

Research Article

Grade Point Average Differences between Dual and Nondual Credit College Students

Robert D. Young Jr., Sheila A. Joyner, and John R. Slate

Department of Educational Leadership and Counseling, College of Education, Sam Houston State University, Huntsville, TX 77340, USA

Correspondence should be addressed to John R. Slate; profslate@aol.com

Received 7 November 2012; Revised 10 January 2013; Accepted 15 January 2013

Academic Editor: James Moore

Copyright © 2013 Robert D. Young Jr. et al. This is an open access article distributed under the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

We examined the first and final term grade point averages (GPA) for a class of students at a Texas community college to determine how dual enrollment credit influenced GPA. Five statistically significant differences, albeit small effect sizes, were present by gender and by ethnic membership. Dual credit students had higher GPAs than did nondual credit students. Interestingly, dual enrollment did not have a statistically significant influence on GPAs for Asian students or for students after two years at this community college. As such, this study is the first research investigation of which we are aware in which student GPA in the first college semester and at the end of the second year was compared between dual credit and nondual credit students. Implications of our findings and suggestions for future research are provided.

1. Grade Point Average Differences between Dual and Nondual Credit College Students

In the United States, education reform initiatives have mandated more rigor in the high school curriculum [1] and the closure of the academic gap between secondary and higher education institutions [2]. Concerns exist about the large number of students who fail to graduate high school and about the high percentage of high school graduates who require remediation once enrolled in college [3]. With respect to students who graduate from high school and who enroll in college, only 35% earn a degree [4]. A rigorous high school curriculum is a student's most important weapon for college academic success [4].

High school students have a variety of opportunities for credit-based transition programs that also improve college preparation. These programs are offered by both secondary and postsecondary institutions and have been designed to meet a variety of needs. In addition to providing a more rigorous curriculum, an additional goal is reduced college costs. Traditional programs include those programs that are

exam based such as the College Level Examination Program (CLEP) program, the International Baccalaureate (IB) and the Advanced Placement (AP) program [3]. Other programs include Tech Prep, early college high schools and actual attendance at the higher education institution while still in high school [1].

Dual credit programming is a relatively new trend dating back to the 1970s but has recently become extremely popular [5]. For readers who may not be familiar with dual credit programs, dual credit programs provide high school students with an opportunity to take a college level course for which they may receive college credit. Dual credit courses may be taken at a local community college or at the high school campus, depending upon the school district in which students reside. Moreover, dual credit courses are taught by either a college instructor or a high school teacher who has received specialized training. Data from the Academic Pathways to Access and Student Success study provide documentation that dual credit courses are offered by high schools in all 50 states [5]. State legislatures have enacted dual enrollment policies which support the development of these programs

resulting in an expansion of participation from not only the gifted academic high school student, but also from those students who may be average or low-achieving students [6]. Dual credit is a means by which students receive both high school and college credit for the same course.

Recently, most researchers of dual credit programs have explored state policies and program features through qualitative investigations [7]. Prior to these studies, the focus had been on state and national studies of access and enrollment growth [8–11]. Very few researchers have explored subsequent college success after participating in dual credit programming during high school. In one such study of the program entitled College Now conducted by the City University of New York (CUNY) system, Kleiman [12] reported that students were less likely to need remediation and were twice as likely to graduate from college on time as compared to program nonparticipants. Mead [13] examined the first semester academic performance of dual enrollment students as part of a larger study of students enrolled in the Des Moines Area Community College system. The success of students who begin their college career while still enrolled in high school and who then enroll in a community college has not been extensively investigated.

State efforts to promote high school success and college readiness in Texas culminated in 2006 by an act of the legislature known as HB1. Each local education agency is now required to provide opportunity for students to earn at least 12 semester credit hours of college credit while still in high school. College credit may be earned through articulated courses, Advanced Placement (AP) courses, International Baccalaureate (IB) courses, and courses for dual credit. Dual credit in Texas, as defined by the Texas Higher Education Coordinating Board, 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 [14]. Currently, more than 90% of dual credit courses in the state are offered by Texas community colleges [15].

