MEMORANDUM   September 24, 2019

TO: Michael Love
             Assistant Superintendent, Career Readiness

FROM: Carla Stevens
             Assistant Superintendent, Research and Accountability

SUBJECT: **DUAL CREDIT REPORT, 2018–2019**

Dual Credit courses are offered in several instructional and program arrangements including international baccalaureate, advanced placement, and articulated postsecondary courses designed for advanced technical credit in the Houston Independent School District (HISD). The purpose of this evaluation was to determine the effect of dual credit enrollment on the academic performance of HISD high school students using results from the 2019 State of Texas Assessments of Academic Readiness (STAAR) Algebra I, Biology, English I, English II, and U.S. History End-of-Course (EOC) tests. The percentage of dual credit students relative to their non-dual credit peers who met the Approaches Student Standard was provided and disaggregated by key demographic and educational variables. Multiple regression was used to determine key demographic and educational predictors of performance on the 2019 STAAR EOCs. The college enrollment status of dual credit students from the class of 2017 was also provided.

Key findings include:
- Student enrollment in dual credit courses resulted in increases of 142.9 (U.S. History) to 412.6 (English I) scale score points (ssp) on the 2019 STAAR EOC assessments, compared to students who were not enrolled in dual credit courses.
- Compared to their peers who were not enrolled in dual credit courses for the 2018–2019 school year, a higher percentage of students who were enrolled in dual credit courses met the Approaches, Meets, and Masters Student Standards on the 2019 STAAR Algebra I, Biology, English I, English II, and U.S. History EOC assessments.
- Dual credit enrollment was a positive predictor of students' performance on the 2019 STAAR EOC assessments. The regression models explained between 23.9 and 56.4 percent of the variance in students' scale scores on the 2019 STAAR EOC assessments.
- Other statistically significant positive predictors of students' performance on the 2019 STAAR EOC included being identified as gifted and talented (G/T) (Algebra I, Biology, English I, English II, U.S. History), being a White student (Biology, English and U.S. History), being an Asian student (Algebra I, Biology, English I, English II, and U.S. History), and being enrolled in a career and technical education (CTE) course (Algebra I, Biology, and English II).
- The strongest but inverse predictor for each EOC test result was being at risk for school dropout. It predicted between -22.3 percent and -31.0 percent of the variance in students' performance on the 2019 STAAR EOC tests.
- Among the 1,004 dual credit students who graduated in 2016–2017, about 70 percent (712) were found to have enrolled in college by January 2018 compared to 53.1 percent of graduates who did not take a dual credit course their senior year.

- Overall, among the 1,004 HISD dual credit students from who graduated in 2016–2017 and were enrolled in college, 30.5 percent were enrolled in 2-year institutions compared to 69.5 percent for those enrolled in 4-year institutions.

Further distribution of this report is at your discretion. Should you have any questions, please contact me at 713-556-6700.

_CJS

Attachment

cc: Grenita Lathan
    Silvia Trinh
    Rick Cruz
    Montra Rogers

HOUSTON INDEPENDENT SCHOOL DISTRICT

RESEARCH
Educational Program Report

DUAL CREDIT REPORT: STUDENT ENROLLMENT, PERFORMANCE, AND PROGRAM EFFECTS, 2018-2019

HISD | Research and Accountability

ANALYZING DATA, MEASURING PERFORMANCE.

Dual Credit Report: Student Enrollment, Performance, and Program Effects, 2018–2019

Executive Summary

Dual credit courses are legislated course enrollment options available to ninth- to twelfth-grade students in the State of Texas. The dual credit program provides the opportunity for all high school students, regardless of grade level, to earn college credits while working toward a high school diploma (Houston ISD, 2018). There is no limit to the number of dual credit courses or hours students can take in a single semester or school year (Houston ISD, 2018). Dual credit is offered in several instructional and program arrangements, including international baccalaureate, advanced placement, and articulated postsecondary courses designed for advanced technical credit in the Houston Independent School District (HISD).

The purpose of the evaluation was to determine the effect of dual credit enrollment on the academic performance of HISD students using results from the 2019 State of Texas Assessments of Academic Readiness (STAAR) Algebra I, Biology, English I, English II, and U.S. History End-of-Course (EOC) assessments. Scale scores for dual credit and non-dual credit students were subject to treatment effects with regression adjustment to determine dual credit effects. The percentage of dual credit students relative to their non-dual credit peers who met the Approaches Student Standard was provided and disaggregated by key demographic and educational variables. Multiple regression was used to determine key demographic and educational predictors of performance on the STAAR EOCs.

Highlights

- Student enrollment in dual credit courses in 2018–2019 resulted in higher scale score points (ssp), 142.9 (U.S. History) to 412.6 (English I), on the 2019 STAAR EOC assessments, compared to students who were not enrolled in dual credit courses.

- Compared to their peers who were not enrolled in dual credit courses for the 2018–2019 school year, a higher percentage of students who were enrolled in dual credit courses met the Approaches, Meets, and Masters Student Standards on the 2019 STAAR Algebra I, Biology, English I, English II, and U.S. History EOC exams.

- Dual credit enrollment was a positive predictor of students' performance on the 2019 STAAR EOC assessments. The regression models explained between 23.9 and 56.4 percent of the variance in students' scale scores on the 2019 STAAR EOC assessments.

- Other statistically significant positive predictors of students' performance on 2019 STAAR EOC exams included gifted and talented (Algebra I, Biology, English I, English II, U.S. History), being a White student (Biology, English and U.S. History), being an Asian student (Algebra I, Biology, English I, English II, and U.S. History), and being enrolled in career and technical education (CTE) courses (Algebra I, Biology, and English II).

- The strongest, but inverse predictor for each EOC was being at risk for school dropout. It predicted between -22.3 percent and -31.0 percent of the variance in students' performance on the STAAR EOC tests.

- About 70.9 percent of dual credit students who graduated in 2017 were enrolled in a higher education institution by January 2018 compared to 53.1 percent of graduates who did not take a dual credit course their senior year.

- About 69.5 percent of students of 2017 dual-credit graduates who enrolled in college were enrolled at four-year higher education institutions and 30.5 percent were enrolled in two-year higher education institutions. This exceeded the district's rate at four-year institutions of 57.3 percent of graduates who enrolled in college.

Recommendations

- Because of the statistically significant effect of dual credit enrollment on student performance in HISD, the district should continue to promote dual credit as a viable option for improving STAAR EOC performance, attaining college credits, industry-recognized credentials, certificates, or associate degrees, and to prepare students for the rigorous academic experiences of college.

- While at-risk students enrolled in dual credit courses outperformed their peers who were not enrolled, being at risk for school dropout was the strongest but inverse predictor of students' performance on the 2019 STAAR EOC assessment. Additional support may be required to mitigate impact of the program on students' performance and further improve the performance of dual credit students who are at risk for school dropout.

Introduction

In accordance with Section 28.009 of the Texas Education code (TEC) regarding College Credit Programs, the Houston Independent School District (HISD) makes provision for students to earn the equivalent of at least 12 semester hours of college credit while in high school (Texas Education Code, 2006). Such provision is made through (1) international baccalaureate, advanced placement or dual credit courses; (2) articulated postsecondary courses provided for local credit or articulated postsecondary advanced technical credit courses provided for state credit; or (3) any combination of the courses just described (Texas Education Code, 2006). Texas Higher Education Coordinating Board (THECB) approves all dual credit courses in the State of Texas. Students eligible for enrollment in "core academic courses awarding dual credit...must demonstrate college readiness on one of the Texas Success Initiative (TSI) assessments, which consists of reading, writing, and mathematics tests" (Houston ISD, 2018, p. IX-11). Where Career and Technical Education (CTE) dual credit courses are part of an Entry Level or Level 1 postsecondary certificate, students are not required to demonstrate TSI readiness (Houston ISD, 2018). There is no limit to the number of dual credit courses or hours students can take within a school semester or school year (Houston ISD, 2018).

