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Differences in First Semester GPAs by Dual Credit Enrollment Status for Texas Community College Students: A Multiyear Investigation

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Abstract

In this study, the degree to which differences were present in first semester GPAs by dual credit enrollment status for Texas community college students were examined for the 2012-2013 through the 2014-2015 academic years. Inferential statistical analyses revealed the presence of statistically significant differences in first semester GPAs for all students, separately by gender, and then by ethnicity/race (i.e., Asian, White, Hispanic, and Black). In all instances, students who completed a dual credit course while enrolled in high school earned statistically significantly higher average first semester GPAs in community college than did students who did not complete a dual credit course while enrolled in high school. Implications and recommendations for future research were discussed.

1. Introduction

The importance of postsecondary education for career success and for functioning in a global economy cannot be overstated [1, 2]. In the last two decades, the need for some postsecondary education has increased substantially. As noted by the [2], "A high school diploma is no longer sufficient in the 21st century. In order to be successful in today's global economy a person must receive some form of postsecondary education" (para. 1). Postsecondary credentials are imperative for gainful employment, better pay, and stronger economies [3]. "It is now widely recognized that more young Americans than ever before will need postsecondary credentials in order to achieve economic self-sufficiency, which, in turn is needed to maintain and strengthen our collective prosperity" [4, p. 1].

Given the statistics on job and career requirements, a postsecondary degree or training will be required for two-thirds of job openings by 2020 [5]. According to [6], jobs that required only a high school diploma or less decreased from 72% in 1973 to an anticipated 38% by 2018. With reference to the state of interest for this investigation, by 2018, 56% of the jobs in Texas will require some form of postsecondary education to obtain employment [6].

A barrier to successful college degree completion is a lack of college-readiness [7, 8,

9]. Aspiring to attend a postsecondary institution is imperative for potential college students; however, college-readiness has tremendous implications for a successful pathway to completion. Students who lack reading, mathematics, and/or writing skills are less likely to be successful in college and less likely to obtain a college degree than are students who are college-ready in these areas. At the national level, "only 38 percent of graduating seniors who took the exam hit the college-prepared benchmark in at least three of the four core subjects tested - reading, English, math and science" [10, para. 2]. Due to changes in workforce degree credentials needed, the issue of high school graduates who are not college-ready is alarming [11]. The lack of college-readiness of students with deficiencies in reading, mathematics, and writing can delay or prevent postsecondary student success [12, 13, 14].

Students without a high level of knowledge and skills face many challenges in competing in the global marketplace [15]. Barrow et al. [1] stated:

U.S. postsecondary institutions serve not only those students with the best academic preparation but also those who were not well served in the nation's elementary and secondary school system and need a second chance. This range is reflected in the differing degrees of "college readiness" among entering postsecondary students and in the increasing proportion of students who are "nontraditional" in that they are older, from less advantaged families, financially independent of their parents, parents themselves, or working while going to school. (p. 3)

Barnes and Slate [16, 17] provided extensive evidence regarding poor college-readiness skills of high school graduates in Texas. According to [17], only 45% of seniors who graduated from Texas high schools were college-ready in reading in the 2006-2007 school year. With respect to college-readiness in mathematics, [17] further established that less than one-half of Texas high school graduates, 48%, were college-ready.

Regarding a definition of college-readiness, numerous definitions exist. Arnold et al. [8] stated that college-readiness denotes "a student's capacity to enroll at a postsecondary institution, take credit-baring classes beginning in the first year, earn passing grades in courses, and persist to his or her educational goals" (p. 1). As defined by the [18], college-readiness is the level of preparation a student needs to be ready to enroll and succeed without remediation-in a credit-bearing course at a two-year or four-year institution, trade school, or technical school. "We have evidence that college readiness also means workforce readiness" [18, p. 5].

