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Transforming Comprehensive High Schools into Early Colleges: The Impacts of the Early College Expansion Partnership

SERVE Center

5900 Summit Ave.
#201
Browns Summit, NC 27214
www.serve.org

TRANSFORMING COMPREHENSIVE HIGH SCHOOLS INTO EARLY COLLEGES: THE IMPACTS OF THE EARLY COLLEGE EXPANSION PARTNERSHIP

Prepared by:

Dr. Julie Edmunds
Dr. Karla Lewis
Dr. Bryan Hutchins
SERVE Center at UNCG

Dr. Kristin Klopfenstein
University of Denver

Contact:

Dr. Julie Edmunds, Program Director

336-574-8727

jedmunds@serve.org

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Background Information about the SERVE Center

The SERVE Center at the University of North Carolina at Greensboro (UNCG) is a university-based research, development, dissemination, evaluation, and technical assistance center. Its mission is to support and promote teaching and learning excellence in the education community.

Since its inception in 1990, SERVE has been awarded over $200 million in contracts and grants. It has successfully managed 14 major awards including four consecutive contracts for the Regional Educational Laboratory for the Southeast (REL-SE) funded by the Institute of Education Sciences (IES) at the US Department of Education (USED) and four awards from USED for the National Center for Homeless Education (NCHE). In addition, past SERVE awards include a five-year Technology Grant for Coordinating Teaching and Learning in Migrant Communities, three consecutive contracts as the Eisenhower Consortium for Mathematics and Science Education for the Southeast, and two consecutive Regional Technology in Education Consortium grants.

At the national level, SERVE operates the National Center for Homeless Education (NCHE), USED's technical assistance and information dissemination center in the area of homeless education. NCHE uses state-of-the-art technology for web communication and online professional development and for supporting state coordinators of homeless education, local program coordinators, educators, parents, and advocates in all 50 states and in 15,000 school districts.

In addition to national-level NCHE activities, SERVE currently conducts research studies and evaluations under grants and contracts with federal, state, and local education agencies. Examples of SERVE's grant-funded research work include three federally funded studies of the impact of Early College high schools. Contract work includes evaluations of five Investing in Innovation (i3) projects, the Winston-Salem/Forsyth County Magnet Program in North Carolina, the Guilford County Schools teacher incentive program (Mission Possible), the USED-funded Bridges to Early Learning Project in South Carolina, and North Carolina's Race to the Top Initiative. The *Guiding Principles for Evaluators* (American Evaluation Association, 2004) and the *What Works Clearinghouse Standards* (Institution of Education Sciences, March, 2014) guide the evaluation work performed at the SERVE Center.

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Section I: Introduction and Overview

The changing U.S. economy means that jobs that pay a living wage are more likely to require some form of postsecondary education (Carnevale & Desrochers, 2003; Carnevale, Smith, & Strohl, 2010). Yet, concerns remain that too few students are successfully earning postsecondary credentials. In response to these concerns, educators and policymakers have been exploring a variety of efforts at the high school level to increase students' likelihood of enrolling and succeeding in postsecondary education. One of the most successful of these models has been the Early College.

As originally conceptualized, Early Colleges were small schools focused purposefully on college readiness for all students. Frequently located on college campuses, Early Colleges targeted students who might face challenges in postsecondary education, including students who were the first in their family to go to college, economically disadvantaged students, English Language Learners (ELL), or students who are members of racial or ethnic groups underrepresented in college. Early Colleges served students starting in 9th grade and the goal was to have students graduate in four or five years with a high school diploma and a postsecondary credential (an associate degree) or two years of transferable college credit. Supported by an initial investment by the Bill and Melinda Gates Foundation, the small Early College Model expanded across the country.

This model has been the subject of three rigorous longitudinal experimental studies funded by the U.S. Department of Education and led by SERVE Center at UNCG and an experimental study conducted by the American Institutes of Research. These studies found that the Early College Model had positive impacts on a variety of outcomes, including staying in school, progressing in college-preparatory courses, graduating from high school, and enrolling in and graduating from college (Berger et al., 2013; Edmunds, Bernstein, Unlu, Glennie, & Smith, 2013; Edmunds et al., 2012; Edmunds et al., 2017; Edmunds, Willse, Arshavsky, & Dallas, 2013).

Although the model has been successful, practitioners have been concerned about the extent to which a model composed of small schools on college campuses could be expanded to serve large numbers of students. As a result, there have been increasing efforts to explore the possibility of transforming regular comprehensive high schools into Early Colleges. The Early College Expansion Partnership (ECEP) is among the first large-scale effort to apply Early College strategies into comprehensive high schools.

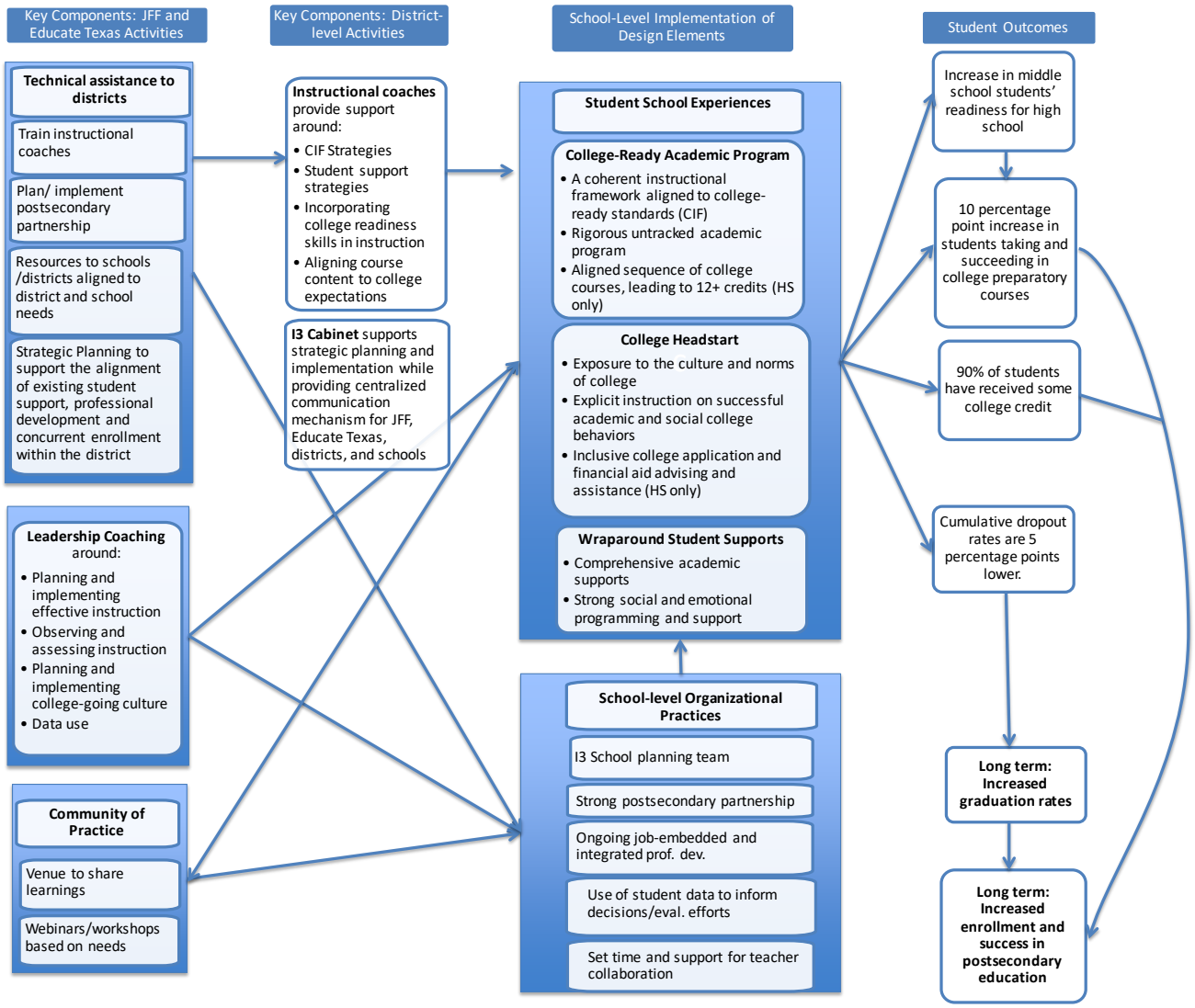
Supported by a $15 million grant from U.S. Department of Education's Investing in Innovation (i3) program, the ECEP was designed to increase the number of students graduating from high school prepared for enrollment and success in postsecondary education. The project sought to blend high school and college by applying strategies from the successful Early College high school model to 14 middle schools, 12 high schools, and two 6th-12th-grade schools in three districts in two states: Colorado and Texas.