HISD offers dual credit courses in collaboration with Houston Community College (HCC), a public higher education institution. Under agreements with HISD and as stipulated by the education code, HCC assists HISD in the development and implementation of its dual credit program. HCC selects dual credit instructors in accordance with the education code. Funding for the dual credit program is determined once documentation of the agreement and between the collaborating district and college are confirmed, and the other requirements are met (Houston ISD, 2018).

HISD campuses interested in offering dual credit courses contact the district's College Readiness Department, which meets with the "campus and postsecondary staff to discuss and agree on course crosswalks, teacher credentialing, and master and student scheduling necessary to offer the courses requested" (Houston ISD, 2018, p. IX–11). "All requests for academic dual credit must be approved by the appropriate HISD curriculum manager" (Houston ISD, 2018, p. IX–11). HISD and HCC will determine, collaboratively, whether the instruction is delivered by a high school or college instructor. Non-dual credit courses must be offered simultaneously with dual credit courses to accommodate students who need to be removed from a dual credit course. Such withdrawal decisions must be made in collaboration with students and their families. HISD students who receive a grade of 70 or better are awarded high school credit regardless of what the HCC passing grade may be (Houston ISD, 2018, p. IX–12).

The purpose of this study was to identify the number of students who were enrolled in dual credit programs in HISD for the 2018–2019 school year, to evaluate the performance of students who were enrolled in these programs, and to measure the program effects on the State of Texas Assessments of Academic Readiness (STAAR) End-of-Course (EOC) assessments. Additionally, the study identified key variables that predicted students' performance on the STAAR EOC assessments.

Literature Review

The initial intent of dual credit was to provide "more challenging curricula for academically prepared high school students" (Kim, Kirby, & Bragg, 2006). As dual credit programs spread throughout academic institutions in the United States, its targets changed. In Syracuse University's Project Advance, the program targeted mostly high academic achievers in the early to mid-1980s. Beginning in 1974 in New York's LaGuardia Community College, the focus of the dual credit programs was on high school students at risk for school dropout (Kim, Kirby, & Bragg, 2006). Students who were not traditionally college bound with an

expected high school diploma as their terminal qualification were targeted for dual credit in the Partners in Progress program at the Florida International College which commenced in 1982. The program, which began in the City University of New York in 1984, was designed to help students meet high school graduation requirements and to prepare for college success. It focused on average achievers between the 65th and 80th percentile rank in high school (Kim, Kirby, & Bragg, 2006).

Research confirmed that dual credit was one way to facilitate the transition of an increasing number of underserved students to college (Hoffman as cited in Kim, Kirby & Bragg, 2006, p. 3). Allowing high school students to complete even a single college class could significantly enhance their chances of attending college and eventually graduate (Struhl & Vargas, 2012). Using longitudinal data after six years of graduation among Texas high school students, Struhl and Vargas (2012) found that high school dual credit enrollees who had completed a college course prior to graduation were 50 percent more likely to earn a college degree from a Texas university within six years compared to their peers who were not dual enrollees.

Further, dual credit students who completed college courses were more likely to attend college, persist in college, and complete at least an associate degree within six years (Struhl & Vargas, 2012). This finding was true for all racial groups and low-income students. Dual enrollment students from low-income families in Texas were more likely to attend a four-year college after high school (Struhl & Vargas, 2012). While these appear to be correlated, it does not address the influence of family in students' persistence in dual credit programs or college.

Mansell and Justice (2014) found that "incentives and challenges" were the frequent reason students gave for their enrollments in dual credit courses. The incentives included earning a college credit and financial savings on college tuition. Students' challenges included the level of rigor provided by early college experiences, which helped students to adjust with college-level expectations. Early college students cited personal hinderances as reasons for their non-enrollment in dual credit courses. The study involved 139 students in traditional vs. early college in Texas, using a Flanagan's Critical Incident Technique (CIT)[1] (Mansell & Justice, 2014).

Dual credit had positive effects on student outcomes particularly among early college high school students (Haskell, 2016). The study measured the effect on dual credit enrollment and early college high school on Utah public education. Dual credit acquisition had positive economic effects on the accumulation of higher education course credits. It reduced time-to-completion and resulted in "measurable household and state level savings" (p. 54). The study however did not consider the effects of the structure of higher education courses and programs and the challenges for student decision-making in higher education (Haskell, 2016).

Giani, Alexander, and Reyes indicated that dual credit was "a promising strategy for increasing students' likelihood of accessing, persisting through, and completing a postsecondary degree" and advanced coursework (2014, p. 200). Their suggestion was based on a longitudinal study of a cohort of Texas high school students, statewide, who were tracked through their transition to postsecondary education statewide.

Leonard-Foot and Lumadue (2014) found significant differences in the median grade-point average (GPA) of students in universities with 12 or more dual credits compared to those who were similarly enrolled without credits. Students with 12 or more dual credits had a higher GPA. The study involved 2,062 Texas high school students, randomly selected and grouped equally into those who had attained 12 dual credits and those who had not attained any credits. All participants in the sample were first-year students enrolled

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[1] CIT is a procedure for gathering certain important facts concerning behavior in certain defined situations. It is an observation technique that identifies and documents incidents with special significance in decision making or performing an act. Its intent and effects must be clear to the observer (Flanagan, 1954)

in a four-year Texas university. Students' first year GPA was the outcome (Leonard-Foot & Lumadue, 2014).

Overall, based on the foregoing, dual credit is associated with access to higher education, higher GPA, college persistence, and reduced time to college completion. It is also associated with the reduction in the overall cost of higher education. While studies in HISD have not looked at the transition to higher education, persistence, and time to graduate, they have demonstrated the effectiveness of dual credit enrollment on students' performance (HISD Research and Accountability, 2017, 2018). The purpose of this study is to determine the impact of dual credit enrollment on students' performance using the 2019 State of Texas Assessments of Academic Readiness (STAAR) End-of-Course (EOC) assessment results. The study will also analyze college enrollment for the dual credit students from the Class of 2017, the most recent year for which data was available.

 The evaluation was guided by the following questions:

1. What was the academic and demographic composition of dual-credit students in the study sample?

2. How did a sample of HISD students enrolled in dual credit courses perform on the 2019 STAAR EOC assessments relative to their peers who were not enrolled in dual-credit courses?

3. What were the effects of the dual credit program on the 2019 STAAR EOC performance of student enrollees?

4. What factors predicted the performance of HISD dual credit students on the 2019 STAAR EOC assessments?

5. What was the college enrollment status of the class of 2017 dual credit students?

Method

This is a quasi-experimental study designed to determine the effect of dual credit enrollment on the 2019 STAAR EOC assessments using treatment effects with regression adjustment (teffects ra). Treatment effect is the average causal effect of a binary (0-1) variable on a scientific or policy outcome variable. In this study, 1 is the treatment or dual credit group, and 0 is the control or non-dual credit group. Treatment effect corrects for selection bias and the missing or confounding variable problem. Confounding variables are unknown factors that can distort the effect of a treatment, exposure, or intervention on an outcome, in this case student performance (Skelly, Dettori, & Brodt, 2012). Unknown factors make it a challenge to link an intervention to results unless appropriate measures like teffects ra are used (Skelly, Dettori, & Brodt, 2012).

Students who were enrolled in a dual credit course for the 2018–2019 school year constituted the treatment group and those who were not enrolled in dual credit courses were the control group. It is assumed that all students had the opportunity to enroll in dual credit courses or that enrollment was open to all students. Students who had a STAAR EOC score in Algebra I, Biology, English I, English II, and U.S. History were included in the study sample. The study also tracked the college enrollment of dual credit students who constituted the class of 2017, that is, students who were enrolled in a dual credit course during their senior year. College enrollment data has a one-year lag. College enrollment data for the class of 2018 were not yet released.