In a discussion of college-readiness, [13] contended, "that college-readiness, as it is currently defined and measured, does not represent the set of skills students need to be successful in college" (p. 2). Barnes et al. [13] argued that what was being defined as college-readiness was academic preparedness, which is not the same as actually being ready for college. Barnes et al. [13] stated that academic preparedness (i.e., academic skills) is only a portion of the needed cognitive and non-cognitive skills. Of note to this investigation is their recommendation that school districts and postsecondary institutions should collaborate to improve college and career readiness skills of high school students. High school teachers, college faculty, staff, and administrators at the P-16 levels must work collaboratively to help students understand what they need to be successful in postsecondary settings [13]. According to the Southern Association of Colleges and Schools, educators across the P-20 spectrum must increase the academic rigor of high school curriculum, provide structures for student acceleration and support, and create successful pathways for all students from pre-kindergarten through postsecondary education. Researchers [e.g., 19, 20, 21] suggested that postsecondary expectations of faculty and academic standards should be taught to junior high and high school students early to establish knowledge about going to college and a persistent mindset to finish. This knowledge and a college-going mindset can increase college admission, retention, and graduation rates, especially for underrepresented students and of students in poverty.

Moore et al. [22] suggested that the addition of specialized high school programs could increase college-readiness. Several researchers [e.g., 16, 17, 23, 24, 25] addressed the importance of college-readiness and the need for college preparatory programs such as dual credit because dual credit programs may increase college-readiness. In the past decade, several research investigations were conducted regarding college-readiness programs and the under-preparedness of students enrolled in college [8]. "In recent years, educators and policymakers have become increasingly interested in the potential of dual enrollment to improve educational outcomes for a broader range of students" [26, p. 3]. As an indication of how dual credit was viewed at the federal level, in 2013, the White House issued a statement about former-President Barack Obama's initiatives to make college more affordable. The former-president stated, "Dual-enrollment opportunities let high school students earn credits before arriving at college, which can save them money by accelerating their time to degree" (The White House Office of the Press Secretary, 2013, para. 6). In addition to the former-president's support of dual credit, other researchers [e.g., 27, 28, 24, 25] asserted that dual credit enrollment provides students opportunities to transition seamlessly from high school to college.

As evidence of the popularity of dual credit programs in the United States, [29] reported that "about 1.9 million students—11.4 percent of the secondary school population—were taking some form of dual-enrollment course in 2010-11, the most recent federal data show, up from 1.2 million in 2002-03" (para 6). Empirical benefits for students who enroll in dual credit courses have been established. Dual credit programs have been credited with allowing high school students opportunities to increase their GPAs [30, 31, 24]. In addition, dual credit allows students to earn college credit [32, 33, 31, 34] and to gain confidence in making the transition to

college [35, 31].

The [31] defined dual credit as an accelerated program that allows high school juniors and seniors to enroll in college courses and receive concurrent academic credit for the high school course simultaneously. The focus of this article was on the first semester GPAs of college students who completed dual credit courses while in high school. In a recent empirical investigation, [36] documented that students who successfully completed dual credit courses while in high school had statistically significantly higher GPAs (i.e., 0.23 points higher) in college than did students who did not complete dual credit courses while in high school. In a study of Texas community college students, [37] established that students who completed dual credit courses in high school achieved higher GPAs than did their community college peers who did not enroll in dual credit courses. In their investigation, [37] determined that both White and Black students who completed dual credit courses in high school had statistically significantly higher GPAs in college than did White and Black students who did not enroll in dual credit courses in high school. This dual credit investigation by [37] is relevant to this study because Texas community college students who completed dual credit courses while in high school and students who did not complete dual credit courses while in high school constituted their sample.

Other researchers [e.g., 12, 38] conducted studies on the relationship of dual credit enrollment with postsecondary GPAs. In two separate investigations, [12] and [39] analyzed data from dual credit programs in the nation's largest urban dual credit program at The City University of New York. They documented that the first semester GPAs of college students were higher for students who completed dual credit courses in high school than for college students who did not complete dual credit courses while in high school. Allen and Dadger [12] established that dual credit enrollment "improves college GPA" during the first semester (p. 17). In their study of Hispanic students at a Hispanic-serving Institute, [38] determined that first semester GPAs were higher for students who completed dual credit courses in high school than for those students who did not complete dual credit courses.