ECEP implemented an adapted version of the Early College High School Model. Key adaptations from the original design included the following:

- ECEP implemented the model in existing comprehensive high schools. In the schools included in the experimental studies, the model has only been implemented in small schools, almost all of which were new and most of which were on college campuses.
- Original Early College High Schools were schools of choice to which a student had to apply. All schools engaged in some level of screening of applicants. In addition, most schools had substantial control over hiring of staff. This was not the case with the traditional high schools implementing ECEP.

ECEP was a collaborative effort, involving Jobs for the Future (JFF), Educate Texas (EdTX), and the school districts of Denver, Colorado, and Pharr-San Juan-Alamo (PSJA) and Brownsville Independent School District, both in the Rio Grande Valley area of Texas. The program provided a set of services that supported implementation of a whole-school reform model emphasizing the creation of a college-preparatory school environment. The services provided included: (1) technical assistance to districts around strategic planning, alignment of resources, and the creation of postsecondary partnerships; (2) on-site leadership coaching for school administrative teams around the ECEP Design Elements; (3) an online Community of Practice organized by JFF; (4) on-site instructional coaching with an emphasis on a core set of instructional practices; and (5) an i3 Cabinet or district-level coordinating body to guide the work. As a result of these services, each school was expected to implement four Early College Design Elements. These Early College Design Elements, as articulated by JFF, are as follows: (1) a College Ready Academic Program, (2) a College Headstart, (3) Wraparound Student Supports, and (4) School-Level Organizational Practices that support implementation. A primary emphasis of the program was increasing the number of students who participated in college-credit-bearing courses while in high school. Figure 1 is the the ECEP logic model, which graphically represents the program's implementation supports ("Key Components") as well as the anticipated school-level and student-level outcomes.

Figure 1. ECEP Logic Model



This report presents findings relative to the outcomes of the intervention (the last two columns in the logic model). Findings relative to the Key Components (the first two columns of the logic model) are included in a separate report entitled *Implementation Supports of the Early College Expansion Partnership*. This impact report is organized as follows:

- Section II: Evaluation Methodology. This section describes the approach used to assess student impacts and to track changes over time.
- Section III: Changes at the District and School Levels. In this section, we use survey and site visit data to describe key changes that have been made at the district and school levels. The Early College Design Elements are defined in more detail in this section.

- Section IV: Impact on Student Outcomes. This section presents the impact estimates for the core student-level outcomes.
- Section V: Discussion. In this section, we place the findings in context and we discuss the broader implications of this work.
- Section VI: Conclusions. This final section summarizes the overall findings.

Sections II-V begin with key highlights of the content in each section.

Section II: Evaluation Methodology

The evaluation was designed to examine the impact of the project on targeted outcomes and to explore changes occurring in the traditional schools as they sought to transform themselves into Early Colleges. The methodology section is divided into two different sub-sections: (1) Changes in Schools and Districts and (2) Impact on Student Outcomes.

Key Points

- The evaluation used mixed methods to assess the implementation and impact of the model.
- To examine the implementation of the model and changes that occurred at the district and school levels, the evaluation used data from surveys, site visits, annual interviews, and program materials.
- The impact study used a quasi-experimental design in which schools were matched on baseline measures of the outcomes and key demographic characteristics. Baseline equivalence was then assessed at the student level.

Changes in Schools and Districts

We used two primary approaches to explore the extent to which schools and districts were changing their practices: (1) a survey that measured implementation of the Design Elements in schools and (2) annual site visits to districts and biennial visits to schools. The methodology for each of these is described separately.

Survey

The implementation supports provided by the grant were designed to prepare participating schools to implement the four ECEP Design Elements. These Design Elements were expected to lead to improved student outcomes.

To measure implementation of the Design Elements, we developed a survey that was administered to school staff. The survey included a variety of scales that were indicators of the different Design Elements (a copy of the survey is provided in Appendix F). Table 1 provides a summary of the scales, sample questions, and the reliability of each scale.

Table 1. ECEP Implementation Survey Scales

Design Element	Indicator	Number of Items	Cronbach's Alpha Reliability: Middle School Respondents	Cronbach's Alpha Reliability: High School Respondents	Sample Question	Response Scale
College Ready Academic Program	CIF[a]-Collaborative Group Work	4	0.76	0.76	Had students work together on projects or assignments	1=Never 2=A few times this year 3=Once or twice a month 4=Once or twice a week 5=Almost every day
	CIF-Writing to Learn	4 (HS) 3 (MS)	0.74	0.75	Asked students to defend their own ideas or point of view in writing or in a discussion	
	CIF-Scaffolding	4	0.81	0.83	Made connections between what's covered in your class and what's covered in other classes	
	CIF-Questioning	3	0.87	0.87	Taught or modeled for your students how to ask good questions	
	CIF-Classroom Talk	4	0.78	0.81	Asked students to explain their thinking	
	CIF-Literacy Group	4	0.81	0.82	Asked students to read difficult or complex texts	
	Assessment	6	0.87	0.88	Used rubrics to grade students' work	
College Headstart	College-Going Culture	6 (HS) 5 (MS)	0.92	0.94	The faculty and staff in this school expect every student to receive postsecondary education or training	1=Strongly Disagree 2=Disagree 3=Agree 4=Strongly Agree

Design Element	Indicator	Number of Items	Cronbach's Alpha Reliability: Middle School Respondents	Cronbach's Alpha Reliability: High School Respondents	Sample Question	Response Scale
College Headstart (cont'd)	College Readiness Instructional Activities	6 (HS); 5 (MS)	0.83	0.84	Worked with students on time management and study skills	1=Never 2=A few times this year 3=Once or twice a month 4=Once or twice a week 5=Almost every day
	High School/ College Readiness Support [b]	9 (HS); 4 (MS)	0.90	0.95	Advising on courses to take to get ready for college	1=0% 2=less than 25% 3=26-49% 4=50-75% 5=greater than 75%
Wraparound Student Supports	Student Supports	5 (HS); 3 (MS)	0.80	0.93	Sessions or classes to help students cope with social or emotional issues	
	School Relationships	5	0.83	0.85	The family and home life of each student is known to at least one faculty or staff member in this school	1=Not true at all 2=Somewhat true 3=Mostly true 4=Entirely true
	Family Relationships	6	0.84	0.89	School faculty and staff meet or talk with parents	1=Never 2=A few times this year 3=Once or twice a month 4=Once or twice a week 5=Almost every day

[a] Common Instructional Framework

[b] Middle school staff received high school readiness support questions and high school staff received college readiness support questions.

