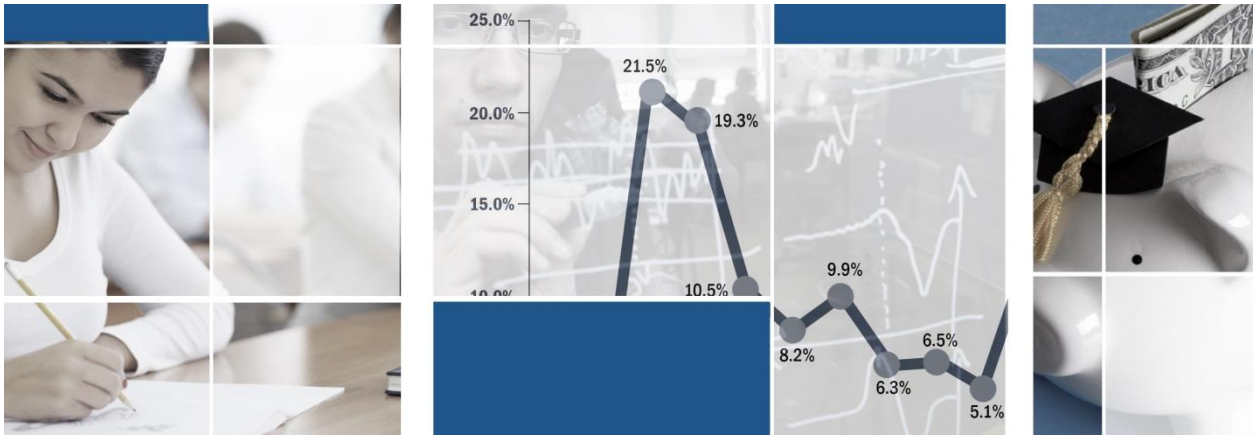
March 2018



Dual Enrollment Quality and Transferability

STATE COUNCIL OF HIGHER EDUCATION FOR VIRGINIA

DUAL ENROLLMENT QUALITY AND TRANSFERABILITY

Pursuant to Code of Virginia § 23.1-907, The State Council of Higher Education for Virginia (SCHEV) is tasked with preparing an annual report on pertinent aspects of the educational pipeline for students transferring from public two-year to public four-year institutions of higher education. This report examines the quality of dual enrollment and shows, overall, that dual enrollment students do approximately as well as first-time-in-college (FTIC) students in subsequent college-level coursework. The data support the general inference that preparation received by dual enrollment students rises to the quality of typical college-level courses.

Since 2001, the number of high school students taking advantage of dual enrollment has increased by more than 65 percent. The rapid growth of dual enrollment programs can be attributed to many factors (e.g. legislation, increased curricular challenges, college affordability, etc.) and affords high school students in Virginia the opportunity to enroll in college-level coursework while concurrently satisfying high school graduation requirements. Dual enrollment programs have a number of benefits for students, including improving students' ability to complete postsecondary programs efficiently, providing enriching educational opportunities, and preparing them for future employment. Recognition of these benefits requires Virginia's two- and four-year (public and private) institutions to develop dual enrollment programs that promote a wide range of course options, while ensuring Virginia's high school students have quality transferable dual enrollment course offerings.

However, according to the September 2017 Joint Legislative Audit and Review Commission (JLARC) report on the Operations and Performance of the Virginia Community College System, matriculating high school students may not have their dual enrollment courses accepted for credit at the public four-year institutions, or if accepted for credit, the course does not satisfy specific programmatic graduation requirements. One issue underlying this inconsistency has to do with perceptions of quality, specifically whether dual enrollment courses prepare high school students adequately for subsequent college-level course work. The results of this report should provide greater reassurance on this point: evidence suggests that the quality of dual enrollment, as a whole, is good, and supports the participating students' educational goals. However, these results should not necessarily be viewed as a universal reassurance, as particular institutional programs may have variable results.

Several broad conclusions can be drawn from this report:

- Dual enrollment programs do provide a benefit for college-bound high school students.
- The location (i.e., whether at the high school or on the community college campus) of the dual enrollment course does not affect the quality of instruction.
- Dual enrollment courses should be treated as equivalent to the two-year transfer parallel with regard to credit.
- Mathematics is the one area that requires attention with respect to quality and academic performance in subsequent coursework. Presciently, the Virginia Community College System's (VCCS) Math Pathways project constitutes a major step in this direction, and should be monitored for its effect on dual enrollment over the next few years.

Detailed data showing student academic performance in subsequent coursework in the same discipline as the dual enrollment coursework is found in Appendices A, B, C, D, and E at the end of this report.