Additionally, other researchers [e.g., 33, 40] conducted studies on dual credit enrollment. O'Connor and Justice [40] documented the presence of higher first semester GPAs and acceleration to college degree completion for students who completed a dual credit course while in high school. Hughes [33] reported that first semester GPAs as well as: (a) high school diploma completion, (b) college matriculation, and (c) college persistence were positively related to students who completed dual credit courses in high school. Hughes [33] stated,

dual enrollment was positively related to students' likelihood of earning a high school diploma, to college enrollment, to persistence in college, and to higher postsecondary grade-point averages. And, while much dual enrollment occurs through community colleges, participating students in our studies who went on to attend college once completing high school were more likely to enroll in a four-year institution, perhaps indicating that their early taste of college gave them the skills and confidence to raise their educational aspirations. (p. 12)

Anderson [32] evaluated data on community college students, primarily White students, from a mid-sized institution in Wyoming where 71% of the participants were female students who had previously completed at least one dual credit course. Although [32] did not examine whether the GPAs were statistically significantly different between students who completed dual credit courses while in high school from students who did not complete dual credit courses, 75% of participants had GPAs between 3.00 and 3.99. Only 18% of participants had GPAs that were less than 3.00 [32].

1.1. Statement of the Problem

Underprepared students in postsecondary education represent a serious challenge. As discussed previously, many students who graduate from high school are not prepared for the rigor of college courses. In response to poor college-readiness skills, college preparatory programs such as dual credit were developed. Given former-President Obama's statement that community colleges need to graduate 5 million more students by 2020 [41], college preparatory programs, such as dual credit should be examined with respect to their efficacy. That is, to what degree are students who complete a dual credit course successful in a postsecondary setting? Although this issue of student success in postsecondary settings has been addressed in previous studies, further research is needed, specifically with reference to student GPAs at community colleges.

1.2. Purpose of the Study

The purpose of this research investigation was to determine the degree to which differences were present in first semester GPAs by dual credit course completion status for Texas community college students. Three academic years (i.e., 2012-2013, 2013-2014, and 2014-2015) of data from a Texas community college district were analyzed to determine whether students who completed a dual credit course while in high school had a higher first semester GPA than their peers who did not complete a dual credit course while in high school. Statistical analyses were conducted by student gender and by student ethnicity/race (i.e., Asian, White, Hispanic, and Black). Through analyzing three years of data, the extent to which trends were present in the first semester GPAs of students by their dual credit course completion status was determined.

1.3. Significance of the Study

The significance of the study involved determining the degree to which students' first semester GPAs benefitted from completing dual credit courses while in high school. Should community college students who completed a dual credit course while in high school have higher first semester

GPAs than their peers who did not complete a dual credit course? If the answer to the previous question is yes, educational leaders and policymakers may want to consider expanding dual credit programs to ensure that more students in high school are provided with the opportunity to enroll in dual credit courses. Through analyzing first semester GPAs by student gender and ethnicity/race, the degree to which dual credit course completion had similar results for all students was ascertained. If differences are present in first semester GPAs by student gender and ethnicity/race, changes may be warranted in dual credit programs. Finally, by analyzing data across a 3-year period, policymakers and educational leaders are provided with information to assist them in making informed decisions about the efficacy of dual credit program participation.

1.4. Research Questions

The research questions addressed in this study were: (a) What is the difference in first semester GPAs by dual credit enrollment status for community college students?; (b) What is the difference in first semester GPAs by dual credit enrollment status for community college students by gender?; (c) What is the difference in first semester GPAs by dual credit enrollment status for community college students by ethnicity/race (i.e., Asian, White, Hispanic, and Black)?; (d) What trend is present in first semester GPAs by dual credit enrollment status for the 2012-2013 through the 2014-2015 academic years?; (d) What trend is present in first semester GPAs by dual credit enrollment status for male and for female students in the 2012-2013 through the 2014-2015 academic years?; and, (d) What trend is present in first semester GPAs by dual credit enrollment status for Asian, White, Hispanic, and Black students in the 2012-2013 through the 2014-2015 academic years? The first three research questions were repeated for the 2012-2013, 2013-2014, and 2014-2015 academic years, whereas the last three research questions reflected all three academic years. As such, a total of 12 research questions comprised this empirical study.