The survey also included a set of questions that focused on "Organizational Supports," that is, participants' experiences with professional development, collaboration, and use of data. These questions were analyzed as individual items.

The survey was administered to schools in fall 2013 (baseline) and again in spring 2014, 2015, 2016, and 2017. Early analyses showed that there was a decline in the survey scale values between the surveys administered in fall 2013 and spring 2014 (within the same school year)

that appeared to be driven more by the timing of the survey administration than the program. As a result, we treated spring 2014 as our baseline. The analyses included in this report therefore focus on changes made between spring 2014 and spring 2017 (between the first and fourth years of implementation). Such an approach might help reduce the likelihood that results are driven by the timing of the survey administration; further it allows us to look at changes over three years. In order for a school to be included in the analyses, at least 50% of the staff at the school had to have completed the survey.

A total of 22 schools completed the survey in spring 2014 and 28 schools completed the survey in spring 2017. For analyses involving both spring 2014 and spring 2017 survey data, schools with less than 50% participation in either survey administration were excluded from the analytic sample. A total of 8 high schools and 12 middle schools met the participation requirements at both time points. It should be noted that the high schools that were included in this analysis varied in size. Given the small number of high schools that completed the survey at both spring administrations and the uneven size of the schools, any results showing changes for high schools should be interpreted with caution.

To analyze the difference in scales between 2014 and 2017, we used mixed-effects ANOVAs. One analytic challenge was that, because the survey was anonymous, we do not know if the same teachers responded at the different time points, making it impossible to link the survey results to an individual participant across time. Thus, we were unable to account for the correlation between survey responses across the two administrations as is typically the case with repeated-measures analysis. However, because survey responses were tracked at the school level, we were able to control for the fact that respondents were nested within schools. To account for the fact that respondents were nested within schools, we used mixed-effects ANOVAs for analysis of scales where survey administration (spring 2014 vs. spring 2017) was entered into the model as a fixed effect and school ID was entered as a random effect. It should be noted that results may have been impacted by issues related to staff turnover and/or different staff members taking the survey between both administrations.

Site Visits

To further explore changes that were occurring at the district and school levels, we conducted annual visits to the districts, supplemented by biennial visits to selected schools. During the annual visits to the districts, we interviewed key district-level personnel responsible for ECEP implementation, instructional and leadership coaches, and representatives from the higher education partners. Table 2 presents the district-level interviews conducted annually.

Table 2. District-Level Interviews

Level	Role	Year 1	Year 2	Year 3	Year 4	Year 5
District	District representatives	7	7	4	5	4
	External (JFF or EdTX) instructional coaches	8	11	7	4	--
	Internal (district or school) instructional coaches	--	12	10	8	--
	JFF leadership coaches	3	2	3	3	1
	CIF[a] Implementation Facilitator (EdTX)	NA	NA	1	1	--
	Professional Development Specialist (EdTX)	NA	NA	1	1	--
	District individual working with college credit	--	4	--	4	1
Project	JFF/EdTX staff	5	5	5	6	6
Higher Education	Postsecondary representative	1	3	3	3	3
	College faculty member	--	--		6	--
	Adjunct faculty (housed at high school)			3	4	--
	College liaison	--	--	2	2	2

[a] Common Instructional Framework.

Note that the positions of CIF Implementation Facilitator and Professional Development Specialist did not exist in the first two years of the project. Dashes indicate that we did not interview those individuals at that given time point.

The interviews focused on implementation of the various project activities as well as individuals' perceptions of how the schools were implementing the Design Elements. We also collected data on lessons learned and plans for sustainability.

In Years 2 and 4, we also conducted site visits to three schools in Denver (one high school, one middle school, and one 6-12 school) and two schools each in Brownsville and PSJA (one high school and one middle school). We were able to visit the same set of schools in Year 4 as in Year 2. During these site visits, we conducted interviews and observations. Table 3 summarizes the data collected during the school visits.

Table 3. Data Collected from Site Visits

Level	Role	Year 2	Year 4
High School	Administrators	11	7
	Counselor	4	4
	Teachers	7	5
	Students (in focus groups)	25	24
	Classroom observations	7	8
Middle School	Administrators	8	7
	Teachers	7	7
	Classroom observations	7	6
	Students (in focus groups)	--	24

Note: Dashes indicate that we did not interview those individuals at that given time point.

The interviews focused on implementation of the various Design Elements and included questions around college credit coursetaking, creating a college-going culture, supports for students, changes in instruction, and the organizational structures in place to support the work. The observations focused on the extent to which targeted instructional practices, including the Common Instructional Framework and other college readiness strategies, were being implemented in the classrooms. A typical interview protocol is provided in Appendix E and the observation protocol is available upon request.

All interviews were transcribed and observation notes were entered into an online data collection system. We then reviewed the transcripts and observation data to describe the specific actions that districts were taking to support the project activities and that schools were taking to implement the Design Elements.

Impact on Student Outcomes

Overview

The core question for the impact study was:

> To what extent does participation in ECEP result in improved student outcomes, including increased college preparatory coursetaking and success, increased numbers of students staying in school, and increased enrollment and success in college-level courses?

This general research question was further broken into three specific *Primary (Confirmatory) Research Questions*:

1. To what extent does a school's participation in more than one year of ECEP result in increased enrollment and success in a college preparatory course of study in the 9th grade?
2. To what extent does a school's participation in more than two years of ECEP result in fewer students dropping out by the beginning of their third year in high school?
3. To what extent does a school's participation in at least three years of ECEP result in improved student enrollment and success in college-level courses by the end of 12th grade?

The impact study also examined the impacts on college credit coursetaking for 11th graders. Further, we conducted exploratory analyses that examined project impact on key sub-groups of students including those who were: (1) an under-represented minority, (2) economically disadvantaged, (3) English Language Learners, and (4) initially low-performing.

Research Design

The impact study utilized a two-level quasi-experimental design in which ECEP schools were first matched to similar schools not participating in ECEP. Baseline equivalence was then established on the students in those schools; if the students were not equivalent, we conducted additional matching. Results were then compared for students within those two sets of schools.

The goal of this quasi-experimental design was to compare outcomes for students in schools that received the ECEP intervention with outcomes for students in other schools that did not receive the ECEP intervention. This kind of research design is stronger than designs that only look at changes in participating schools over time because it can account for any other changes that may also cause the outcomes to improve over time. For example, during the period of the ECEP intervention, there might also have been state policies expanding student access to dual enrollment. In this situation, it might be possible that ECEP schools expanded their college enrollment because of the state policies and not because of the project. Thus, we compared the ECEP schools to other schools that were experiencing the same changes in state policies.

Outcomes and Data Sources

The core outcomes examined in the impact evaluation fell into three primary domains: (1) college preparatory coursetaking, (2) staying in school, and (3) experience in courses potentially bearing college credit. The measures in each domain are described below.

For the outcome analysis, we relied exclusively on administrative data that districts finished compiling in the summer following each academic year (later in the case of dropout data). In Texas, all data used for student outcomes were collected from schools by the Texas Education Agency as part of regular administrative data collections; we were thus able to use state-wide administrative records housed at the Education Research Data Center at the University of Texas in Dallas. In Colorado, student outcomes data were provided directly by Denver Public Schools, which collected these data as part of their regular administrative data collection protocol. Students were included in the sample only if they had non-missing values for all variables used in the analysis.

Domain 1: Enrollment and Success in a College Preparatory Course of Study

This domain included two separate, yet tightly related, outcomes.