Data Collection

The list of students enrolled in dual credit courses was downloaded from the HISD Chancery Ad hoc using Cognos. Cognos is an International Business Machines Corporation (IMB) data querying platform linked to the HISD data warehouse for querying and retrieving data and information. Students' demographic and educational attributes were also downloaded from the Public Education Information Management System

(PEIMS) stored in the HISD Research and Accountability Microsoft Access Archival database. Similarly, STAAR EOC data stored on the Microsoft Access database was downloaded. All three datasets were linked using unique student identification numbers. PEIMS data identified 7,115 ninth- to twelfth-grade students who were enrolled in dual credit courses during the 2018–2019 school year. Data were tested for evidence of linearity, homoscedasticity, and normality using Kolmogorov-Smirnov statistic and Normal Q-Q (normal probability plots) and Detrended Normal Q-Q plots. Missing data were treated to pairwise exclusion. When linked, the final sample was 7,062 dual credit students. Students enrolled in dual credit courses needed to have at least one scored EOC assessment to be included in the sample. Non-dually enrolled students were included as the control group, which totaled 55,255 students. College enrollment data from the National Student Clearinghouse (NSC) were linked to dual credit data using unique student identifiers. NSC data for HISD students were retrieved from the Research and Accountability Department Microsoft Access archival database.

Data Analysis

Students' assessment data were subject to teffects ra estimators. Teffects ra is a Stata command which runs separate regressions for each treatment level, in this case, students who were enrolled in dual credit courses and those who were not. It calculates the predicted means of the assessment results for each EOC by treatment levels (potential outcome means (POM)) and uses the difference in the means for each subject in the study by treatment level to estimate the program or intervention effects. The average treatment effect (ATE) is used in this study. It is the average performance of any students selected at random from the sample if those students were to enroll in a dual credit course. Teffects were regressed using key demographic and educational variables, including gender, ethnicity, limited English proficiency (LEP), special education, gifted and talented (G/T), at risk, career and technical education (CTE), and economic status. The results of the analysis are presented in tables and graphs.

The percentage of students in the sample who met the Approaches, Meet, and Masters Student Standards by EOC courses were also presented. Data on students who met the Approaches Student Standard on each EOC assessment was further disaggregated by student demographic and educational variables, and dual and non-dual credit students were compared. The demographic and educational composition of students in the sample were compared by dual and non-dual credit enrollees. Multiple regressions were conducted to identify key demographic and educational predictors on STAAR EOC performance for students in the sample. The unstandardized coefficients and standardized coefficient (Beta) were presented. Beta is used to compare the strength and direction of predictors.

The college enrollment status of dual credit graduates and the institutional level at which they were enrolled, by high school attended, are also presented in this study. Dual credit students for the 2016–2017 school year were identified as those in a dual credit course during their senior year. Students who took a dual credit course privately were not included in the 2016–2017 figures.

Limitations

- Attainment of college credit and enrollment is a primary objective of the dual credit program. Concurrent college enrollment data for the student cohort in this study is unavailable. There is a publication lag for this data and so it is not possible to include that information in this study. Therefore, a prior cohort was used in this analysis.

- It is assumed that students self-selected into dual credit course enrollment. A quasi-experimental study was undertaken using teffects command in STATA to determine the enrollment effect.

- HISD implemented several programs designed to improve students' performance during the school year. Dual Credit students may have been exposed to these programs. The impacts of these programs

were not controlled for in this study. Multiple regression was used to, however, determine the predictive power of dual credit enrollment on student performance.

Results

What was the academic and demographic composition of dual-credit students in the study sample?

Figure 1 shows the composition of students in the dual-credit sample. The sample consisted of 7,062 dual credit students and 55,255 non-dual credit students.

Figure 1. Academic and Demographic Percentage Composition of the Dual-Credit Enrollment Study Sample, 2018–2019

	Gender		Ethnicity				G/T		LEP		Special Ed.		CTE		At Risk		Econ. Disadv.	
	Fem.	Male	Asian	Black	Hisp.	White	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes
Dual Credit	58.3	41.7	2.6	22.2	71.0	3.4	69.5	30.5	95.6	4.4	98.7	1.3	5.9	94.1	67.7	32.3	18.2	81.8
No Dual Credit	50.0	50.0	3.8	23.5	61.7	9.6	83.8	16.2	79.8	20.2	92.6	7.4	19.0	81.1	38.7	61.3	23.1	76.9
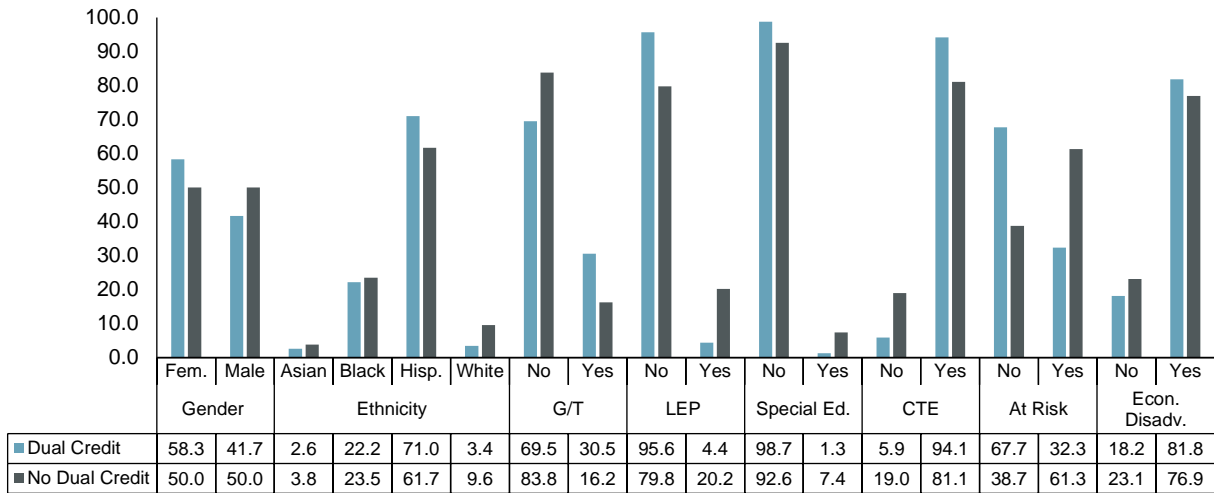
Note: Fem = Female, Hisp. = Hispanic; G/T = gifted and talented; LEP = limited English proficiency; Special Ed = Special education; TE = Career & Technical Education.
Source: HISD Research and Accountability Chancery Ad hoc Microsoft Access archival databases.

- A higher percentage of female than male students were enrolled in the dual credit programs in HISD.

- There were higher percentages of Hispanic students in the dual credit group compared to students in the non-dual credit group (71 vs. 61.7%), but higher percentages of Asian (3.8 vs. 2.6%); Black (23.5 vs. 22.2%) and White (9.6 vs. 3.4%) students in the non-dual credit group.

- There were higher percentages of students identified as G/T (30.5 vs. 16.2%) and a lower percentage of student identified as LEP (4.4 vs. 20.2%), special ed. (1.3 vs. 7.4%), and at-risk (32.3 vs 61.3%) in the dual credit group compared to students in the non-dual credit group.

- A larger percentage of students enrolled in CTE courses (94.1%), compared to students who were not enrolled in CTE courses (5.9%), made up the dual-credit group.

- A larger percentage of economically-disadvantaged students in the dual credit group (81.8%), compared to similar students in the non-dual credit group (76.9%), comprised the sample.

How did a sample of HISD students enrolled in dual credit courses perform on the 2019 STAAR EOC assessments relative to their peers who were not enrolled in dual-credit courses?

Figure 2 displays the proportion of dual credit students compared to non-dual credit students in the sample who met the Approaches, Meets, and Masters Student Standards on the 2019 STAAR EOC assessments.