2. Method

2.1. Research Design

For this research article, a nonexperimental causal comparative design was present [42]. Characteristics of a causal comparative research design are reliant on archival data and the lack of any manipulation of the independent variable [42]. The causal comparative research design is appropriate for this investigation because of the use of three years of archival data. As such, the independent variable of dual credit enrollment had already occurred. Moreover, the community college students whose data were analyzed in this article had already completed several semesters. Accordingly, neither the independent variable (i.e., dual credit enrollment) nor the dependent variable (i.e., first semester GPA) could be manipulated in this investigation due to the use of archival data.

2.2. Participants and Instrumentation

Archival data were obtained for the 2012-2013, 2013-2014, and the 2014-2015 academic years from a community college district in Texas. These data were requested from the Institutional Research Division at this community college district for the past three academic years for use in an Advanced Statistics course. Data requested were student ethnicity/race, gender, dual credit enrollment status, and first semester GPAs. Following the request, data provided were in the form of three excel files, one for each academic year.

3. Results

Prior to conducting inferential statistics to determine whether differences were present in the first semester GPAs of Texas community college students who completed a dual credit course while enrolled in high school, checks were conducted to determine the extent to which these data were normally distributed [43]. Because the first semester GPAs of students enrolled in dual credit courses data were normally distributed, parametric independent samples *t*-tests were used to answer the research questions. Statistical results will now be presented in order of each research question by academic year.

With respect to the first research question involving first semester GPAs for all students, the parametric independent samples *t*-test for the 2012-2013 academic year revealed a statistically significant difference in first semester GPAs, $t(750.76) = -10.43$, $p < .001$, by dual credit enrollment status. This difference represented a small effect size (Cohen's *d*) of 0.39 [44]. Students who completed a dual credit course while in high school had a statistically significantly higher average first semester GPA, 0.41 points higher, than students who did not complete a dual credit course while in high school.

The parametric independent samples *t*-test for the 2013-2014 academic year revealed a statistically significant difference in first semester GPAs, $t(594.95) = -13.95$, $p < .001$, by dual credit enrollment status. This difference represented a moderate effect size (Cohen's *d*) of 0.59 [44]. Students who completed a dual credit course while in high school had a statistically significantly higher average first semester GPA, 0.62 points higher, than students who did not complete a dual credit course while in high school.

With respect to the 2014-2015 academic year, a statistically significant difference was yielded in first semester GPAs, $t(683.41) = -8.76$, $p < .001$, by dual credit enrollment status. This difference represented a small effect size (Cohen's *d*) of 0.35 [44]. Students who completed a dual credit course while in high school had a statistically significantly higher average first semester GPA, 0.36 points higher, than students who did not complete a dual credit course while in high school. Table 1 contains the descriptive statistics for the analyses for the three academic years.

Table 1. *Descriptive Statistics for the First Semester GPAs of Texas Community College Students by Dual Credit Enrollment Status in the 2012-2013, 2013-2014, and 2014-2015 Academic Years.*

Academic Year and Dual Credit Enrollment Status	*n*	*M*	*SD*
2012-2013			
Not Enrolled	7,396	2.50	1.16
Enrolled	584	2.91	0.89
2013-2014			
Not Enrolled	7,383	2.46	1.19
Enrolled	462	3.08	0.91
2014-2015			
Not Enrolled	7,904	2.63	1.10
Enrolled	564	2.99	0.92

Concerning the second research question involving first semester GPAs by gender, results for male students will be presented first, followed by the results for female students. The parametric independent samples *t*-test for the 2012-2013 academic year revealed a statistically significant difference in first semester GPAs, $t(246.20) = -5.91$, $p < .001$, by dual credit enrollment status for male students. This difference represented a small effect size (Cohen's *d*) of 0.38 [44]). Male students who completed a dual credit course while in high school had a statistically significantly higher average first semester GPA, 0.40 points higher, than male students who did not complete a dual credit course while in high school.

Concerning the 2013-2014 academic year, a statistically significant difference was revealed in first semester GPAs, $t(185.30) = -7.23$, $p < .001$, by dual credit enrollment status for male students. This difference represented a moderate effect size (Cohen's *d*) of 0.54 [44]. Male students who completed a dual credit course while in high school had a statistically significantly higher average first semester GPA, 0.59 points higher, than male students who did not complete a dual credit course while in high school.