Confirmatory Outcome A: College Preparatory Coursetaking. This measure looked at the proportion of students taking a core set of college preparatory courses at the 9th-grade level. In 9th grade, the two courses were the equivalent of English I or a higher-level English course and one college preparatory mathematics course (i.e., Algebra I, Geometry, Algebra II, Integrated Math I or higher). “Taking a course” was defined as a student being enrolled in at least one Carnegie unit of relevant coursework during the academic year. Because it is

extremely challenging for students who are off-track for college in 9th grade to catch up (Finkelstein & Fong, 2008), this measure assessed the extent to which schools provided access to the courses needed to enter college.

Confirmatory Outcome B: College Preparatory Course Success. This measure was very closely related to the first measure; the percentage of students taking and succeeding in English I and at least one college preparatory math course in the 9th grade. "Successful completion" was defined as earning high school credit for at least one Carnegie unit of relevant coursework with a grade of C- or higher.[1] While the first measure spoke to access, this second measure of successful course completion captured both access and success in school.

Domain 2: Staying in School

This domain included one outcome.

Confirmatory Outcome C: Cohort Dropout Rate. This measure reflected the percentage of students who were 9th graders in 2013-14 who dropped out by the start of their third year in high school. If a student was no longer enrolled in school, schools confirmed whether they were enrolled somewhere else (including a GED program), left the country, or were being home schooled. Students who could not be located elsewhere were identified as dropping out. These data were reported at the student level in state leaver files in Texas and in district exit codes in Denver.

Domain 3: Enrollment and Success in College-Level Courses

This domain included two outcomes.

Confirmatory Outcome D: College-Level Coursetaking. This measure examined the percentage of students who had enrolled in at least one college-level course (any number or fraction of Carnegie units) by the end of 12th grade, excluding developmental courses. For this outcome, we looked at three different types of courses that had the potential to provide students with college-level credit: (1) transferable dual credit courses, defined for this study as courses offered by a two- or four-year institution for which a student can receive college credit upon successful completion of the course and for which that credit could transfer to another college; (2) Advanced Placement (AP) courses, which are college-level courses taught at the high school and which require students to pass an external exam to receive college credit; and (3) college-level Career and Technical Education (CTE) courses, a large portion of which are articulated courses in which a student can receive college credit only if they enroll in the postsecondary

[1] A C- is the cut-off used to determine successful completion of a course by Texas and the administrative data only include an indication of whether the student's grade was a C- or higher, not the actual grade. As a result, we applied the same standard for successful completion to both the Texas and Colorado data.

institution that originally offered the course.[2] A primary goal of the ECEP intervention was to increase the number of students who have access to college-level courses. Thus, this measure was designed to look at the percentage of the student body given access to these courses. A student was coded as taking a college-level course if they had enrolled in at least one AP, dual enrollment, or college-level CTE course by the end of 12th grade. Data were collected at the student level and included the name of the course and whether it was AP, dual enrollment, or college-level CTE.

Confirmatory Outcome E: High School Credits Received for College-Level Courses. This measure captured the average number of high school credits earned in college-level courses students had taken and passed with a grade of C- or higher by the end of 12th grade. Just as with Confirmatory Outcome D, we excluded developmental courses. This measure was designed to assess not only access to college-level courses, but success in those courses. Students were identified as having taken and earned high school credit with a grade of C- or higher in any of the three types of potentially college credit-bearing courses, as described above.

We acknowledge that students taking AP courses can only earn college credit if they pass the exams associated with the courses. Unfortunately, we did not have AP exam performance data. As a result, as noted above, we used passing the course as a proxy for passing the exam. We recognize that many students who pass the AP course may not pass the exam and therefore may not earn college credit. We acknowledge that the number of credits earned through this calculation could be considered the upper bound on the total number of actual college credits earned by students. In recognition of this issue, we supplemented the primary outcome of all credits received with a sensitivity analysis that looked at the number of credits earned through only dual enrollment courses, which served as a lower bound estimate of the total number of college credits earned.

The same logic applied to the CTE courses, the vast majority of which were articulated courses that gave students the opportunity to earn college credit in only limited instances. Thus, the high school credits that included Carnegie units earned for the CTE courses could be considered an upper bound on the total number of college credits that a student actually earned.

The number of credits received represented the cumulative number of credits awarded in courses taken in the 12th grade and three years prior with a grade of C- or higher. Data were collected at the student level and included the name of the course, whether it was AP, dual

[2] As an example of an articulated course: a student could take a college-level welding course from community college X. Upon successful completion of the course, the student receives high school credit for the course. If the student enrolls in community college X, he or she will receive college credit for the course. If the student enrolls in another institution, he or she would not receive college credit and would only have the high school credit.

enrollment, or college-level CTE, the credits earned, and whether a student earned credit with a grade of at least a C-.

Table 4 summarizes the outcomes that were examined, the time points at which they were examined, and the sample for each outcome.

Table 4. ECEP Evaluation Outcomes

Outcome	Definition	Time Point	Sample
A. Enrollment in a college preparatory course of study	Percentage of students taking English I and Algebra I or higher	2014-15 2015-16	9th graders
B. Enrollment and success in a college preparatory course of study	Percentage of students taking and passing English I and Algebra I or higher	2014-15 2015-16	9th graders
C. Staying in school	Percentage of 9th graders who had dropped out of high school by the start of 11th grade	Beginning of 2015-16 school year	9th graders from 2013-14
D. Enrollment in college courses	Percentage of 12th graders ever enrolled in college-level (dual credit (both transferable and CTE) and AP) courses	2016-17	12th graders (11th graders as exploratory)
E. College credit attainment	Number of college-credit-bearing courses ever taken and number of high school credits earned in college-level classes	2016-17	12th graders (11th graders as exploratory)

As Table 4 shows, the student sample varied depending on the outcome. We next discuss creation of the overall school sample and then the analytic sample for each outcome.

Sample

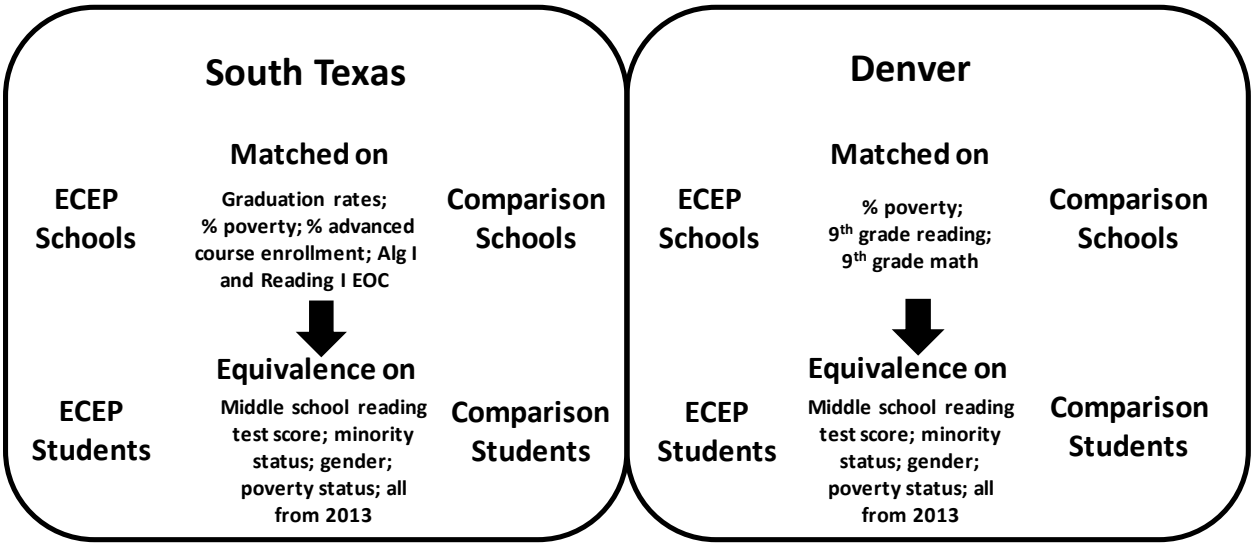
JFF recruited three districts to be part of the i3 proposal. The two Texas districts—PSJA and Brownsville, both located in the Rio Grande Valley—were chosen because of their interest in Early Colleges. One district, PSJA, had already committed to creating a district-wide Early College and had implemented the model in most district high schools. The i3 grant supported implementation of the model in the two remaining high schools. The second district, Brownsville, had one Early College high school and wanted to expand the model to more schools. However, familiarity with the instructional and structural components of the Early College Model was much less widespread. Brownsville selected schools for participation based on enrollment size and experience offering dual credit courses.