Academic Performance of Dual Enrollment and FTIC Students

The evaluation of academic performance consisted of three elements: average course grade, overall course outcomes, and course grade distribution. Dual enrollment students performed as well as FTIC students in biology, history, mathematics, and the physical sciences; the average course grade in each of these subjects was statistically the same. In English, the data show dual enrollment students had a slightly higher, statistically significant, average grade in subsequent lower-division coursework.

Course outcomes for students who had taken dual enrollment are statistically equivalent to those for FTIC students in history and in the physical sciences. Course outcomes in Biology, English, and mathematics do show statistically significant findings. In biology, dual enrollment students withdrew at a higher rate than FTIC students, but the data as a whole do not suggest a quality concern. On the other hand, analysis of the course outcomes in English show slightly better outcomes for dual enrollment students: they had a lower percentage of withdrawals and a higher percentage of grades greater than C in subsequent coursework. However, dual enrollment students tend not to do as well in mathematics: students had a lower average course grade, a higher percentage of withdrawals, a lower percentage of grades greater than C, and a higher percentage of F's. Although these actual course grade

differences were not statistically significant, they are consistent with findings in Appendices B and C that do show statistically significant weaker academic performance for dual enrollment students in terms of course withdrawals and overall grade distributions.

There is a positive correlation between dual enrollment credits and college completion rates. SCHEV data show that students arriving at college with dual enrollment credit do well in terms of four-year baccalaureate completion: the more dual enrollment credits a student earns, the higher the likelihood that she will complete a bachelor degree in four years. For example, overall four-year completion rates for first-time college students entering during the 2010-2011 academic year was 47.6 percent. Students earning 11 credits or fewer in dual enrollment have a four-year graduation rate of 49 percent, while those with 24 credits or greater in dual enrollment had a four-year graduation rate of 57.6 percent.

Academic Performance and Dual Enrollment Course Location

According to the JLARC report, four-year institutions have reported concerns about the quality of the dual enrollment courses taught on the high school campus and stated that "...students whose dual enrollment course work was taken solely in high school were not prepared for the four-year institution's course work." However, data examined for this report show no statistically significant difference in average course grade for students in any subject area, regardless of the dual enrollment course location. For example, students taking mathematics on the high school campus had a lower percentage of F's than students taking the course on the college campus. Therefore, the data provide counter-evidence to institutional claims of poor preparation in dual enrollment courses taught on the high school campus.

Concluding Observations

According to data examined by SCHEV, having to do with completion rates and academic performance in college by students who took dual enrollment courses in high school, students in general are being adequately prepared for the rigors of post-secondary coursework. Mathematics is the one area that showed need for improvement. The mathematics outcome data indicate dual enrollment student performance lags behind students who begin a course sequence at the four-year institution, and suggest a more in-depth review of mathematics dual enrollment is necessary. Subsequent

research may show that the VCCS's Math Pathways Project[1] will lead to an improvement in dual enrollment student outcomes in mathematics. The Math Pathways Project is intended to improve student success through better alignment with the quantitative curricular requirements of four-year institutions and a more logical array of offerings at community colleges. By limiting the number of mathematics offerings to 14 transfer-level courses from the previously-offered 82 courses, and better aligning these offerings with the student's intended academic interest, the VCCS may ultimately improve the academic performance of dual enrollment mathematics students in subsequent college-level coursework.

The data presented here are statewide averages, which do not necessarily reveal regional, local, or institutional quality issues. Instead, these findings clarify broad questions about quality, constitute a baseline for future research, and establish a solid foundation from which to follow-up on dual enrollment recommendations by JLARC. Four-year institutions are strongly encouraged to review their data, identify quality issues, and offer feedback to individual community colleges. Future research should take into account the effects of legislation coming out of the 2017-2018 legislative session focused on dual enrollment, in tandem with perhaps a tighter focus on regional and local issues and the development of guided pathways for students.

[1] Math Pathways Project for the Virginia Community College System

Appendix A: Average Grade by Subject

Student Type	Biology	English	History	Math	Physical Sciences
Dual Enroll	2.84 (n = 272)	**3.09 (n = 500)**	2.67 (n = 438)	2.62 (n = 480)	2.91 (n = 283)
FTIC	2.85 (n = 272)	2.95 (n = 500)	2.77 (n = 438)	2.76 (n= 480)	2.90 (n = 283)

***Numbers in bold indicate a statistically significant finding**

Appendix B: Summary Table for Course Outcomes

Student Type	Outcome	Biology	English	History	Math	Physical Sciences
Dual Enroll	% W/D	**5.9 (n = 16)**	**2.0 (n = 10)**	5.0 (n = 22)	**10.2 (n = 49)**	5.0 (n = 14)
	% < Grade C	9.2 (n = 25)	6.0 (n = 30)	12.3 (n = 54)	15.6 (n = 54)	8.8 (n = 25)
	% > Grade C	**84.9 (n = 231)**	**92.0 (n = 460)**	82.7 (n = 362)	**74.2 (n = 356)**	86.2 (n = 244)
FTIC	% W/D	1.5 (n = 4)	4.4 (n = 22)	4.1 (n = 18)	4.4 (n = 21)	2.1 (n = 6)
	% < Grade C	7.4 (n = 20)	8.2 (n = 41)	9.1 (n = 40)	12.3 (n = 59)	7.1 (n = 20)
	% > Grade C	91.2 (n = 248)	87.4 (n = 437)	87.4 (n = 437)	83.3 (n = 400)	90.8 (n = 287)