Positive outcomes of this program include a reduction in the cost of education, shortened time required to obtain a degree resulting in a quicker entry into the workforce, and an increase in the number of students who finish high school with subsequent enrollment in college [14]. One negative aspect of the dual credit system is that students who do not pass a dual credit course potentially would not graduate, therefore negatively affecting the graduation rate of the high school [16].

Andrews [6, 17, 18], Bailey et al. [19], Gertge [20], and Welsh et al. [21] are researchers who have examined the dual credit issue with the same general concerns. Those concerns were with student success in coursework, their future success in the university setting, reduction in costs to the student, maintaining standards for the course, and quality of the instructors. Burns and Lewis [22], Marshall and Andrews [23], and Smith [16] examined the dual credit issue from the student perspective through the use of surveys. Students responded that they were pleased with dual credit offerings and that they believed that dual credit had helped them to be successful in college.

With enrollment steadily increasing in dual credit courses, educators have raised some concerns, namely, that those individuals teaching the courses be qualified and that the college quality level of coursework be maintained [6]. To address these concerns, lawmakers in Minnesota, Washington, Florida, and Massachusetts enacted policies that compelled the community colleges to have a formal plan to provide dual credit courses for qualified high school students [6]. Stipulated in those plans were the standards and qualifications of individuals who teach dual credit courses. Andrews [6] stated that course delivery could be conducted on-campus, off-campus, in high schools, using distance learning, and on interactive TV.

Andrews [18] reviewed results of success by dual credit students at Clear Lake High School, matched college students in the same course, and determined that no difference existed in their success rate in college. A similar matching of dual credit students and nondual credit students was conducted at Garner-Hayfield School District in several courses at the local community colleges. Final exams were used to measure results. The final exam analysis resulted in no difference between dual credit and nondual credit students [18]. Southside Virginia Community College had similar results with students at Marquette High School stating in a returned questionnaire that most of them were better prepared by dual credit most of the time [18]. Another point made by the author was that dual credit might replace Advanced Placement programs or honors program classes in high school [18].

Bailey et al. [19] reported that dual credit students tended to graduate from high school at a higher rate than students who did not take dual credit. Welsh et al. [21] examined high school student performance, gender, residence, ethnicity, and the socioeconomic effect on credits earned, deficient credits earned, and cumulative college GPA in dual credit courses. The dual credit students came from Kentucky high schools. Findings by Welsh et al. [21] included a significant increase in total credits earned by students, deficient credits, and cumulative GPA. A positive correlation was obtained between GPA and total credit earned, whereas a negative correlation was yielded between a higher GPA and deficient credits earned [21]. Results were not provided with respect to gender and ethnicity.

Windham [24] examined dual enrollment to gauge its effectiveness of preparing high school students for college-level coursework. Windham [24] also noted a trend of increased female enrollment and that most dual enrollment students were White. To determine if the dual enrollment was effective at preparing the student for the next course in the progression of coursework, a comparison was made of higher grades on dual enrollment classes, as well as the grades in the next class in the progression of classes [24]. A positive relationship was revealed between dual enrollment and success in the first class and the subsequent class [24]. Townsend et al. [25] demonstrated that community college transfer students performed at approximately the same level academically as did the Native American students. This positive correlation was higher than that of entering freshman

in both classes at a university without having taken dual enrollment in high school.

Windham [24] suggested that it was necessary that the student had passed the college placement test and be recommended by the principal before dual enrollment class enrollment to prevent negative outcomes in the program. Another concern was that the instructor of the dual enrollment courses meet the college standards for the dual enrollment courses [24]. Students who were enrolled at the campus stated that they had benefited from the experience of having to be more responsible and independent [22]. Positive outcomes for the program were reported: dual credit classes were as good as or better than single credit classes, transferability of the dual credit classes to a 4-year university was high, and attitude toward the community college was improved [23].

Andrews [18] documented that a primary reason for the Illinois Community College Board supporting dual credit courses was the decreasing time that students were taking to obtain their baccalaureate degree. Andrews [18] and Gertge [20] suggested replacement of Advanced Placement programs and honors classes with dual credit classes. Welsh et al. [21] stated that the GPA was the most important indicator of success in dual credit courses. Andrews [18], Bailey et al. [19], Schuetz [26], Smith [16], and Windham [24] demonstrated that students who completed dual credit courses were as successful as or even more successful than those students who did not complete dual credit courses.