JFF chose the third district, Denver Public Schools, to take advantage of Colorado's recent policy changes creating a good environment for growth of dual enrollment as well as the district's leadership and commitment to college access and success. In Denver, participating schools were chosen through a district-wide RFP process. In addition to proposals for providing ECEP course offerings and support services, applicant schools were judged on their history of providing dual enrollment opportunities and a commitment to providing a school culture

conducive to ECEP implementation. Fifteen schools submitted RFPs and nine were chosen. Three of the ECEP high schools in Denver were recently opened and only served a subset of grades as of the baseline year. Two schools served grades 6-12. Three schools, including one of the 6-12 schools and one of the recently opened schools, self-identified as early or middle colleges but had not historically received services from JFF or a similar provider. Thus, at the start of the evaluation, it was unclear the extent to which these schools exhibited the desired Early College Design Elements. Three schools were classified as Innovation Schools, which afforded them many of the same flexibilities as charter schools.

These treatment schools were then matched to a set of similar comparison schools. The strength of a quasi-experimental design relies on the extent to which the students in the two sets of schools—treatment (ECEP) and comparison—are similar to each other in terms of their characteristics and initial level of the outcomes. Although the analyses compared students, we began by matching the ECEP schools to comparison schools. We used slightly different procedures in Texas and Denver to identify a strong set of comparison schools. Figure 2 presents an overview of the matching process.

Figure 2. Comparison Sample Construction



In Texas, we started with the pool of all non-Early College, non-charter schools in the Rio Grande Valley that had at least 50 students in 9th grade. We used 3-nearest-neighbor propensity score matching with replacement using the following school-level variables: (1) percentage of 11th- and 12th-grade students passing AP, IB, dual credit, or other challenging courses as defined by the state; (2) four-year cohort graduation rate; (3) percentage of students passing the Algebra I end-of-course exam and the percentage of students passing the Reading I end-of-course exam; and (4) percentage of students eligible for free or reduced-price lunch.

This process resulted in a total of six comparison schools, each in a different district, for the five treatment schools in Texas.

In Denver, the school-level matching occurred entirely within the district. Several ECEP schools enjoyed much of the same flexibility as charter schools through state-designated Innovation Status, so we included charter schools in the potential comparison pool. Because three treatment schools were newly formed and did not have 11th and 12th graders in the baseline year, we were unable to match on the percentage of students taking advanced courses nor on graduation rates. As a result, we used the following variables from 2012-13 for school-level matching: (1) percentage of students eligible for free or reduced-price lunch, (2) percentage of students passing the 9th-grade state standardized math test, and (3) percentage of students passing the 9th-grade state standardized reading test. Propensity score matching did not identify matches that were equivalent for the targeted variables, so we elected instead to conduct 1:1 matching which minimized the Euclidean distance between treatment and comparison schools on the three variables. In this way, we were able to find nine comparison schools, one for each of the nine treatment schools. It is important to note that the comparison schools were subject to the same district-wide policies as the treatment schools. Given that ECEP worked with district-level staff, it is possible that the comparison schools may have received some of the benefit of the intervention as well.

The previous description applies to the selection of schools. Within the schools, we utilized sub-populations of students that varied depending on the proposed outcomes. For each separate analysis, we assessed baseline equivalence on the analytic sample of students. We evaluated whether the students in our samples in these schools were similar on the following student-level measures: (1) scores on the middle school state standardized reading test, (2) gender, (3) underrepresented minority, and (4) eligibility for free or reduced-price lunch. For all variables, we used data from 2012-13, the year prior to the intervention starting. Table 5 shows baseline equivalence for the students in each of our three analytic samples. In Texas, the school-level matching led to student populations that were equivalent on all of the baseline measures; the only exception was the proportion of underrepresented minority students in Texas for Outcomes A and B, which had a non-substantive difference of only 0.4 percentage points but a large effect size because of the lack of variability across sites. In Denver, the school-level matching led to student populations that were mostly comparable except in the samples for the sub-group analyses where there was a higher percentage of minority students enrolled in treatment schools. As a result, we dropped randomly selected students who were both minority and ELL from the treatment group full sample until we attained baseline equivalence for the sub-group samples in addition to the full sample. As the table shows, the final student samples were equivalent in the baseline year for the pooled sample, with any differences

between the two populations having effect sizes of less than 0.25, which met the What Works Clearinghouse standards for baseline equivalence.

Table 5. Baseline Student Characteristics, by Sample*

Sample	Sample Definition	Characteristic	Treatment Mean (SD)	Comparison Mean (SD)	Treatment-Comparison Difference (Effect Size)[3]
Analytic Sample for Outcomes A and B (9th-grade college prep coursetaking)	Cross-sectional sample of 9th graders in schools in their second and third years of implementation (2014-15 and 2015-16)	Panel A: Pooled	(N=7,723)	(N=6,797)	
		Baseline reading z-score	0.011 (0.954)	0.002 (1.052)	0.009
		Eligible for free or reduced-price lunch	88.1%	88.1%	0.00
		Underrepresented minority	92.6%	92.3%	0.03
		Female	49.4%	49.6%	-0.01
		Panel B: Texas	(N=4,917)	(N=4,673)	
		Baseline reading z-score	0.012 (0.958)	-0.013 (1.041)	0.026
		Eligible for free or reduced-price lunch	93.2%	94.0%	-0.09
		Underrepresented minority	99.3%	98.9%	0.29
		Female	49.9%	49.4%	0.01
		Panel C: Denver	(N=2,806)	(N=2,124)	
		Baseline reading z-score	0.009 (0.946)	0.036 (1.076)	-0.03
		Eligible for free or reduced-price lunch	79.3%	75.1%	0.14
		Underrepresented minority	80.9%	77.8%	0.12
		Female	48.5%	50.2%	-0.04
Analytic Sample for Outcome C (persistence)	Longitudinal sample of 9th graders from 2013-14 followed through 2015-16	Panel A: Pooled	(N=4,192)	(N=3,438)	
		Baseline reading z-score	0.012 (0.874)	0.007 (1.132)	0.01
		Eligible for free or reduced-price lunch	87.5%	89.6%	-0.128
		Underrepresented minority	92.5%	93.7%	-0.111
		Female	48.6%	48.9%	-0.007
		Panel B: Texas	(N=2,511)	(N=2,363)	
		Baseline reading z-score	-0.001 (0.799)	0.001 (1.177)	0.00

[3] To calculate effect sizes for continuous variables, we used Hedge's *g*, which is calculated using the standard deviation pooled between treatment and comparison groups. For dichotomous variables, we calculated Cox's *d*.