***Numbers in bold indicate a statistically significant finding**

Appendix C: Grade Distribution Summary

Student Type	Grade	Biology	English	History	Math	Physical Sciences
Dual Enrollment	% A	27.7 (n = 71)	41.8 (n = 205)	23.1 (n = 96)	25.8 (n = 111)	32.1 (n = 86)
	% B	40.6 (n = 104)	38.6 (n = 189)	40.9 (n = 170)	33.4 (n = 144)	39.6 (n = 52)
	% C	21.9 (n = 56)	**13.5 (n = 66)**	23.1 (n = 96)	23.4 (n = 101)	19.4 (n = 52)
	% D	7.4 (n = 19)	3.3 (n = 16)	8.4 (n = 35)	11.1 (n = 48)	7.8 (n = 21)
	% F	2.3 (n = 6)	2.9 (n = 14)	4.6 (n = 19)	**6.3 (n = 27)**	1.5 (n = 4)
FTIC	% A	26.9 (n = 72)	37 (n = 177)	23.3 (n = 98)	30.5 (n = 140)	30.7 (n = 85)
	% B	42.2 (n = 113)	36.2 (n = 173)	46.4 (n = 195)	33.1 (n = 152)	38.3 (n = 106)
	% C	23.5 (n = 63)	18.2 (n = 87)	20.7 (n = 87)	23.5 (n = 108)	23.8 (n = 66)
	% D	4.5 (n = 12)	4.4 (n = 21)	6.2 (n = 20)	9.8 (n = 45)	5.8 (n = 16)
	% F	3.0 (n = 8)	4.2 (n = 20)	3.3 (n = 14)	3.1 (n = 14)	1.4 (n = 4)

***Numbers in bold indicate a statistically significant finding**

Appendix D: Average Grade by Subject and Dual Enrollment Course Delivery Modality

DE Course Location	Biology	English	History	Math	Physical Sciences
On College Campus	2.8 (n = 70)	3.0 (n = 27)	2.9 (n = 44)	2.5 (n = 162)	3.0 (n = 154)
High School Campus	2.9 (n = 191)	3.1 (n = 459)	2.7 (n = 353)	2.7 (n = 285)	2.8 (n = 124)

***Numbers in bold indicate a statistically significant finding**

Appendix E: Course Outcomes by Subject and Dual Enrollment Course Delivery Location

Student Type	Outcome	Biology	English	History	Math	Physical Sciences
On High School Campus	% A	26.2 (n = 50)	41.0 (n = 188	21.3 (n = 75)	22.5 (n = 64)	26.6 (n = 33)
	% B	38.7 (n = 74)	38.1 (n = 175)	39.4 (n = 139)	33.7 (n = 96)	37.1 (n = 46)
	% C	20.4 (n = 39)	12.9 (n = 59)	22.4 (n = 79)	19.3 (n = 55)	20.2 (n = 25)
	% D	6.3 (n = 12)	3.1 (n = 14)	8.2 (n = 29)	11.2 (n = 32)	8.9 (n = 11)
	% F	2.6 (n = 5)	2.8 (n = 13)	4 (n = 14)	**3.9 (n = 11)**	1.6 (n = 2)
	% W/D	5.8 (n = 11)	2.2 (n = 10)	4.8 (n = 17)	9.5 (n = 27)	5.7 (n = 7)
On College Campus	% A	24.3 (n = 17)	37.0 (n = 10)	25 (n = 11)	21 (n = 34)	34.4 (n = 53)
	% B	35.7 (n = 27)	37.0 (n = 10)	43.2 (n = 19)	25.9 (n = 42)	36.4 (n = 56)
	% C	8.6 (n = 6)	18.5 (n = 5)	18.2 (n = 8)	22.8 (n = 37)	17.5 (n = 27)
	% D	22.9 (n = 16)	3.7 (n = 1)	4.6 (n = 2)	9.3 (n = 15)	5.8 (n = 9)
	% F	1.4 (n = 1)	3.7 (n = 1)	2.3 (n = 1)	8.6 (n = 14)	1.3 (n = 2)
	% W/D	7.1 (n = 5)	0 (n = 0)	6.8 (n = 3)	12.4 (n = 20)	4.6 (n = 7)

***Numbers in bold indicate a statistically significant finding**