Correa and Kouzekanani [27] investigated the influence of participation in dual credit on first year college persistence and GPA, through the use of qualitative and quantitative research methods. In their study, Correa and Kouzekanani [27] demonstrated statistically significant differences between nondual credit and dual credit students, with dual credit students having higher GPAs than nondual credit students. Persistence data, however, did not yield any statistically significant differences between these two groups of students [27].

Andrews [6, 17, 18], Bailey et al. [19], Gertge [20], and Welsh et al. [21] all had concerns about student success being carried forward from dual credit in the high school to success in coursework in the university setting. What is lacking in the literature is a preponderance of studies citing GPA. Thus, a strong need exists for this research investigation.

1.1. Purpose of this Study. The purpose of this study was to examine the extent to which differences, if any, were present in academic achievement as a function of student enrollment in dual credit courses. Another purpose was to ascertain the extent to which student demographic variables (i.e., gender, ethnicity) were related to student performance in dual credit courses.

1.2. Research Questions. The following research questions were addressed in this study: (a) What is the difference in first term GPA between dual credit students and nondual credit students enrolled in a Texas community college? (b) What is the difference in first term GPA between dual credit students and nondual credit students enrolled in a Texas community

college by gender? (c) What is the difference in first term GPA between dual credit students and nondual credit students enrolled in a Texas community college by ethnicity? and (d) What is the difference in cumulative two-year GPA between dual credit students and nondual credit students enrolled in a Texas community college?

2. Method

2.1. Participants. Student data from a Southwest Texas community college for the years 2006–2008 were utilized in this study. The first three research questions were examined separately for students enrolled in the fall of 2006. The last research question was examined separately for students enrolled at the end of the 2007–2008 school year. All data were obtained from this community college's Achieve the Dream database. Yearly, data are collected and reported to the Achieve the Dream project for accountability purposes. For readers who might not be familiar with Achieving the Dream, it is a national initiative of which Texas is a part. In this multiyear initiative, the focus is on facilitating the success of community college students, particularly students of color.

Student records totaling 15,636 were used in this study, with 1,785 being dual credit students and 13,851 being nondual credit students. Male records totaled 8,305 with 824 being dual credit students and 7,481 being nondual credit students. Female records totaled 7,351 with 961 being dual credit students and 6,370 being nondual credit students. The dataset included 11,935 White students, 1,312 Black students, and 216 Asian students. The final group consisted of 726 students who completed the second year with 172 dual credit students and 554 nondual credit students. Unfortunately, we could not analyze data for Hispanic students because of an error in the dataset with which we were provided. In examining the dataset, we determined that the demographic information for whether or not students were Hispanic was missing. As such, we could not conduct any analyses regarding dual-credit enrollment and Hispanic ethnic membership.

2.2. 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 Excel file that was obtained from Achieve the Dream was imported into SPSS, it was converted into a SPSS data file. In the next step of the process, we verified the accuracy of the dataset. As such, we changed all negative values to 0 or eliminated them from further consideration. Labels were added to variables utilized in this investigation.

2.3. Definition of Terms. *Dual credit*, as defined by the Texas Higher Education Coordinating Board, 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 [14]. The use of the phrase *first term GPA* means that the student's GPA, after they have finished their first semester at this community college as a freshman, were used. The use of the phrase *cumulative two year GPA* means that the

student's GPA at the end of the summer term of their second year at this community college was used.

3. Results

Regarding the first research question, sample sizes, means, and standard deviations pertaining to term GPA for dual credit students and nondual credit students enrolled in this Texas community college are listed in Table 1. Prior to conducting inferential statistics for this research question, checks were conducted to determine if the data were normally distributed. Regarding the underlying distribution of term GPA for dual credit students and nondual credit students enrolled in a Texas community college, the standardized skewness coefficients (i.e., the skewness value divided by the standard error of skewness) and the standardized kurtosis coefficients (i.e., the kurtosis value divided by the standard error of kurtosis) were calculated. Three of the four coefficients were outside of the range of normality (i.e., ± 3 , [28]).