Regarding the 2014-2015 academic year, a statistically significant difference was yielded in first semester GPAs, $t(234.87) = -4.38$, $p < .001$, by dual credit enrollment status for male students. This difference represented a small effect size (Cohen's *d*) of 0.29 [44]. Male students who completed a dual credit course while in high school had a statistically significantly higher average first semester GPA, 0.34 points higher, than male students who did not complete a dual credit course while in high school. Revealed in Table 2 are the descriptive statistics for the analyses for the three academic years.

Table 2. *Descriptive Statistics for the First Semester GPAs of Male Texas Community College Students by Dual Credit Enrollment Status in the 2012-2013, 2013-2014, and 2014-2015 Academic Years.*

Academic Year and Dual Credit Enrollment Status	*n*	*M*	*SD*
2012-2013			
Not Enrolled	3,266	2.39	1.16
Enrolled	205	2.79	0.93
2013-2014			
Not Enrolled	3,361	2.46	1.19
Enrolled	164	2.95	1.02
2014-2015			
Not Enrolled	3,571	2.52	1.12
Enrolled	204	2.83	0.98

With respect to the second research question involving first semester GPAs for female students, the parametric independent samples *t*-test for the 2012-2013 academic year revealed a statistically significant difference in first semester GPAs, $t(512.25) = -8.06$, $p < .001$, by dual credit enrollment status. This difference represented a small effect size (Cohen's *d*) of 0.38 [44]. Female students who completed a dual credit course while in high school had a statistically significantly higher average first semester GPA, 0.38 points higher, than female students who did not complete a dual credit course while in high school.

Regarding the 2013-2014 academic year, a statistically significant difference was revealed in first semester GPAs, $t(391.73) = -11.67$, $p < .001$, by dual credit enrollment status for female students. This difference represented a moderate effect size (Cohen's *d*) of 0.59 [44]. Female students who completed a dual credit course while in high school had a statistically significantly higher average first semester GPA, 0.60 points higher, than female students who did not complete a dual credit course while in high school.

Concerning the 2014-2015 academic year, a statistically significant difference was yielded in first semester GPAs, $t(453.67) = -7.22$, $p < .001$, by dual credit enrollment status for female students. This difference represented a small effect size (Cohen's *d*) of 0.36 [44]. Female students who completed a dual credit course while in high school had a statistically significantly higher average first semester GPA, 0.35 points higher, than female students who did not complete a dual credit course while in high school. Presented in Table 3 are the descriptive statistics for the analyses for the three academic years.

Table 3. *Descriptive Statistics for the First Semester GPAs of Female Texas Community College Students by Dual Credit Enrollment Status in the 2012-2013, 2013-2014, and 2014-2015 Academic Years.*

Academic Year and Dual Credit Enrollment Status	*n*	*M*	*SD*
2012-2013			
Not Enrolled	4,130	2.59	1.15
Enrolled	379	2.98	0.86
2013-2014			
Not Enrolled	4,022	2.55	1.18
Enrolled	298	3.15	0.83
2014-2015			
Not Enrolled	4,332	2.73	1.08
Enrolled	360	3.08	0.88

With respect to the third research question involving first semester GPAs by ethnicity/race, results for Asian students will be presented first, followed by the results for White students, then Hispanic students, and then Black students. The parametric independent samples *t*-test for the 2012-2013 academic year did not reveal a statistically significant difference in first semester GPAs, $t(56.37) = -0.71$, $p = .48$, by dual credit enrollment status for Asian students. Asian students who completed a dual credit course while in high school had a similar first semester GPA, within 0.11 points, to Asian students who did not complete a dual credit course while in high school.

Regarding the 2013-2014 academic year, a statistically

significant difference was revealed in first semester GPAs, $t(59.58) = -6.81$, $p < .001$, by dual credit enrollment status for Asian students. This difference represented a near-large effect size (Cohen's *d*) of 0.79 [44]. Asian students who completed a dual credit course while in high school had a statistically significantly higher average first semester GPA, 0.63 points higher, than Asian students who did not complete a dual credit course while in high school.

Concerning the 2014-2015 academic year, a statistically significant difference was yielded in first semester GPAs, $t(83.69) = -2.13$, $p = .04$, by dual credit enrollment status for Asian students. This difference represented a small effect size (Cohen's *d*) of 0.27 [44]. Asian students who completed a dual credit course while in high school had a statistically significantly higher average first semester GPA, 0.25 points higher, than Asian students who did not complete a dual credit course while in high school. Readers are directed to Table 4 for the descriptive statistics for the analyses for the three academic years for Asian students.