Sample	Sample Definition	Characteristic	Treatment Mean (SD)	Comparison Mean (SD)	Treatment-Comparison Difference (Effect Size)[3]
		Eligible for free or reduced-price lunch	94.1%	94.6%	-0.06
		Underrepresented minority	99.3%	99.4%	-0.11
		Female	49.3%	48.2%	0.03
		Panel C: Denver	(N=1,681)	(N=1,075)	
		Baseline reading z-score	0.032 (0.987)	0.021 (1.034)	0.01
		Eligible for free or reduced-price lunch	77.6%	78.6%	-0.034
		Underrepresented minority	82.3%	81.0%	0.053
		Female	47.5%	50.4%	-0.07
Analytic Sample for Outcomes D and E (college credit courses)	12th graders enrolled in 2016-17	Panel A: Pooled	(N=2,756)	(N=2,380)	
		Baseline reading z-score	0.006 (0.849)	0.008 (1.152)	-0.002
		Eligible for free or reduced-price lunch	88.2%	88.6%	-0.019
		Underrepresented minority	94.3%	93.9%	0.052
		Female	50.1%	51.5%	-0.032
		Panel B: Texas	(N=1,984)	(N=1,842)	
		Baseline reading z-score	-0.002 (0.805)	0.002 (1.175)	0.00
		Eligible for free or reduced-price lunch	93.3%	93.4%	-0.01
		Underrepresented minority	99.5%	99.3%	0.22
		Female	49.3%	50.3%	-0.03
		Panel C: Denver	(N=772)	(N=538)	
		Baseline reading z-score	0.025 (0.983)	0.028 (1.039)	0.00
		Eligible for free or reduced-price lunch	75.6%	71.9%	0.10
		Underrepresented minority	81.0%	75.1%	0.21
		Female	52.3%	55.4%	-0.07

*Baseline year for administrative data is 2012-13 school year, the year prior to the intervention starting.

Baseline equivalence for sub-groups was established at the student level using the same baseline measures and analytic procedures described above. These baseline tables for the subgroup analyses are provided in Appendix A.

Analysis

We examined the difference between ECEP and comparison schools using hierarchical linear modeling (HLM) (Raudenbush & Bryk, 2002), which accounts for the fact that students are nested within schools. The models included all the student-level variables listed in Table 5 as well as student-level baseline math z-scores and ELL status, and school-level variables for the percentage of students in poverty, passing the 9th-grade standardized test in English, and passing the 9th-grade standardized test in math in the baseline year. School-level variables were limited to those that could be measured in the 9th-grade year because several treatment high schools were new at baseline and had yet to serve all grade levels. For this reason, it also was not possible to calculate pre-post changes analogous to the targets represented in the student outcomes column of the logic model in Figure 1 for dropout and college-level coursetaking outcomes.

In general, the HLM models sought to answer the question, "Is there an overall treatment effect of the ECEP intervention on relevant student outcomes for schools that implement the model relative to their comparison school counterparts?" We therefore estimated the parameters for a random intercept at the school level (Level 2) and clustered standard errors at the school level. The treatment effect was adjusted for school-level variables measured during the baseline year (Bloom, Richburg-Hayes, & Black, 2007). Although debate exists about whether the analysis needs to account for matched pairs, Stuart (2010) argued that it is not necessary to account for matched pairs when variables used in the matching process are included in the model. Therefore, we chose not to model matched pairs but to include all covariates upon which schools matched in our analytic models (see matching discussion above).

All models were estimated in the latest available version of STATA. To facilitate interpretation, all variables were centered around their grand mean. The statistical model is shown in Appendix B with all covariates included in every model regardless of statistical significance.

These analyses were conducted initially by state and then pooled to determine the overall programmatic impact of the initiative. The combined treatment effect was calculated as a weighted average of the individual state estimates with weights proportional to the inverse variance of each estimate. This strategy gave greater weight to the more precise estimate, just as would occur if parameters were estimated from a single combined sample. It is important to note that, for some outcomes, this approach resulted in one state being weighted substantially more than the other. The weights are provided in Appendix C.

We also conducted exploratory analyses to examine whether programmatic impacts on all relevant outcomes varied for three theoretically relevant sub-groups of interest: (1) economically disadvantaged students, (2) English language Learners, and (3) under-performing students (i.e., those who did not meet the Level II recommended score on reading in middle

school). We also added two analyses related to exposure to the intervention. One examined the impacts on 9th-grade college preparatory coursetaking outcomes for students who participated in the middle school component of the intervention, and the other looked at the impact on college credit coursetaking outcomes for students who were enrolled in a treatment high school for the full three years. The impacts on each sub-group were estimated separately so that estimated intercepts and slopes were allowed to vary. The estimated model was identical to that for the relevant confirmatory analysis, with only the stratifying variable removed due to lack of variation.

We planned to adjust for multiple comparisons for only confirmatory outcomes for the pooled sample within each of the three domains, as appropriate. The two-college preparatory coursetaking outcomes fell within the same domain and were subject to adjustment, as were the two outcomes that fell under the college credit coursetaking domain. The dropout outcome was the only outcome in that domain and was not subject to adjustment. Although the plan was to use significance tests that accounted for the potential false discovery rate (Benjamini & Hochberg, 1995), no confirmatory outcomes that would have been subject to adjustment were statistically significant so adjustments were not needed. Exploratory analyses, including sub-group and state-level analyses, were not subject to adjustment.

Section III: Implementation of the Early College Model

The expectation of the Early College Model is to change the teaching and learning environments in schools. In this section, we present descriptive results around how participating schools have changed their practices because of the ECEP project. The section begins with a description of the extent to which schools were supportive of the Early College work and then describes participants' overall perceptions of the impact of the project. The remainder of the section integrates data from surveys and site visits to describe changes the schools made relative to the four Design Elements: College Ready Academic Program, College Headstart, Wraparound Student Supports, and School-level Organizational Practices. As appropriate, we include information about how districts have changed their practices, however, the majority of information about how districts have supported the Early College work can be found in the accompanying report, *Implementation Supports of the Early College Expansion Partnership*.

Key Points

- All three districts remained committed to the goals of the grant over the duration of the project. Buy-in varied at the school level.
- When asked about project impact, approximately three-quarters of survey respondents indicated that the project had some or a substantial impact on the ability of the school to prepare students for college, on instruction and supports, and on the level of expectations for students going to college. Approximately three-quarters also indicated that the project had some or substantial impact on the professional experience including the use of data, the level of collaboration in the school, and the quality of the postsecondary partnership.
- Across all three districts, the project increased the number of officially recognized as Early Colleges by their states.
- School staff reported expanding access to college courses.
- All three districts developed pathways to guide students' college coursetaking.
- All three districts moved to incentivize more high school teachers to become credentialed to teach college courses.
- Site visit data suggested that there were instructional changes occurring, but that this might be occurring primarily in pockets. Survey results showed the same, suggesting that instructional change were not widespread across the schools.
- Schools significantly increased their support for college readiness activities, including an emphasis on increasing the number of students completing college placement exams.

- In focus groups, students reported an increased college-going culture in their school.
- Over the course of the grant, teachers reported increases in professional development and use of data to inform instruction.

Buy-In at the School Level

Research on effective implementation suggests that one of the most important factors affecting quality of implementation and sustainability of project activities is the extent to which participants believe in or "buy in" to the intervention (Durlak & Dupre, 2008; Meyers, Durlak, & Wandersman, 2012). All three districts began the grant with a commitment to the Early College work and this commitment remained throughout the project. Much of the buy-in at the district level stemmed from the belief among district staff that the ECEP grant aligned with other district initiatives related to college and career readiness. For example, PSJA was awarded two Early College High School Demonstration Site grants, all Brownsville high schools were designated as Early Colleges, and in Denver, school and district leaders mentioned the push toward the Denver 2020 goal of graduating every student "college and career ready," with an emphasis on students entering postsecondary environments "remediation free."

