17], and Welsh et al. [12].

As evidenced by the statistical information presented herein, dual credit enrollment has increased in its popularity in Texas, increasing by 31% between the 2008 and 2010 academic years [2]. One reason for this trend of increased enrollment is that many school districts are reducing the cost of dual credit classes and parents understand that their children get credit for the college course after completing the course successfully. Future research is needed on participation trends in the coming years and at other institutions to verify these trends and to examine the decrease of the Black student enrollment in dual credit. The lack of Black student

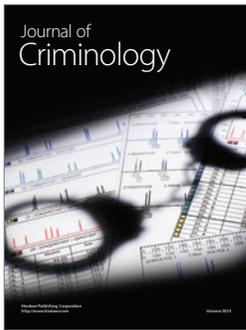
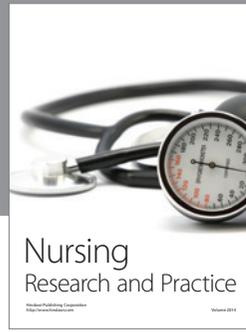
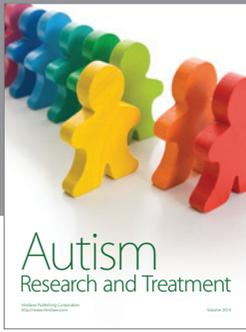
enrollment should be a major priority for future research and could be accomplished by research through surveys on the cultural differences that “prevent” Black students from enrolling in dual credit. Finding the reason for high enrollment in the Asian community and then adapting what is discovered to assist other cultural communities could be of benefit. Does a difference exist in the manner in which the dual credit program is applied in high schools? Are cultural blocks or bias present in the system and if so do they need to be changed? Additionally, research needs to be conducted regarding why women enroll in dual credit more often than men.

Furthermore, the efficacy of dual credit in college preparatory work for high school students planning on going to college has been demonstrated [20–24]. Additionally, students who enroll in dual credit while in high school are more likely to persist in college than students who do not enroll in dual credit courses [6, 7]. These findings make it imperative that all students, regardless of ethnicity, have equal access to dual credit programs. Until such information is obtained, the extent to which dual credit enrollment is uniformly applied is unknown. In previous studies, the emphasis was placed on student enrollment, with minimal attention paid to the ethnic membership of students who were enrolled in dual credit courses. In today’s high schools, ethnicity must be emphasized and differences must be minimized.

Other areas of research that either needs to be accomplished or updated are concerns of qualifications and course rigor in dual credit courses that could be addressed. Another area that needs additional research would be on how students performed in college after taking dual credit courses and that should include time to graduation and not just first semester GPA. Additional research needs to be completed at 4-year universities; currently most of the dual credit studies have been done at community colleges. The current study was at one Texas community college and should be replicated at other Texas community colleges. Such replications could provide information regarding the generalizability of these results to Texas community colleges.

References

- [1] Texas Higher Education Coordinating Board, “Dual credit—frequently asked questions,” 2010, <http://www.theccb.state.tx.us/index.cfm?objectid=6363B260-FBB8-C8E6-1AEEDA05F8AC-E4A4>.
- [2] American Institutes for Research, “Research study of Texas dual credit programs and courses,” The Texas Education Agency, 2011, http://www.tea.state.tx.us/index2.aspx?id=276&menu_id=692.
- [3] J. Correa and K. Kouzekanani, *Impact of Participation in Dual Enrollment on Persistence and Academic Achievement at a Community College*, The American Educational Research Association, New Orleans, La, USA, 2011.
- [4] H. A. Andrews, “Lessons learned from current state and national dual-credit programs,” *New Directions for Community Colleges*, vol. 2000, no. 111, pp. 31–39, 2000.
- [5] T. R. Bailey, K. L. Hughes, and M. M. Karp, *What Role Can Dual Enrollment Programs Play in Easing the Transition Between High School and Postsecondary Education?* ERIC Database (ED465090), Office of Vocational and Adult Education, Washington, DC, USA, 2002.
- [6] T. Whissemore, “Dual-enrollment studies say location, rigor matter,” *Community College Journal*, vol. 82, no. 4, p. 9, 2012.
- [7] J. Swanson, “Dual enrollment: the missing link to college readiness,” *Principal Leadership*, vol. 10, no. 7, pp. 42–46, 2010.
- [8] P. Schuetz and ERIC Clearinghouse for Community Colleges, “Successful collaborations between high schools and community colleges,” ERIC Digest, (ED451856), 2000.
- [9] D. Smith, “Why expand dual-credit programs?” *Community College Journal of Research and Practice*, vol. 31, no. 5, pp. 371–387, 2007.
- [10] P. Windham, *High School and Community College Dual Enrollment: Issues of Rigor and Transferability*, ERIC Database (ED413936), Florida State Board of Community Colleges, Tallahassee, Fla, USA, 1997.
- [11] H. A. Andrews, “Dual credit research outcomes for students,” *Community College Journal of Research and Practice*, vol. 28, no. 5, pp. 415–422, 2004.
- [12] J. Welsh, N. Brake, and N. Choi, “Student participation and performance in dual-credit courses in a reform environment,” *Community College Journal of Research and Practice*, vol. 29, no. 3, pp. 199–213, 2005.
- [13] K. Sullivan-Ham, *Impact of participation in a dual enrollment program on first-semester GPA [Ph.D. thesis]*, ProQuest Dissertations & Theses, 2011.
- [14] P. Gertge, “Analyses of dual credit in rural eastern Colorado,” *Community College Journal of Research and Practice*, vol. 32, no. 8, pp. 549–558, 2008.
- [15] R. K. Catron, “Dual enrollment in Virginia,” *New Directions for Community Colleges*, vol. 2001, no. 113, pp. 51–58, 2001.
- [16] D. L. Preston, “Characteristics of concurrent/dual credit students in the Gulf coast community colleges of Texas,” *Journal of Applied Research in the Community College*, vol. 14, pp. 7–17, 2006.
- [17] Texas Higher Education Coordinating Board, “Overview dual credit,” 2008, <http://www.theccb.state.tx.us/reports/PDF/1514.PDF>.
- [18] B. W. Brown and K. Russell, “Methods of correcting for multiple testing: operating characteristics,” *Statistics in Medicine*, vol. 16, no. 22, pp. 2511–2528, 1997.
- [19] J. Cohen, *Statistical Power Analysis for the Behavioral Sciences*, Lawrence Erlbaum, Hillsdale, NJ, USA, 2nd edition, 1988.
- [20] R. D. Young Jr., S. A. Joyner, and J. R. Slate, “Grade point average differences between dual and non-dual credit college students,” *Urban Studies Research*, vol. 2013, Article ID 638417, 6 pages, 2013.
- [21] K. L. Hughes, “Dual enrollment: postsecondary/secondary partnerships to prepare students,” *Journal of College Science Teaching*, vol. 39, no. 6, pp. 12–13, 2010.
- [22] M. M. Karp and K. L. Hughes, “Study: dual enrollment can benefit a broad range of students,” *Techniques: Connecting Education and Careers*, vol. 83, no. 7, pp. 14–17, 2008.
- [23] M. V. Lewis and L. Overman, “Dual and concurrent enrollment and transition to postsecondary education,” *Career and Technical Education Research*, vol. 33, no. 3, pp. 189–202, 2008.
- [24] C. Speroni, “Determinants of students’ success: the role of advanced placement and dual enrollment programs,” NCPWR Working Paper, National Center for Postsecondary Research, ERIC Database (ED527528), 2011.



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