Accordingly, a nonparametric (i.e., Mann-Whitney's U) independent samples t -test was conducted to answer the research question. Statistically significant differences were present in the first term GPA for dual credit students and nondual credit students ($U = 10516445.50$, $P < .001$); Cohen's d effect size was 0.28. Using Cohen's [29] criteria; this finding represented a small effect size. Students who completed dual credit classes prior to college had statistically significantly higher GPAs than did nondual credit students.

Regarding the second research question, sample sizes, means, and standard deviations pertaining to term GPA between dual credit students and nondual credit students enrolled in this Texas community college by gender are listed in Table 1. Prior to conducting inferential statistics, checks were conducted to determine if the data were normally distributed. Regarding the underlying distribution of term GPA between dual credit students and nondual credit students by gender, the standardized skewness coefficients and the standardized kurtosis coefficients were calculated. All coefficients were outside of the range of normality.

Accordingly, nonparametric (i.e., Mann-Whitney's U) independent samples t -tests were conducted to answer the gender research question. Statistically significant differences were revealed for male students in their first term GPA, $U = 2529869.00$, $P < .001$ and Cohen's $d = 0.33$. Using Cohen's [29] criteria, this finding represented a small effect size. Male students who completed dual credit classes prior to college had statistically significantly higher GPAs than did male nondual credit students. Statistically significant differences were also yielded for female students' first term GPAs, $U = 2750244.50$, $P < .001$, and Cohen's $d = 0.20$, small effect size [29]. Female students who completed dual credit classes prior to college had statistically significantly higher GPAs than did female nondual credit students.

Regarding the third research question, sample sizes, means, and standard deviations pertaining to term GPA between dual credit students and nondual credit students by ethnicity are listed in Table 1. Prior to conducting inferential statistics, checks were conducted to determine if the data were

normally distributed. Regarding the underlying distribution of term GPA between dual credit students and nondual credit students by ethnicity, the standardized skewness coefficients and the standardized kurtosis coefficients were calculated. Four of the six coefficients were outside of the range of normality (i.e., ± 3 , [28]).

A Mann-Whitney's U independent samples t -test was conducted to answer this specific research question. Statistically significant differences were present for White students' first term GPAs, $U = 6910190.50$, $P < .001$, and Cohen's $d = 0.25$, a small effect size [29]. White students who completed dual credit classes prior to college had statistically significantly higher GPAs than did White nondual credit students. For Black students, the result was also statistically significant, $U = 28491.00$, $P = .016$, and Cohen's $d = 0.32$, a small effect size [29]. Black students who completed dual credit classes prior to college had statistically significantly higher GPAs than did Black nondual credit students. Statistically significant differences were not revealed for Asian students' first term GPAs, $U = 1308.50$, $P = .39$.

Regarding the fourth research question sample sizes, means, and standard deviations pertaining to cumulative two-year GPA between dual credit students and nondual credit students are listed in Table 2. Prior to conducting inferential statistics, checks were conducted to determine if the data were normally distributed. All standardized coefficients were well within the range of normality (i.e., ± 3 , [28]). Accordingly, a parametric independent samples t -test was conducted to answer the research question. A statistically significant difference was not revealed in cumulative two-year GPAs, an independent samples t -test revealed a finding that was not statistically significant, $t(327.18) = -1.31$, $P = .19$. As depicted in Table 2, similar cumulative GPAs were present for students who had been enrolled in dual credit and for students who had not been enrolled in dual credit.