Figure 2. Comparative Performance of Dual Credit and Non-Dual Credit Students on the STAAR EOC Assessments by Course and Standards, 2018–2019

	\<Approaches\>					\<Meets\>					\<Masters\>				
	A1	BI	E1	E2	US	A1	BI	E1	E2	US	A1	BI	E1	E2	US
Non-Dual Credit	75.0	83.7	64.1	67.8	90.0	44.0	54.8	50.4	52.2	67.7	21.2	20.0	13.1	8.6	39.0
Dual Credit	99.0	99.5	98.2	94.8	99.1	81.8	92.2	93.3	86.6	89.6	46.7	42.4	25.4	17.9	58.1
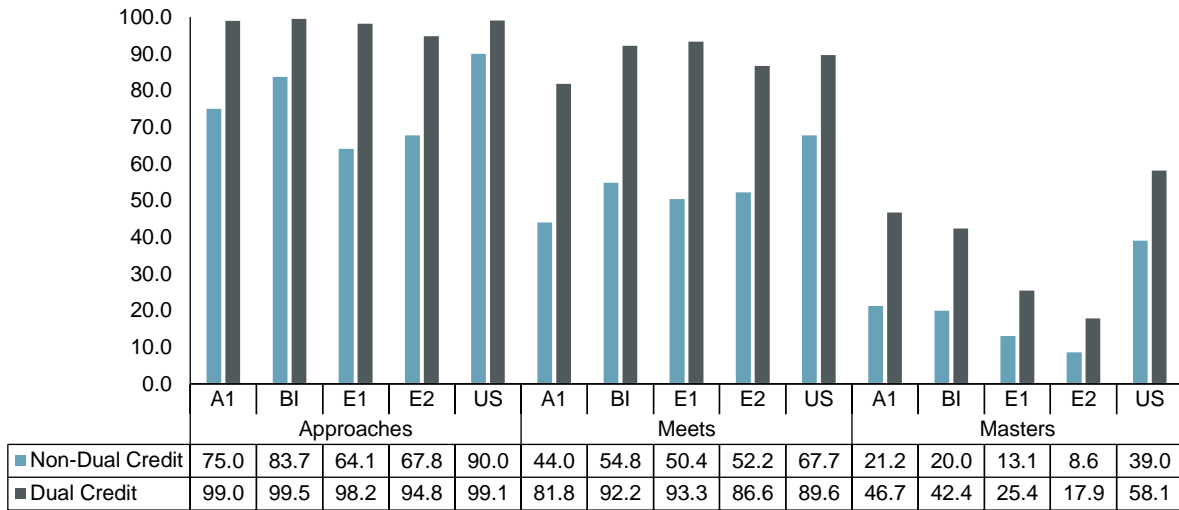
Note: A1 = Algebra I; BI = Biology: E1 = English I; E2 = English II; and US = U.S. History
STAAR regular, first-time testers, paper and online administration
Source: HISD Research and Accountability Department Microsoft Access archival database on STAAR EOC.

- A higher percentage of students in the sample who were enrolled in dual credit courses compared to students who were not enrolled in dual credit courses met the Approaches, Meets, and Masters Student Standards on the 2019 STAAR Algebra I, Biology, English I, English II, and U.S. History EOC assessments.

- The largest gap in performance at the Approaches Student Standard was with respect to the 2019 STAAR English I and English II EOC assessments (34.1 and 29.0 percentage points, respectively), in favor of students who were enrolled in dual credit courses during the 2018–2019 school year.

- Between 81.8 (Algebra I) and 93.3 (English I) percent of dual credit students met the Meets Student Standard on the 2019 STAAR EOC assessments. Between 44.0 (Algebra I) and 67.7 (US. History) percent of non-dual credit students met the same Standard.

- Up to 58.1 percent (U.S. History) of dual-credit students met the Masters Student Standard on the 2019 STAAR EOC assessments compared to 39.0 percent (U.S. History) for students who were not enrolled in dual credit courses.

Table A1 (**Appendix A**, p. 14) displays the performance of students in the sample disaggregated by key demographic and educational variables, including gender, race and ethnicity, G/T, special education, LEP, career and technical education enrollment, at-risk, and economic status. The table shows the percentage of students in the sample (dual and non-dual credit enrollees) who met the Approaches Student Standard on the 2019 STAAR EOC assessments.

- Higher percentages of dual credit students in all subgroups identified in this study, compared to their non-dual credit peers, met the Approaches Student Standard on the five 2019 STAAR EOC tests. Details are on Table A1 (Appendix A, p. 14).

- Higher percentages of female and male students in the dual credit group, compared to their counterparts in the non-dual credit group, met the Approaches Student Standard on the five 2019 STAAR EOC tests. Details are on Table A1 (Appendix A, p. 14).

- All White dual credit students (100%) met the Approaches Student Standard on all the 2019 STAAR EOC tests. All Asian dual credit students (100%) in the sample met the Approaches Student Standard on three 2019 STAAR EOC assessments, except U.S. History. All Black dual credit students (100%) in the study met the Approaches Student Standard in Algebra I. Details are on Table A1 (Appendix A, p. 14).

- A higher percentage of dual credit G/T students, compared to their non-dual credit counterparts, met the Approaches Student Standard on the five 2019 STAAR EOC tests. Similar relationships were observed for non-G/T students in the study. Details are on Table A1 (Appendix A, p. 14).

- The dual credit White–Black performance gaps at the Approaches Student Standard ranged from 0 percentage points for Algebra I to 7.9 percentage points for English II. The other gaps ranged from 1.4 (Biology) to 2.0 (U.S. History) percentage points.

- The dual credit White–Hispanic gaps in performance at the Approaches Student Standard ranged from 0.3 percentage points (Biology) to 4.9 percentage points (English II).

What were the effects of the dual credit program on the 2019 STAAR EOC performance of student enrollees?

Tables B1 to **Table B5 (Appendix B,** pp. 15–16) show the effects of dual credit enrollment on students' STAAR Algebra I, Biology, English I, English II, and U.S. History EOC assessment results.

- Student enrollment in dual credit courses resulted in a 280.4 scale score points (ssp) increase in performance on the 2019 STAAR EOC Algebra I assessment, compared to the performance of students who were not enrolled in dual credit courses (POM = 3934.3). The difference was statistically significant $z(9,455) = 7.2$, *p<.001*. Details are on Table B1 (Appendix B, p. 15).

- Student enrollment in dual credit courses resulted in a 241.9 ssp increase in performance on the 2019 STAAR Biology EOC assessment, compared to the performance of students who were not enrolled in dual credit courses (POM = 4105.9). The difference was statistically significant, $z(12,940) = 14.8$, *p<.001*. Details are on **Table B2** (Appendix B, p. 15).

- Student enrollment in dual credit courses resulted in a 412.6 ssp increase in performance on the 2019 STAAR English I EOC assessment, compared to the performance of students who were not enrolled in dual credit courses (POM = 3990.0). The difference was statistically significant, $z(12,715) = 21.6$, *p<.001*. Details are on **Table B3** (Appendix B, p. 15).

- Student enrollment in dual credit courses resulted in a 268.8 ssp increase in performance on the 2019 STAAR English II EOC assessment, compared to the performance of students who were not enrolled

in dual credit courses (POM = 4037.4). The difference was statistically significant, $z(13,427) = 21.4$, *p<.001*. Details are on **Table B4** (Appendix B, p. 16).

- Student enrollment in dual credit courses resulted in a 142.9 ssp increase in performance on the 2019 STAAR U.S. History assessment, compared to the performance of students who were not enrolled in dual credit courses (POM = 4304.3). The difference was statistically significant, $z(13,775) = 13.2$, *p< 001*. Details are on Table B5 (Appendix B, p. 16).

What factors predicted the performance of HISD dual-credit students on the 2019 STAAR EOC assessments?

Table C1 to **Table C5** (**Appendix C**, pp. 17–19) display the performance predictors for students in the dual credit sample by STAAR EOC assessments using scale scores. Fourteen predictors (key demographic and educational variables) including dual credit enrollment, at-risk, special education, English learners, LEP, G/T, Career and Technical Education (CTE), economically disadvantaged, Asian, African American, Hispanic, White, Native Hawaiian/Pacific Islander, and American Indian/Alaskan Native were used as independent predictors in each model.

Algebra I

- The regression model predicted 23.6% ($R^2 = 0.236$) of the variance in performance on the 2019 STAAR Algebra I EOC assessment in the dual credit sample. The constant or mean was 4144.17 ssp. The constant was statistically significant (*p<.001*). Details are on Table C1 (Appendix C, p. 17).

- Six of the variables in the model were statistically significant predictors of performance for students in the sample, including at risk (-0.272), special education, (-0.193), and G/T (0.169). Details are on Table C1 (Appendix C, p. 17).