Table 4. *Descriptive Statistics for the First Semester GPAs of Asian Texas Community College Students by Dual Credit Enrollment Status in the 2012-2013, 2013-2014, and 2014-2015 Academic Years.*

Academic Year and Dual Credit Enrollment Status	*n*	*M*	*SD*
2012-2013			
Not Enrolled	504	2.91	1.06
Enrolled	47	3.02	0.99
2013-2014			
Not Enrolled	513	2.92	1.01
Enrolled	36	3.55	0.48
2014-2015			
Not Enrolled	543	3.02	0.95
Enrolled	66	3.27	0.90

For the third research question involving first semester GPAs for White students, the parametric independent samples *t*-test for the 2012-2013 academic year revealed a statistically significant difference in first semester GPAs, $t(274.64) = -3.87$, $p < .001$, by dual credit enrollment status. This difference represented a small effect size (Cohen's *d*) of 0.25 [44]. White students who completed a dual credit course while in high school had a statistically significantly higher average first semester GPA, 0.24 points higher, than White students who did not complete a dual credit course while in high school.

With respect to the 2013-2014 academic year, a statistically significant difference was revealed in first semester GPAs, $t(242.04) = -4.93$, $p < .001$, by dual credit enrollment status for White students. This difference represented a small effect size (Cohen's *d*) of 0.35 [44]. White students who completed a dual credit course while in high school had a statistically higher average first semester GPA, 0.37 points higher, than White students who did not complete a dual credit course while in high school.

Regarding the 2014-2015 academic year, a statistically significant difference was yielded in first semester GPAs, $t(226.31) = -4.08$, $p < .001$, by dual credit enrollment status for White students. This difference represented a small effect size (Cohen's *d*) of 0.28 [44]. White students who completed a dual credit course while in high school had a statistically significantly higher average first semester GPA, 0.27 points higher, than White students who did not complete a dual credit course while in high school. Table 5 contains the descriptive statistics for the analyses for the three academic years for White students.

Table 5. *Descriptive Statistics for the First Semester GPAs of White Texas Community College Students by Dual Credit Enrollment Status in the 2012-2013, 2013-2014, and 2014-2015 Academic Years.*

Academic Year and Dual Credit Enrollment Status	*n*	*M*	*SD*
2012-2013			
Not Enrolled	2,475	2.66	1.08
Enrolled	214	2.90	0.86
2013-2014			
Not Enrolled	2,360	2.66	1.09
Enrolled	201	3.03	1.01
2014-2015			
Not Enrolled	2,543	2.76	1.05
Enrolled	185	3.03	0.86

For the third research question involving first semester GPAs for Hispanic students, the parametric independent samples *t*-test for the 2012-2013 academic year revealed a statistically significant difference in first semester GPAs, $t(274.67) = -9.03$, $p < .001$, by dual credit enrollment status. This difference represented a moderate effect size (Cohen's *d*) of 0.54 [44]. Hispanic students who completed a dual credit course while in high school had a statistically significantly higher average first semester GPA, 0.52 points higher, than Hispanic students who did not complete a dual credit course while in high school.

Concerning the 2013-2014 academic year, a statistically significant difference was revealed in first semester GPAs, $t(200.65) = -9.26$, $p < .001$, by dual credit enrollment status for Hispanic students. This difference represented a moderate effect size (Cohen's *d*) of 0.63 [44]. Hispanic students who completed a dual credit course while in high school had a statistically higher average first semester GPA, 0.65 points higher, than Hispanic students who did not complete a dual credit course while in high school.

With respect to the 2014-2015 academic year, a statistically significant difference was yielded in first semester GPAs, $t(288.23) = -5.58$, $p < .001$, by dual credit enrollment status for Hispanic students. This difference represented a small effect size (Cohen's *d*) of 0.35 [44]). Hispanic students who completed a dual credit course while in high school had a statistically significantly higher average first semester GPA, 0.34 points higher, than Hispanic students who did not complete a dual credit course while in high school. Delineated in Table 6 are the descriptive statistics for the analyses for the three academic years for Hispanic students.