4. Discussion

Over 15,000 records were used for the research questions. Students who completed dual credit classes prior to college did statistically significantly better, albeit a small effect size, than nondual credit students with the dual credit students obtaining a higher GPA than nondual credit students. In this study, gender did not make a difference in dual credit success. Both male and female dual credit students had statistically significantly higher GPAs than did male and female nondual credit students. Moreover, White and Black dual credit students performed statistically significantly better, obtaining a higher GPA, than White nondual credit students in obtaining a higher GPA. As with the previous results, the effect size was small. After analyzing the data for effect of dual credit on student success for Asian students in a Texas community college, no statistically significant findings were yielded. An explanation for this result may be that the sample size of Asian students was limited ($n = 15$) in this community college. It may be that Asian students who enroll in dual credit courses tend to enroll in 4-year institutions more often than in 2-year

TABLE 1: Descriptive statistics for term GPA for dual credit students and nondual credit students enrolled in a Texas Community College.

Variable	<i>n</i>	<i>M</i>	SD
End of first semester			
Dual credit	1,785	2.52	0.98
Nondual credit	13,851	2.23	1.11
Male			
Dual credit	824	2.45	1.00
Nondual credit	7,481	2.10	1.12
Female			
Dual credit	961	2.58	0.96
Nondual credit	6,370	2.38	1.10
White			
Dual credit	1526	2.56	0.96
Nondual credit	10,409	2.31	1.10
Black			
Dual credit	56	1.96	1.08
Nondual credit	1,256	1.62	1.07
Asian			
Dual credit	15	2.71	1.08
Nondual credit	201	2.52	1.08

TABLE 2: Descriptive statistics for cumulative two-year GPA between dual credit students and nondual credit students enrolled in a Texas Community College.

Variable	<i>n</i>	<i>M</i>	SD
Dual credit	172	2.79	0.48
Nondual credit	554	2.74	0.56

institutions. Research is needed to clarify these hypotheses for Asian students.

As noted, small effect sizes were present for our statistically significant results. These results are most likely due to the fact that most of the students who enter community colleges are similar in ability regardless of dual credit status. Moreover, many students who may have enrolled in dual-credit courses and had higher GPAs may have transferred more rapidly to a 4-year college. No statistically significant findings for students after two years could be due to the fact that community college students who do well in a Texas community college transfer to a 4-year college as soon as they can. This hypothesis is one that needs to be verified by future research. Another explanation is that our sample size of dual credit students with cumulative GPAs was small. Additional research with a larger sample of dual credit students is warranted.

Future research is needed on enrollment in dual credit courses because information is lacking on the extent to which ethnic and gender differences might be present in dual credit enrollment. Currently, the underrepresentation of males in higher education settings and the overrepresentation of White students in comparison to students of color should be a focus of concern. Schools in rural areas, students with limited English proficiency, and comparisons to students enrolled in

AP courses are all potential areas of research with respect to dual credit.

In summary, results of this study provide evidence that students who enrolled in dual credit courses while in high school have higher first term GPAs than do students who did not enroll in dual credit courses. Though more studies of this type are needed to verify our results, we encourage students to consider taking dual credit courses. Furthermore, we encourage school district administrators to provide opportunities to their students to take dual credit courses.