- Enrollment in CTE (0.088) and dual credit (0.079) were smaller but statistically significant positive predators. Being Asian (0.076) was also a statistically significant positive predictor. Details are on Table C1 (Appendix C, p. 17).

Biology

- The regression model predicted 49.3% ($R^2 = 0.493$) of the variance of performance on the 2019 STAAR Biology EOC assessment of students in the dual credit sample. The constant or mean was 4398.71 ssp. It was statistically significant (*p<.001*). Details are on **Table C2** (Appendix C, p. 17).

- Twelve of the fourteen variables were statistically significant predictors for performance on the STAAR Biology EOC assessment among students in the dual credit sample. The strongest predictors were at risk (-0.310), G/T (0.280), and special education (-0.138). Details are on Table C2 (Appendix C, p. 17).

- Dual credit (0.068) and CTE (0.041) enrollments and being White (0.054, *p<.05*) and Asian (0.094) were all statistically significant positive predictors of performance (*p<.001* unless stated otherwise) on the 2019 STAAR Biology EOC assessment among students in the dual credit sample. Details are on Table C2, (Appendix C, p. 17).

English I

- Overall, the regression model predicted 56.4% (R^2 = 0.564) of the variance in performance on the 2019 STAAR English I EOC assessment of students in the dual credit sample. The constant of 4364.69 ssp was statistically significant ($p<.001$). Details are on **Table C3** (Appendix C, p. 18).

- Twelve of the fourteen predictors were statistically significant at the p<.001 level. The strongest predictors on the 2019 STAAR English I EOC assessment was at risk (-.289), G/T (0.247), and special education (-0.179). Details are on Table C3 (Appendix C, p. 18).

- Dual credit enrollment (0.088) was also a statistically significant positive predictor of performance on the English I EOC assessment among students in the dual credit sample. Details are on Table C3 (Appendix C, p. 18).

English II

- The regression model predicted 55.6% (R^2 = 0.556) of the variance in the performance on the 2019 STAAR English II EOC assessment among students in the dual-credit sample. The constant or mean was 4412.95 ssp, which was statistically significant ($p<.001$). Details are on **Table C4** (Appendix C, p.18).

- Eleven of the predictors were statistically significant ($p<.001$; $p<.05$). Three of these predictors were positive. The strongest predictors were at-risk (-0.296), G/T (0.259), and special education (-0.171). Details are on Table C4 (Appendix C, p. 18).

- In addition to G/T, dual credit enrollment (0.129) was a statistically significant positive predictors of performance on the 2019 STAAR English II EOC assessment among students in the dual credit sample (p<.001). Details are on Table C4 (Appendix C, p. 18).

U.S. History

- Overall, the regression model explained about 39.1% (R^2 = 0.391) of the variance in the performance on the 2019 STAAR U.S. History EOC assessment of students in the dual credit sample. The constant or mean of 4583.53 ssp was statistically significant ($p<.001$). Details are on Table C5 (Appendix C, p. 19).

- Twelve of the fourteen variables in the regression model were statistically significant (p<.001, p<.05). The strongest predictors were G/T (0.227), at risk (-0.223), and LEP (-0.153). Details are on Table C5 (Appendix C, p. 19).

- Besides G/T, being White (0.083), Asian (0.066), and American Indian/Alaskan Native (0.052) were statistically significant positive predictors of performance among students in the sample. Details are on Table C5 (Appendix C, p.19).

What was the college enrollment status of the Class of 2017 dual credit students?

This section analyzed the college enrollment status and the institutional level at which dual credit students from who graduated during the 2016–2017 school year were enrolled by January 2018. Details are on **Table D1** to **Table D2** (**Appendix D**, p. 20–23).

- Of the 2016–2017 HISD graduates (10,561), about 90.5 percent were not enrolled in dual credit courses their senior year compared to 9.5 percent of students who were enrolled in dual credit courses as HISD seniors. Details are on Table D1 (Appendix D, p. 20).

- When matched to the NSC data, the results returned 1,004 dual credit students from the 2016–2017 graduates. Of these, 712 (70.9%) were enrolled in college by January 2018. Details are on **Table D1** (Appendix D, p. 21). This is much higher than the district's class of 2017 college enrollment rate of 56%, one year after graduation from high school or the 53.1 percent college enrollment rate for students who did not take a dual credit course in their senior year.

- Overall, among the 712 dual credit students from the who graduated in 2016–2017 and who were enrolled in college, 30.5 percent were enrolled in 2-year institutions compared to 69.5 percent for 4-year institutions. Details are on Table D2 (Appendix D, p. 22). In comparison, 42.7 percent of district graduates who enrolled in college were enrolled in 2-year institutions, while only 57.3 per were enrolled in 4-year institutions.

Discussion

The purpose of this evaluation was to determine the effect of dual credit enrollment on the academic performance of students on the 2019 STAAR Algebra I, Biology, English I, English II, and U.S. History EOC assessments. Students' scale scores for each EOC assessment results were subjected to treatment effects with regression adjustments. The results showed that compared to their peers who were not enrolled in any dual credit courses, students who were enrolled in dual credit courses scored between 142 and 412 scale score points more on the STAAR Algebra I, Biology, English I, English II, and U.S. History EOC assessments. U.S. History had the least effect and English I had the largest effect. Most of the dual credit students in the sample were female, economically disadvantaged, or Hispanic or enrolled in CTE courses compared to their peers who were not enrolled in any dual credit courses, however almost twice as many dual credit students compared to their non-dual peers were identified as G/T.

Regression analyses also demonstrated that dual credit enrollment was a statistically significant positive predictor of student performance on the 2019 STAAR EOC assessments. Each model explained between 23.6 percent and 56.4 percent of the variance in the students' average scores with Algebra I being the lowest and English I being the highest.

Larger percentages of dual credit students (94.8 – 99.5%) met the Approaches Student Standard on the 2019 STAAR EOC assessments compared to their non-dual credit peers (64.1 – 90.0%). Similar outcome patterns were observed for Meets Student Standard (81.8 – 93.3% vs. 44.0 – 67.7%) and Masters Student Standard (17.9 – 58.1% vs. 8.6 – 39.0%). This is consistent with the research on student performance and dual credit enrollment, which has been explained in part by the rigor and academic demands of the courses, and possibly, by students' academic motivation and persistence. When disaggregated by key demographic and educational variables, dual credit student groups outperformed their non-dual credit peers at the Approaches Student Standard on the five 2019 STAAR EOC assessments.

The White–Black and White–Hispanic gaps in performance for EOC courses, except English II, were 2.0 percentage points or lower. The White–Black performance of students who met the Approaches Student

Standard ranged from zero percentage points for Algebra I to 7.9 percentage points for English II, with all other gaps being 2.0 percentage points or less. Similarly, the White–Hispanic gaps ranged from 0.3 percentage points for Biology to 4.9 percentage points for English II. All other course gaps were 2.0 percentage points or less. The gaps among similar non-dual credit student racial or ethnic groups in the sample were substantially larger.

The consistency in the evaluation results confirm the positive impact of dual credit enrollment on student performance in HISD students. Dual credit enrollment has value for increasing HISD student performance on STAAR EOC assessments and it should continue to be an option available to HISD students. State legislation makes provision for that option. Previous district evaluations found similar value. Research has also identified dual credit enrollments as effective programs for increasing college enrollment, college credits, and time-to-college completion. The potential for college cost reduction is also expected.