Although buy-in is important at the district level, it is particularly important for school leadership given that the changes that directly impact students occur at the school level. In the first year of the project, buy-in at the school level was reported as mixed. A number of participating schools were immediately on board with adopting the college readiness goals, instructional strategies, and the need to get more students taking college classes. Alternatively, other schools seemed somewhat unclear about the intervention. For example, in one district, an instructional coach described how implementation varied across the sites with which she worked, "One particular campus…really supports the process. The other two, I am not sure that campus leadership really understands the process enough to trust." Starting in the second year of the project and continuing throughout the project, however, buy-in at the school leadership level was seen as strong, driven by a sense of alignment between the ECEP work and the other work of the district. As one principal described in the second year of implementation:

> The grant and the initiatives to the district seem to have slowly overlapped much better now, and so they seem to be working more in conjunction than in separation, and so now when we're approached to start a new initiative or to follow up on something that they would like to see implemented in our school, it's always through that lens of Early College and postsecondary readiness.

One of the challenges that we observed around buy-in was the issue of leadership turnover. All districts experienced some level of school leadership turnover over the course of the grant. For example, one of the high school principals that we interviewed in Year 4 was starting his second year at the school and stated that the ECEP grant had been less of a priority for him than other

things in his first year as he navigated his new position. In his first year he delegated much of the responsibility for project implementation to the internal instructional coach assigned to the school and to the assistant principals.

At the teacher level, our interviews suggested that most were generally supportive of the goals of the grant, but that buy-in varied. A high school principal in Year 2 estimated about 75% of his staff were on board. In Year 4, a different high school principal estimated buy-in to be at 50% among his staff. Qualitative data suggested that buy-in among teachers seemed to be related to exposure to ECEP professional development activities and working directly with an instructional coach. If the ECEP practices were not regularly reinforced in the school, awareness and buy-in dropped. For example, one high school teacher that we interviewed in Year 4 indicated that some teachers in her school had forgotten about the program because ECEP concepts were not incorporated into professional development and that instructional rounds did not focus on observing Common Instructional Framework strategy implementation.

Although teacher buy-in varied within and across schools, there was some suggestion that, by the end of the grant, sustained efforts were winning over previously resistant teachers within participating schools. Specifically, some staff members mentioned an observed change in veteran teachers, often perceived to be more difficult to change. For example, a teacher at one middle school said,

> I mentioned at the beginning of our interview also the naysayers; the teachers that have been here for over, and I'm not saying this is every teacher, because we have teachers that have been here for 30 years and say, we need change! But the other ones that are stuck and are not willing to put in the extra time that lesson planning takes, and they are slowly coming along, but it has been a challenge to get them to see the light.

A similar perspective was offered by a high school principal around slowly winning over some of the more veteran teachers:

> The i3 comes with training teachers. A whole mind shift type of going, "I'm an experienced teacher, so why am I going through this training?" That type of deal. Now, my teacher leaders are like, "When are we going to start the instructional rounds again? When are we doing the team teaching again, cross-curricular?" Those are the conversations that we're having. It's taken us a while.

As with school leadership buy-in, buy-in among teachers faced challenges due to turnover too, which gave teachers uneven exposure to the ECEP grant. Additionally, across all three districts, there was a reduction in instructional coach availability. This issue was particularly acute in Denver where one coach returned to the classroom and the remaining two coaches had to pick up project management responsibilities after the sudden death of the project lead. This loss of coaching availability did not go unnoticed by some of the staff that we interviewed. For

example, one high school teacher said,

> I think it has changed this year.... I don't feel that we are as involved with it as we were.... Okay, so the two middle years, Year 2 and Year 3, we were pretty connected and pretty involved. The first year, I think it was just kind of introduced to us and there wasn't as much involvement. And I feel like this Year 4, there's hardly any involvement. So, I think it's just a few of us, who have worked closely with [the instructional coach] and have the rubrics and know what they are and believe in them, [who] are still carrying those through.

The data collected on buy-in suggests that staff were generally supportive of ECEP but that there might be uneven implementation of the Design Elements.

Perceived Impact

At the end of the project, faculty and project staff were asked to reflect on the extent to which the project had an impact on their district, their school, or their postsecondary institution. On the staff survey, we asked school staff to indicate the level of impact that the project had on various aspects of their school. As shown in Table 6, approximately 75% of respondents indicated that the project had some or a substantial impact on the ability of the school to prepare students for college, on instruction and supports, and on the level of expectations. Approximately three quarters also indicated that the project had some or substantial impact on the professional experience including the use of data, the level of collaboration in the school, and the quality of the postsecondary partnership.

Table 6. School Staff Perceptions of Project Impact

	% Agreeing that ECEP has impacted the school					
Because of the i3 Early College work…	No Impact	Minimal Impact	Some Impact	Substantial Impact	% Indicating Some or Substantial Impact	Mean
Our school is better able to prepare students for college.						
Middle Schools	10.6%	14.2%	53.5%	21.7%	75.2%	2.86
High Schools	10.4%	10.4%	50.5%	28.7%	79.2%	2.98
We have improved the instruction in our school.						
Middle Schools	10.1%	16.0%	50.9%	23.0%	73.9%	2.87
High Schools	10.3%	12.8%	48.8%	28.1%	76.9%	2.95
The staff in our school have higher expectations for all students.						
Middle Schools	10.5%	15.7%	49.7%	24.1%	73.8%	2.87
High Schools	10.7%	13.0%	46.3%	30.0%	76.3%	2.96
We have improved the academic and affective supports that are in place for our students.						
Middle Schools	10.1%	17.6%	48.5%	23.8%	72.3%	2.86
High Schools	10.3%	12.7%	48.5%	28.5%	77.0%	2.95
Our staff are using student data more frequently.						
Middle Schools	10.4%	15.1%	50.5%	24.0%	74.5%	2.88

Because of the i3 Early College work…	% Agreeing that ECEP has impacted the school					
	No Impact	Minimal Impact	Some Impact	Substantial Impact	% Indicating Some or Substantial Impact	Mean
High Schools	10.8%	12.8%	47.6%	28.7%	76.3%	2.94
Our faculty are more likely to work collaboratively to improve instruction.						
Middle Schools	10.3%	14.8%	49.0%	25.9%	74.9%	2.90
High Schools	11.3%	12.9%	48.4%	27.3%	75.7%	2.92
We have a stronger partnership with a postsecondary institution.						
Middle Schools	NA	NA	NA	NA	NA	NA
High Schools	11.0%	12.0%	47.8%	29.2%	77.0%	2.95

Interviews and site visits provided additional information about perceived impacts of the grant. An overview of these impacts is presented here; a more detailed discussion of findings is also presented, as appropriate, by individual Design Element.

One of the most significant impacts of the project was that, across all three districts, i3 schools received official state designations as Early Colleges. Early College designation came with certain requirements and benefits, which allowed students to take more courses as described in more depth under the College Ready Academic Program discussion below.

In Texas, these designations occurred toward the beginning of the project and in Denver, they occurred toward the end. One district staff member described the impact:

> The state designation would be, I think, one of the largest outcomes of the grant. I know it was never really a part of our plan in [Denver] to turn all our schools into state-designated Early Colleges, and so we really focused a lot on increasing concurrent enrollment, increasing the number of courses, access, pass rates, and then a positive side-effect, I think, of that concentration and the redesign of the high school experience, our new state graduation guidelines, has been this interest in state designation. And so, four of our participating schools got their state designation and then two additional schools. So, I think that state designation has been the [greatest] impact of the grant; [a] mind-shift to yes, we do want to do this.