References

- [1] M. M. Karp and K. L. Hughes, "Supporting college transitions through collaborative programming: a conceptual model for guiding policy," *Teachers College Record*, vol. 110, no. 4, pp. 838–866, 2008.
- [2] M. W. Kirst, "The high school/college disconnect," *Educational Leadership*, vol. 62, no. 3, pp. 51–55, 2004.
- [3] J. Lerner and B. Brand, "The college ladder: linking secondary and postsecondary education for success for all students," 2006, <http://www.aypf.org/publications/The%20College%20Ladder/TheCollegeLadderlinkingsecondaryandpostsecondaryeducation.pdf>.
- [4] C. Adelman, *The Tool Box Revisited: Paths to Degree Completion from High School Through College*, U.S. Department of Education, Washington, DC, USA, 2006.
- [5] D. Bragg, E. Kim, and M. Rubin, "Academic pathways to college: policies and practices of the fifty states to reach underserved students," in *Proceedings of the Annual Meeting of the Association for the Study of Higher Education*, Philadelphia, Pa, USA, November 2005, <http://www.apass.uiuc.edu/publications/papers.htm>.
- [6] H. A. Andrews, "Lessons learned from current state and national dual-credit programs," *New Directions for Community Colleges*, vol. 111, pp. 31–39, 2000.
- [7] M. Karp, J. Calcagno, K. L. Hughes, D. Jeong, and T. R. Bailey, "The postsecondary achievement of participants in dual enrollment: An Analysis of Student Outcomes in Two States," Tech. Rep. ED498661, Community College Research Center, Columbia University, 2007.
- [8] K. Boswell, "State policy and postsecondary enrollment options: creating seamless systems," *New Directions for Community Colleges*, vol. 113, pp. 7–14, 2001.
- [9] R. W. Clark, *Dual Credit: A Report of Programs and Policies That Offer High School Students College Credits*, University of Washington: Institute for Educational Inquiry, Seattle, Wash, USA, 2001.
- [10] C. M. Frazier, *Dual Enrollment: A Fifty-State Overview*, University of Washington: Institute for Educational Inquiry, Seattle, Wash, USA, 2000.
- [11] N. Hoffman, *Add and Subtract: Dual Enrollment as a State Strategy to Increase Postsecondary Success for Underrepresented Students*, Jobs for the Future, Boston, Mass, USA, 2005.
- [12] N. S. Kleiman, "Building a highway to higher ed: how collaborative efforts are changing education in America," Center for Urban Future, 2001, <http://www.nycfuture.org/>.
- [13] R. A. Mead, *A comparison of the enrollment and academic success of dual credit and non-dual credit students at Des Moines Area Community College [doctoral dissertation]*, Iowa State University, Ames, Iowa, USA, 2009.

- [14] Texas Higher Education Coordinating Board, "Dual credit—frequently asked questions," 2010, <http://www.theCB.state.tx.us/index.cfm?objectid=6363B260-FBB8-C8E6-1AEED-A05F8ACE4A4>.
- [15] American Institutes for Research, "Research Study of Texas Dual Credit Programs and Courses," Submitted to the Texas Education Agency, 2011, http://www.tea.state.tx.us/index2.aspx?id=276&mnu_id=692.
- [16] D. Smith, "Why expand dual-credit programs?" *Community College Journal of Research and Practice*, vol. 31, pp. 371–387, 2007.
- [17] H. A. Andrews, "The dual-credit explosion in Illinois community colleges," ERIC Database ED447851, 2000.
- [18] H. A. Andrews, "Dual credit research outcomes for students," *Community College Journal of Research and Practice*, vol. 28, pp. 415–422, 2004.
- [19] 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.
- [20] P. Gertge, "Analyses of dual credit in rural eastern Colorado," *Community College Journal of Research and Practice*, vol. 32, pp. 549–558, 2008.
- [21] 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, pp. 199–213, 2005.
- [22] H. Burns and B. Lewis, "Dual-enrolled students' perceptions of the effect of classroom environment on education experience," *The Qualitative Report*, vol. 4, no. 1/2, 2000, <http://www.nova.edu/ssss/QR/QR4-1/burns.html>.
- [23] R. Marshall and H. Andrews, "Dual-credit outcomes: a second visit," *Community College Journal of Research and Practice*, vol. 26, pp. 237–242, 2002.
- [24] 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.
- [25] B. Townsend, D. Carr, and R. Scholes, "A comparison of transfer and native students' academic performance in a teacher education program," in *Proceedings of the 2nd Biennial Transfer and Articulation Conference*, ERIC database. (ED480570), Tampa, Fla, USA, July 2003.
- [26] P. Schuetz, "Successful collaborations between high schools and community colleges," ERIC Digest ED451856, ERIC Clearinghouse for Community Colleges, 2000.
- [27] J. Correa and K. Kouzekanani, "Impact of participation in dual enrollment on persistence and academic achievement at a community college," in *Proceedings of the Annual Convention of the American Educational Research Association*, New Orleans, La, USA, April 2011.
- [28] A. J. Onwuegbuzie and L. G. Daniel, "Uses and misuses of the correlation coefficient," *Research in the Schools*, vol. 9, no. 1, pp. 73–90, 2002.
- [29] J. Cohen, *Statistical Power Analysis for the Behavioral Sciences*, Lawrence Erlbaum, Hillsdale, NJ, USA, 2nd edition, 1988.