Table 6. *Descriptive Statistics for the First Semester GPAs of Hispanic Texas Community College Students by Dual Credit Enrollment Status in the 2012-2013, 2013-2014, and 2014-2015 Academic Years.*

Academic Year and Dual Credit Enrollment Status	*n*	*M*	*SD*
2012-2013			
Not Enrolled	2,948	2.48	1.13
Enrolled	210	3.00	0.78
2013-2014			
Not Enrolled	3,068	2.42	1.17
Enrolled	167	3.07	0.86
2014-2015			
Not Enrolled	3,285	2.63	1.04
Enrolled	239	2.97	0.89

For the third research question involving first semester GPAs for Black students, the parametric independent samples *t*-test for the 2012-2013 academic year revealed a statistically significant difference in first semester GPAs, $t(28.25) = -2.34$, $p = .03$, by dual credit enrollment status. This difference represented a small effect size (Cohen's *d*) of 0.41 [44]. Black students who completed a dual credit course while in high school had a statistically significantly higher average first semester GPA, 0.48 points higher, than Black students who did not complete a dual credit course while in high school.

Concerning the 2013-2014 academic year, a statistically significant difference was revealed in first semester GPAs, $t(27.77) = -6.50$, $p < .001$, by dual credit enrollment status. This difference represented a large effect size (Cohen's *d*) of 0.95 [44]. Black students who completed a dual credit course while in high school had a statistically higher average first semester GPA, 1.01 points higher, than Black students who did not complete a dual credit course while in high school.

Regarding the 2014-2015 academic year, a statistically significant difference was yielded in first semester GPAs, $t(31.39) = -2.39$, $p = .02$, by dual credit enrollment status for Black students. This difference represented a small effect size (Cohen's *d*) of 0.40 [44]. Black students who completed a dual credit course while in high school had a statistically significantly higher average first semester GPA, 0.47 points higher, than Black students who did not complete a dual credit course while in high school. Readers are directed to Table 7 for the descriptive statistics for the analyses for the three academic years.

Table 7. *Descriptive Statistics for the First Semester GPAs of Black Texas Community College Students by Dual Credit Enrollment Status in the 2012-2013, 2013-2014, and 2014-2015 Academic Years.*

Academic Year and Dual Credit Enrollment Status	*n*	*M*	*SD*
2012-2013			
Not Enrolled	982	1.97	1.29
Enrolled	27	2.45	1.04
2013-2014			
Not Enrolled	992	1.86	1.29
Enrolled	25	2.87	0.75
2014-2015			
Not Enrolled	1,063	2.14	1.27
Enrolled	30	2.61	1.06

4. Discussion

Addressed in this investigation was the extent to which differences might be present in the first semester GPAs by dual credit enrollment status for male and female students and for Asian, White, Hispanic, and Black Texas community college students. Three academic years (i.e., 2012-2013, 2013-2014, and 2014-2015) of data from a Texas community college district were analyzed. Statistically significant differences were present in all three academic years of data that were analyzed. The average first semester GPAs for Texas community college male and female students and for Asian, White, Hispanic, and Black students were higher for students who completed a dual credit course while in high school than for their peers who did not complete a dual credit course while in high school.

Table 8. *Results for the First Semester GPAs of All Students and by Gender of Texas Community College Students by Dual Credit Enrollment Status in the 2012-2013, 2013-2014, and 2014-2015 Academic Years.*

Group and Academic Year	Significantly Significant	Effect Size	Higher GPAs
All Students			
2012-2013	Yes	Small	Dual Credit
2013-2014	Yes	Moderate	Dual Credit
2014-2015	Yes	Small	Dual Credit
Male Students			
2012-2013	Yes	Small	Dual Credit
2013-2014	Yes	Moderate	Dual Credit
2014-2015	Yes	Small	Dual Credit
Female Students			
2012-2013	Yes	Small	Dual Credit
2013-2014	Yes	Moderate	Dual Credit
2014-2015	Yes	Small	Dual Credit

Table 9. *Results for the First Semester GPAs by Ethnicity/Race of Texas Community College Students by Dual Credit Enrollment Status in the 2012-2013, 2013-2014, and 2014-2015 Academic Years.*