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Appendix A

Table A1. Disaggregated Percentage of Students in the Dual Credit Sample Who Met the Approaches Student Standard by STAAR EOC Assessments, 2018–2019

Variable		Algebra I				Biology				English I				English II				U.S. History			
		Non-Dual Credit		Dual Credit		Non-Dual Credit		Dual Credit		Non-Dual Credit		Dual Credit		Non-Dual Credit		Dual Credit		Non-Dual Credit		Dual Credit	
		N Test.	% App.	N Test.	% App.	N Test.	% App.	N Test.	% App.	N Tested	% App.	N Tested	% App.	N Tested	% App.	N Tested	% App.	N Tested	% App.	N Tested	% App.
Female		4,540	**80.5**	180	**100.0**	6,189	**87.0**	358	**99.4**	6,069	**71.2**	340	**98.8**	5,849	**74.0**	1,077	**96.9**	4,998	**91.2**	2,164	**99.1**
Male		4,625	**69.5**	111	**97.3**	6,176	**80.4**	218	**99.5**	4,912	**57.0**	215	**97.2**	5,821	**61.5**	681	**91.3**	4,912	**88.7**	1,718	**99.0**
Ethnicity	Asian	163	**88.3**	1	*	484	**95.5**	9	**100.0**	511	**89.6**	6	**100.0**	491	**88.0**	42	**100.0**	443	**93.9**	124	**98.4**
	Black	2,448	**76.0**	93	**100.0**	2,877	**83.3**	148	**98.6**	2,842	**59.6**	129	**98.4**	2,613	**64.2**	382	**92.1**	2,209	**90.4**	814	**98.0**
	Hisp.	5,804	**73.6**	186	**98.4**	7,662	**81.3**	391	**99.7**	7,458	**59.9**	394	**98.0**	7,187	**64.0**	1,272	**95.1**	5,974	**88.3**	2,771	**99.3**
	White	636	**79.1**	7	**100.0**	1,152	**93.8**	19	**100.0**	1,167	**88.0**	18	**100.0**	1,221	**87.0**	47	**100.0**	1,119	**96.1**	152	**100.0**
G/T	No	8,520	**73.3**	236	**98.7**	10145	**80.3**	381	**99.2**	9,879	**56.6**	354	**97.7**	9,598	**61.4**	1,190	**92.4**	8,155	**87.9**	2,745	**98.7**
	Yes	645	**96.6**	55	**100.0**	2220	**99.1**	195	**100.0**	2,282	**96.5**	201	**99.0**	2,072	**97.1**	568	**99.8**	1,739	**99.7**	1,137	**100.0**
At-Risk	No	2,632	**91.9**	182	**100.0**	4,961	**97.9**	376	**100.0**	4,850	**93.4**	370	**99.5**	4,813	**95.0**	1,153	**99.6**	4,138	**99.4**	2,700	**100.0**
	Yes	6,533	**68.1**	109	**97.2**	7,404	**74.1**	200	**98.5**	7,311	**44.7**	185	**95.7**	6,857	**48.6**	605	**85.6**	5,756	**83.2**	1,182	**97.0**
Special Education	No	8,329	**78.4**	290	**99.0**	11,502	**85.9**	570	**99.6**	11,275	**67.8**	554	**98.2**	10,857	**71.2**	1,726	**95.4**	9,199	**92.3**	3,833	**99.3**
	Yes	836	**40.4**	1	*	863	**53.8**	6	**83.3**	886	**16.6**	1	*	813	**21.6**	32	**59.4**	695	**60.0**	49	**79.6**
LEP	No	6,827	**79.3**	268	**99.3**	9,755	**90.2**	536	**99.6**	9,605	**75.6**	517	**98.6**	9,621	**77.8**	1,677	**95.9**	8,271	**94.3**	3,755	**99.1**
	Yes	2,338	**62.1**	23	**95.7**	2,610	**59.5**	40	**97.5**	2,556	**21.0**	38	**92.1**	2,049	**20.4**	81	**71.6**	1,623	**68.1**	127	**96.1**
Econ Disadv.	No	1,629	**80.7**	58	**100.0**	2,832	**93.2**	112	**100.0**	2,838	**84.2**	115	**100.0**	2,852	**85.3**	294	**97.6**	2,600	**95.5**	704	**98.4**
	Yes	7,536	**73.7**	223	**98.7**	9,533	**80.9**	464	99.4	9,323	**58.0**	440	**98.2**	8,818	**62.1**	1,464	**94.2**	7,294	**88.0**	3,178	**99.2**
CTE	No	1,867	**67.5**	20	**100.0**	2,651	**81.1**	44	**100.0**	2,671	**66.9**	42	**100.0**	1,903	**72.7**	161	**98.1**	1,378	**89.7**	149	**97.3**
	Yes	7,298	**76.8**	271	**98.9**	9,714	**84.4**	533	**99.4**	9,490	**63.3**	513	**98.1**	9,767	**66.8**	1,597	**94.4**	8516	**90.0**	3,733	**99.1**

Note: * = < 5 students; Hisp. = Hispanic; G/T = gifted and talented; LEP = limited English proficiency; Econ Disadv. = economically disadvantaged; CTE = career and technical education

Shaded blue = Groups with comparatively higher percentages of students who met the Approaches Student standard.

STAAR EOC regular and first-time testers.

CTE included students enrolled in coherent sequence of course and students enrolled in a non-coherent sequence of courses

Source: Chancery Ad hoc downloaded 11/15/2018; Research and Accountability Microsoft Access Archival database-STAAR EOC.

Appendix B

Table B1. Effect of Dual Credit Enrollment on STAAR Algebra I End-of-Course Assessment Results, 2019					
Scale Score	**Coefficient**	**Robust Std. Err.**	**z**	**P>z**	**[95% Conf. Interval]**
n = 9,456					
Average Treatment Effect					
Dual Credit					
(1 vs 0)	280.4	38.9	7.2	0.000	[204.16, 356.59]
Potential Outcome Mean					
Non-Dual Credit					
0	3934.3	5.5	721.6	0.000	[3923.59, 3944.96]

Note: Grade Level Student standards: Approaches = 3550–3961, (2012–2015) = 3500–3525; Meets = 4000–4288; Masters = 4333–6181

Table B2. Effect of Dual Credit Enrollment on STAAR Biology End-of-Course Assessment Results, 2019					
Scale Score	**Coefficient**	**Robust Std. Err.**	**z**	**P>z**	**[95% Conf. Interval]**
n = 12,941					
Average Treatment Effect					
Dual Credit					
(1 vs 0)	241.9	16.32	14.8	0.000	[209.87, 273.86]
Potential Outcome Mean					
Non-Dual Credit					
0	4105.9	5.08	808.6	0.000	[4095.91, 4115.81]

Note: Grade Level Student standards: Approaches = 3550–3966, (2012-2015) = 3500; Meets = 4000–4495; Masters = 4576–6229

Table B3. Effect of Dual Credit Enrollment on STAAR English I End-of-Course Assessment Results, 2019					
Scale Score	**Coefficient**	**Robust Std. Err.**	**z**	**P>z**	**[95% Conf. Interval]**
n = 12,716					
Average Treatment Effect					
Dual Credit					
(1 vs 0)	412.6	19.10	21.6	0.000	[375.20, 450.05]
Potential Outcome Mean					
Non-Dual Credit					
0	3990.0	5.36	744.1	0.000	[3979.45, 4000.47]

Note: Grade Level Student standards: Approaches = 3775–3495, (2012–2015) = 3750; Meets = 4000–4603; Masters = 4691–6367

Table B4. Effect of Dual Credit Enrollment on STAAR English II End-of-Course Assessment Results, 2019					
Scale Score	Coefficient	Robust Std. Err.	z	P>z	[95% Conf. Interval]
n = 13,428					
Average Treatment Effect					
Dual Credit					
(1 vs 0)	268.8	12.6	21.4	0.000	[244.12, 293.42]
Potential Outcome Mean					
Non-Dual Credit					
0	4037.4	5.1	793.9	0.000	[4027.39, 4047.33]

Note: Grade Level Student standards: Approaches = 3775–3966, (2012–2015) = 3750; Meets= 4000–4730; Masters = 4831–6416

Table B5. Effect of Dual Credit Enrollment on STAAR U.S. History End-of-Course Assessment Results, 2019					
Scale Score	Coefficient	Robust Std. Err.	z	P>z	[95% Conf. Interval]
n = 13,776					
Average Treatment Effect					
Dual Credit					
(1 vs 0)	142.9	10.9	13.2	0.000	[121.63, 164.17]
Potential Outcome Mean					
Non-Dual Credit					
0	4304.3	5.4	804.4	0.000	[4293.76, 4314.74]