Group and Academic Year	Significantly Significant	Effect Size	Higher GPAs
Asian Students			
2012-2013	No	N/A	Dual Credit
2013-2014	Yes	Near-large	Dual Credit
2014-2015	Yes	Small	Dual Credit
White Students			
2012-2013	Yes	Small	Dual Credit
2013-2014	Yes	Small	Dual Credit
2014-2015	Yes	Small	Dual Credit
Hispanic Students			
2012-2013	Yes	Moderate	Dual Credit
2013-2014	Yes	Moderate	Dual Credit
2014-2015	Yes	Small	Dual Credit
Black Students			
2012-2013	Yes	Small	Dual Credit
2013-2014	Yes	Large	Dual Credit
2014-2015	Yes	Small	Dual Credit

The average first semester GPA of students who completed a dual credit course while in high school was 0.47 points higher than the first semester GPA of students who did not complete a dual credit course. With respect to gender, the average first semester GPAs of community college male and female students who completed a dual credit course while

enrolled in high school were 0.43 and 0.47 points higher, respectively, than their peers who did not complete a dual credit course while in high school. Regarding community college student ethnicity/race, the average first semester GPAs of Asian, White, Hispanic, and Black students who completed a dual credit course while in high school were 0.33, 0.30, 0.50, and 0.67 points higher than their ethnic/racial peers, respectively, who did not complete a dual credit course while in high school. Of note was the finding that Black students who completed a dual credit course while in high school had the highest average difference in their first semester GPAs than Black students who did not complete a dual credit course. Tables 8 and 9 contains the average first semester GPAs for these groups of students.

4.1. Implications for Policy and Practice

In this multiyear investigation's results, several implications are present for policy and for practice. First, community college leaders are encouraged to compare the demographic characteristics of their students who completed dual credit courses while in high school to the demographic characteristics of the enrollment at the college. Concerning ethnicity/race, Asian, White, Hispanic, and Black community college students who completed a dual credit course while enrolled in high school had higher first semester GPAs than their ethnic/racial peers who did not complete a dual credit course while enrolled in high school. As such, educational leaders in both K-12 and postsecondary settings should encourage high school students to enroll in dual credit courses because completion of such courses is related to academic success in community colleges. Educational leaders in both settings, however, should ensure that high school students who enroll in dual credit courses are provided with the appropriate support to be successful.

4.2. Recommendations for Future Research

Based upon the results of this multiyear investigation, several recommendations for future research are warranted. First, an increased number of years of data on community college students who completed a dual credit course in high school should be examined. The degree to which results from this analysis of three years of data are generalizable to other years is not known. Second, researchers are encouraged to determine the extent to which second-semester GPAs or longer term GPAs for students who completed a dual credit course while in high school are different from those students who did not complete a dual credit course. Such analyses would be beneficial in ascertaining the long-term efficacy of dual credit enrollment. Third, this study should be extended to other states to determine the degree to which results delineated herein are generalizable to students in other states. Fourth, researchers are encouraged to extend this study to 4-year postsecondary institutions because data on only community colleges were analyzed herein. Fifth, the demographic characteristics of students enrolled in postsecondary institutions should be compared to the demographic characteristics of students who are enrolled in postsecondary institutions and who completed a dual credit course while enrolled in high school. To what extent is equity present in the ethnic/racial percentages? Finally, researchers could conduct qualitative studies to understand why different ethnic/racial groups are/are not enrolling in dual credit courses in high school at the same rate.

5. Conclusion

In this multiyear analysis, the degree to which differences were present in first semester GPAs by dual credit enrollment status for Texas community college students was investigated for the 2012-2013 through the 2014-2015 academic years. Inferential statistical analyses revealed the presence of statistically significant differences in first semester GPAs for all students, separately by gender, and by ethnicity/race. In all instances, students who had completed a dual credit course while enrolled in high school had statistically significantly higher first semester GPAs in community college than did students who did not complete a dual credit course while enrolled in high school. With respect to ethnicity/race, Black students had the highest average first semester difference for students who completed a dual credit course while enrolled in high school. Efforts to increase the ethnic/racial diversity of students who complete dual credit courses are warranted, especially for Black students.

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