Note: Grade Level Student standards: Approaches = 3550–3980, (2012–2015) = 3500; Meets= 4000–4375; Masters = 4440–6609

Appendix C

Table C1. Predictors of Performance on the STAAR Algebra I End-of-Course Assessment, 2019

Predictor	Coefficient	Beta	[95% Conf. Interval]
Constant	4144.17**	-	[4078.43, 4209.91]
African American	-96.41	-0.083	[-157.87, -34.95]
Hispanic	-11.03	-0.010	[-46.76, 24.70]
White	-60.39	-0.057	[-115.04, -5.74]
Asian	280.87**	0.076**	[197.13, 364.62]
Native Hawaiian/Pacific Islander	-136.93	-0.019	[-268.45, -5.42]
American Indian/Alaskan Native	-40.51	-0.031	[-95.66, 14.64]
At Risk	-312.37**	-0.272**	[-335.55, -289.19]
Special Education	-357.04**	-0.193**	[-390.31, -323.78]
English Learners	-106.27	-0.085	[-180.74, -31.79]
Limited English Proficiency	3.66	0.003	[-70.08, 77.40]
Gifted and Talented	339.76**	0.169**	[302.83, 376.68]
Career and Technical Education	116.43**	0.088**	[92.68, 140.18]
Economically-Disadvantaged	18.95	0.014	[-7.34, 45.24]
Dual-Credit Enrollment	241.00**	0.079**	[186.61, 295.38]
F	209.22**		
R^2	0.236		

Note: N = 9445; First-time testers, STAAR regular
Sources: Chancery Ad hoc downloaded 11/15/2018, HISD Research & Accountability Microsoft Access data achieve
*$p < .05$; **$p < .001$

Table C2. Predictors of Performance on the STAAR Biology End-of-Course Assessment, 2019

Predictor	Coefficient	Beta	[95% Conf. Interval]
Constant	4398.71**	-	[4351.80, 4445.61]
African American	-133.65**	-0.102**	[-177.65, -89.64]
Hispanic	-142.27**	-0.121**	[-167.43, -117.10]
White	61.60*	0.054*	[22.41, 100.78]
Asian	262.10**	0.094**	[210.81, 313.38]
Native Hawaiian/Pacific Islander	14.85	0.002	[-83.55, 113.24]
American Indian/Alaskan Native	56.60	0.039	[16.79, 96.42]
At Risk	-358.13**	-0.310**	[-375.35, -340.91]
Special Education	-312.84**	-0.138**	[-341.39, -284.29]
English Learners	-172.17**	-0.119**	[-233.37, -110.98]
Limited English Proficiency	-73.28*	-0.052*	[-133.74, -12.83]
Gifted and Talented	409.47**	0.280**	[389.32, 429.62]
Career and Technical Education	57.34**	0.041**	[39.52, 75.16]
Economically-Disadvantaged	-89.18**	-0.066**	[-108.28, -70.08]
Dual-Credit Enrollment	188.57**	0.068**	[154.23, 222.90]
F	900.62**		
R^2	0.493		

Note: N = 12,930; First-time testers, STAAR regular
Sources: Chancery Ad hoc downloaded 11/15/2018, HISD Research & Accountability Microsoft Access data achieve
*$p < .05$; **$p < .001$

Table C3. Predictors of Performance on the STAAR English I End-of-Course Assessment, 2019

Predictor	Coefficient	Beta	[95% Conf. Interval]
Constant	4364.69**		[4318.12, 4411.26]
African American	-120.22**	-0.087**	[-163.92, -76.53]
Hispanic	-118.76**	-0.096**	[-143.47, -94.04]
White	81.80**	0.068**	[42.59, 121.02]
Asian	226.01**	0.080**	[176.07, 275.94]
Native Hawaiian/Pacific Islander	-5.05	-0.001	[-102.85, 92.74]
American Indian/Alaskan Native	73.88**	0.048**	[33.95, 113.82]
At Risk	-353.13**	-0.289**	[-370.30, -335.97]
Special Education	-422.27**	-0.179**	[-450.00, -394.53]
English Learners	-231.52**	-0.151**	[-292.41, -170.63]
Limited English Proficiency	-189.18**	-0.127**	[-249.32, -129.03]
Gifted and Talented	374.93**	0.247**	[355.11, 394.75]
Career and Technical Education	-9.49	-0.006	[-26.90, 7.91]
Economically-Disadvantaged	-111.38**	-0.078**	[-130.24, -92.51]
Dual-Credit Enrollment	257.99**	0.088**	[223.69, 292.29]
F	1174.09**		
R^2	0.564		

Note: N = 12,705; First-time testers, STAAR regular
Sources: Chancery Ad hoc downloaded 11/15/2018, HISD Research & Accountability Microsoft Access data archive
*$p < .05$; **$p < .001$

Table C4. Predictors of Performance on the STAAR English II End-of-Course Assessment, 2019

Predictor	Coefficient	Beta	[95% Conf. Interval]
Constant	4412.95**		[4369.16, 4456.74]
African American	-125.10**	-0.093**	[-166.16, -84.04]
Hispanic	-90.31**	-0.076**	[-113.38, -67.25]
White	27.03	0.023	[-9.56, 63.62]
Asian	167.17**	0.062**	[121.23, 213.12]
Native Hawaiian/Pacific Islander	-36.31	-0.004	[-136.50, 63.88]
American Indian/Alaskan Native	8.03	0.006	[-29.11, 45.17]
At Risk	-343.51**	-0.296**	[-358.99, -328.03]
Special Education	-406.57**	-0.171**	[-434.06, -379.09]
English Learners	-212.34**	-0.131**	[-283.41, -141.28]
Limited English Proficiency	-220.49**	-0.140**	[-290.39, -150.59]
Gifted and Talented	375.54**	0.259**	[357.49, 393.60]
Career and Technical Education	-27.83*	-0.017*	[-46.41, -9.26]
Economically-Disadvantaged	-104.71**	-0.077**	[-122.12, -87.30]
Dual-Credit Enrollment	220.34**	0.129**	[200.36, 240.32]
F	1200.14**		
R^2	0.556		

Note: N = 13,417; First-time testers, STAAR regular
Sources: Chancery Ad hoc downloaded 11/15/2018, HISD Research & Accountability Microsoft Access data archive
*$p < .05$; **$p < .001$

Table C5. Predictors of Performance on the STAAR U.S. History End-of-Course Assessment, 2019			
Predictor	**Coefficient**	**Beta**	**[95% Conf. Interval]**
Constant	4583.53**		[4531.26, 4635.79]
African American	-158.12**	-0.122**	[-206.38, -109.85]
Hispanic	-150.90**	-0.132**	[-176.42, -125.37]
White	91.92**	0.083**	[48.90, 134.94]
Asian	171.25**	0.066**	[117.45, 225.06]
Native Hawaiian/Pacific Islander	43.15	0.005	[-79.98, 166.29]
American Indian/Alaskan Native	68.55*	0.052*	[24.93, 112.17]
At Risk	-245.92**	-0.223**	[-263.00, -228.84]
Special Education	-351.08**	-0.144**	[-383.80, -318.36]
English Learners	-93.00*	-0.055*	[-183.64, -2.37]
Limited English Proficiency	-254.13**	-0.153**	[-343.27, -164.99]
Gifted and Talented	308.18**	0.227**	[288.72, 327.65]
Career and Technical Education	-21.58	-0.012	[-45.21, 2.05]
Economically-Disadvantaged	-107.88**	-0.084**	[-126.63, -89.13]
Dual-Credit Enrollment	102.42**	0.084**	[85.26, 119.57]
F	621.40		
R^2	0.391		

Note: N= 13,765; first-time testers, STAAR regular

Sources: Chancery Ad hoc downloaded 11/15/2018, HISD Research & Accountability Microsoft Access data archive

*$p < .05$; **$p < .001$

Appendix D

Table D1 Comparative College Enrollment Status of the 2017 Graduates in the Study Sample							
School	**Non-Dual Credit**			**Dual Credit**			**Overall Graduates**
	Enroll.	% Enroll.	Grads.	Enroll.	% Enroll.	Grads.	
Advanced Virtual	17	16.8	101	-	-	-	101
Austin High School	138	45.2	305	23	54.8	42	347
Bellaire High School	519	73.9	702	81	91.0	89	791
Carnegie Vanguard High School	121	92.4	131	-	-	-	131
Challenge Early College HS	36	85.7	42	51	81.0	63	105
Chavez High School	322	53.1	606	9	69.2	13	619
DeBakey HSHP	148	90.2	164	-	-	-	164
East Early College HS	44	95.7	46	50	86.2	58	104
Eastwood Academy	33	84.6	39	56	80.0	70	109
Energized for STEM Academy HS	30	55.6	54	14	87.5	16	70
Energized for STEM Academy Central	3	37.5	8	*	*	1	9
Energy Institute High School	110	78.6	140	-	-		140
Furr High School	61	37.2	164	20	57.1	35	199
Heights High School	331	66.7	496	12	63.2	19	515
Houston Academy International	31	68.9	45	33	84.6	39	84
Houston MSTC	171	33.1	516	24	50.0	48	564
HSPVA	149	89.8	166	-	-	-	166
Jones Futures Academy	*	*	4	4	66.7	6	10
Jordan High School	67	49.6	135	10	32.3	31	166
Kashmere High School	24	29.6	81	3	8.0	6	87
Lamar High School	505	76.6	659	10	76.9	13	672
Law and Justice High School	34	68.0	50	23	67.6	34	84
Liberty High School	10	18.5	54	-	-	-	54
Long Academy	13	54.2	24	19	76.0	25	49
Madison High School	118	38.7	305	7	63.6	11	316
Mickey Leland College Prep	9	81.8	11	-	-	-	11
Middle College at HCC Fraga	24	36.4	66	-	-	-	66
Middle College at HCC Gulfton	12	19.4	62	*	*	3	65
Milby High School	196	53.4	367	20	83.3	24	391
Mount Carmel Academy	49	72.1	68	10	90.9	11	79
North Forest High School	49	29.9	164	3	60.0	5	169
North Houston Early College HS	46	83.6	55	41	80.4	51	106
Northside High School	138	47.3	292	30	63.8	47	339
Reach Charter	15	17.9	84	-	-	-	84
Scarborough High School	24	23.5	102	6	30.0	20	122
Sharpstown High School	81	39.1	207	15	51.7	29	236
Sharpstown International	66	59.5	111	8	53.3	15	126
SOAR Center	1	9.1	11	-	-	-	11
South Early College HS	6	85.7	7	7	77.8	9	16
Sterling High School	51	30.4	168	4	33.3	12	180

Table D1. Comparative College Enrollment Status of the 2017 Graduates in the Study Sample (continued)							
School	**Non-Dual Credit**			**Dual Credit**			**Overall Graduates**
	Enroll.	**% Enroll.**	**Grads.**	**Enroll.**	**% Enroll.**	**Grads.**	
T H Rogers School	*	*	1	-	**-**	-	1
Texas Connections Academy Hou	217	**44.4**	489	-	**-**	-	489
Victory Prep Academy North	20	**26.0**	77	-	**-**	-	77
Waltrip High School	153	**46.2**	331	5	**71.4**	7	338
Washington BT High School	63	**42.0**	150	*	*	1	151
Westbury High School	172	**41.7**	412	20	**62.5**	32	444
Westside High School	388	**65.3**	594	66	**79.5**	83	677
Wheatley High School	44	**34.6**	127	-	**-**	-	127
Wisdom High School	77	**32.4**	238	11	**64.7**	17	255
Worthing High School	47	**34.3**	137	-	**-**	-	137
Yates High School	68	**40.5**	168	2	**22.2**	9	177
Young Women's College Prep	18	**85.7**	21	10	**100.0**	10	31
Grand Total	5,071	**53.1**	9,557	712	**70.9**	1,004	10,561

Source: National Student Clearinghouse 2018 Archived in the Research & Accountability Microsoft Access Database (data only).
Note: *n <5 students; Graduates were students enrolled in a course, Grads. = Graduates; Enroll. = Enrolled in a postsecondary institution by the following January of high school graduation.
   Students who registered for and completed dual credit courses, privately, were not included in these figures.

Table D2. College Enrollment by Institutional Level for 2017 Dual Credit Graduates Who Enrolled in a Postsecondary Institution					
School	2-year	% 2-year	4-year	% 4-year	Total DC Grads Enrolled
Austin High School	15	**65.2**	8	**34.8**	23
Bellaire High School	23	**28.4**	58	**71.6**	81
Carnegie Vanguard High School	-	**-**	-	**-**	-
Challenge Early College HS	10	**19.6**	41	**80.4**	51
Chavez High School	6	**66.7**	3	**33.3**	9
DeBakey HSHP	-	**-**	-	**-**	-
East Early College HS	8	**16.0**	42	**84.0**	50
Eastwood Academy	22	**40.0**	33	**60.0**	56
Energized for STEM Academy HS	3	**21.4**	11	**78.6**	14
Energized for STEM Academy Central	*	*****	*	*****	1
Energy Institute High School	-	**-**	-	**-**	-
Furr High School	11	**55.0**	9	**45.0**	20
Heights High School	7	**58.3**	5	**41.7**	12
Houston Academy International	5	**15.2**	28	**84.8**	33
Houston MSTC	13	**54.2**	11	**45.8**	24
HSPVA	-	**-**	-	**-**	-
Jones Futures Academy	*	*****	*	*****	4
Jordan HS	5	**50.0**	5	**50.0**	10
Kashmere High School	*	*****	*	*****	3
Lamar High School	1	**10.0**	9	**90.0**	10
Law and Justice High School	8	**34.8**	15	**65.2**	23
Liberty High School	-	**-**	-	**-**	-
Long Academy	7	**36.8**	12	**63.2**	19
Madison High School	4	**57.1**	3	**42.9**	7
Mickey Leland College Prep	-	**-**	-	**-**	-
Middle College at HCC Fraga	-	**-**	-	**-**	-
Middle College at HCC Gulfton	*	*****	*	*****	3
Milby High School	8	**40.0**	12	**60.0**	20
Mount Carmel Academy	1	**10.0**	9	**90.0**	10
North Forest High School	*	*****	*	*****	3
North Houston Early College HS	5	**12.2**	36	**87.8**	41
Northside High School	9	**30.0**	21	**70.0**	30
Reach Charter	-	**-**	-	**-**	-
Scarborough High School	1	**16.7**	5	**83.3**	6
Sharpstown High School	4	**26.7**	11	**73.3**	15
Sharpstown International	3	**37.5**	5	**62.5**	8
South Early College HS	-	**-**	7	**100.0**	7
Sterling High School	*	*****	*	*****	4
T H Rogers School	-	**-**	-	**-**	-
Texas Connections Academy - Houston	-	**-**	-	**-**	-
Victory Prep Academy North	-	**-**	-	**-**	-
Waltrip High School	3	**60.0**	2	**40.0**	5
Washington BT High School	*	*****	*	*****	1
Westbury High School	4	**20.0**	16	**80.0**	20
Westside High School	18	**27.3**	48	**72.7**	66
Wheatley High School	-	**-**	-	**-**	-

School	2-year	% 2-year	4-year	% 4-year	Total DC Grads Enrolled
Wisdom High School	5	**45.5**	6	**54.5**	11
Worthing High School	-	**-**	-	**-**	-
Yates High School	*	*	*	*	2
Young Women's College Prep	1	**10.0**	9	**90.0**	10
Grand Total	217	**30.5**	494	**69.5**	712

Table D2. College Enrollment by Institutional Level for 2017 Dual Credit Graduates who Enrolled in a Postsecondary Institution (continued)

Source: National Student Clearinghouse 2018 Archived in the Research & Accountability Microsoft Access Database (data only).

Note: *n <5 students; DC = Dual Credit; Grads Enrolled = Graduates enrolled in a postsecondary institution by January following high school graduation.

Students who registered for and completed dual credit courses, privately, were not included in these figures.