Another impact of the grant in two of the districts has been the formation of governance structures providing for clear coordination between the district and postsecondary partners. Staff in one district noted that the district had been doing a lot of work related to Early College and dual enrollment prior to the grant but "there weren't systems really in place to help us or guide us with the work as much as there has been with the i3 now…. So that's how it's helped our district a lot."

Another significant area of impact has been on college readiness and college coursetaking. One staff member noted:

> It's put an emphasis on college readiness, on the wall-to-wall model of Early College high school, on college, on TSI prep, and TSI passing rates. I mean, we track data continuously having to do with TSI, having to do with numbers of students involved, having to do with the number of students taking dual enrollment courses and when they take it.

In Denver, a district staff member described how ECEP has caused district-wide growth in college coursetaking:

> I would say that this grant was the impetus for the exploding growth that we've seen in concurrent enrollment. And concurrent enrollment programs have been around…for a long time and under-utilized. And then, the laws changed, and things like that. So, I would say that one of the things that the grant was able to do is to give us the supports and the capacity to be able to really grow [the rate of concurrent enrollment].

Most interviewees also noted that there were changes in instruction as a result of the project, with shifts toward more student-centered instructional practices.

> I think the teachers are getting used to letting the kids do more. It's hard, I talked for 18 years. It's difficult to let go of the classroom…. The rigor of the lessons I think have stepped up more than what they were before. It's hard for the teachers that have been here for a long time because I know some teachers that have been here really long. It's hard for them to let go and let the kids do more and be just be a guide, just monitor the kids and walk around and help them, not so much do more. It's more about letting the kids do and guiding them as a teacher. Planning those rigorous lessons and.... They're working on it. It has changed and it is getting better.

Some interviewees also acknowledged, however, that it was hard to make instructional change. One principal did not believe there had been any change and a coach noted, "The instructional change is slow moving." More information on instruction is provided under the College Ready Academic Program Design Element.

College representatives also highlighted that the grant had had impacts on their postsecondary institutions, primarily because of the expansion of college courses. For one college, it forced them to put positions and infrastructure in place that they would not have otherwise had. The increase in college courses also forced colleges to expand the numbers of teachers, which resulted in challenges related to staffing.

At two of the partner colleges, representatives indicated that the Early College work had an impact on the instruction. As one college instructor said,

> The biggest impact I've seen is me working closely with the high school teachers and knowing some of their background with pedagogy and bringing that pedagogy back to

the college, because so many of us at the college are just trained in content [specialties] and not necessarily in pedagogy.

The next sections of the report describe some of these impacts in more depth, organized by the four Early College Design Elements.

College Ready Academic Program

One of the core Design Elements is a College Ready Academic Program. This Design Element focuses on the coursetaking and instructional changes seen as necessary to prepare students effectively for college.

Coursetaking

Regarding coursetaking, in order to implement a College Ready Academic Program, schools are expected to implement an academic program of study that allows almost all students to be prepared for college and to attain at least some college credits. A College Ready Academic Program also includes access to, and success in, the courses needed for entrance into college as well as courses that can provide students the opportunities to earn college credit while in high school. The ECEP impact study looked at the extent to which the program was increasing the number of 9th graders successfully completing a college preparatory course of study as well as the impact of the program on college coursetaking.

In addition to collecting data on college preparatory coursetaking, we also collected data around advanced coursetaking. Table 7 shows the percentage of respondents indicating high school students' enrollment in different types of advanced courses across the six schools for which administrator data were available for spring 2014 and spring 2017. The table suggests that high schools generally increased their enrollment in honors courses, pathways, and college credit-bearing courses over the course of the grant.

Table 7. Percentage of High Schools Indicating Specific Levels of Students' Enrollment in Advanced Courses—Spring 2014 and Spring 2017

	Level of High School Students' Participation				
Type of Class	0-25% Students Enrolled	25-49% Students Enrolled	50-74% Students Enrolled	75-99% Students Enrolled	100% Students Enrolled
Honors					
Spring 2014	33.3%	50.0%	0.0%	0.0%	16.7%
Spring 2017	0.0%	50.0%	16.7%	33.3%	0.0%
STEM pathways					
Spring 2014	83.3%	16.7%	0.0%	0.0%	0.0%
Spring 2017	50.0%	33.3%	16.7%	0.0%	0.0%
Career and Technical Education (CTE) pathways					
Spring 2014	33.3%	16.7%	0.0%	33.3%	16.7%
Spring 2017	33.3%	0.0%	0.0%	33.3%	33.3%
On track to earn 12+ college credits					

Type of Class	Level of High School Students' Participation				
	0-25% Students Enrolled	25-49% Students Enrolled	50-74% Students Enrolled	75-99% Students Enrolled	100% Students Enrolled
Spring 2014	50.0%	16.7%	16.7%	16.7%	0.0%
Spring 2017	33.3%	33.3%	16.7%	16.7%	0.0%

Note. Six high schools have administrator reports for spring 2014 and spring 2017.

The primary emphasis of the coursetaking work centered on expanding access to college courses. In the spring 2017 interviews, staff agreed that more students were taking college courses as a result of the project. For example, an administrator at one high school reported,

> We have a huge increase, like I said, in our concurrent enrollments. We can't just count students, because some students might be taking more than one, but I think we increased from last year to this year from 217 enrollments to 453 enrollments.

A principal at another high school discussed how almost half of the students were taking a college course. In particular, this principal mentioned how the 2017 graduating seniors compared to previous cohorts,

> It's a huge difference. We can even prove it with data, because this group is going to graduate with…just certificates alone we're already projecting about 135 professional certificates from [IHE].... That means that they've excelled. Those certificates require anywhere from 15 to 36 hours. That's just the group right there. Then we're looking at our students with Associate's degrees. This is going to be the class that will have the most Associate's degrees.... We're projecting about 70 right now, 70 students.

Data from the site visits provided additional detail about how the districts and schools were able to expand opportunities to earn college credit.

One of the primary factors affecting the rollout of college coursetaking in Texas was whether a school was designated as an Early College or not. In Texas, the state's Early College designation dictates when students can take courses and how many courses students can take. For example, students who are part of a designated Early College can take college courses starting in 9th grade, as opposed to students who are not part of the designated Early College, who must wait until 11th grade. In addition, designated Early College students can take up to four transferable college courses if they attempt the state's college readiness exam (even if they do not pass it), while students who are not part of the designated Early College can take only one transferable college course. In both Texas districts, all of the i3 schools became designated as schoolwide Early Colleges over the course of the grant, which made all students eligible for college coursetaking in 9th grade. In Denver, on the other hand, while students could take dual enrollment courses in 9th grade, they had to apply and be accepted into the college where the course was offered.

In Texas, prior to taking any college classes, students needed to take the Texas Success Initiative (TSI) exam, which was designed to assess college readiness. As a result, the two Texas districts had a very explicit focus on increasing the number of students who were passing the state college readiness exam. Each school was expected to set a target for the number of students who were taking and passing the exam, and they reported on these targets in monthly i3 Cabinet meetings.

Individual schools developed support structures to assist students in passing the state college readiness exam. For example, one school focused on removing barriers to college enrollment by offering the state college readiness exams on campus every Saturday, requiring 8 hours of TSI prep before taking the test and providing tutoring on demand for students struggling in classes. In this school, students who did not pass the placement exam would also be encouraged to take dual credit Career and Technical Education courses to build their confidence. Students in one high school commented on the emphasis on the college readiness exam:

> Every single day you'll hear in the announcements about the TSIs. The conference tutorials.... And what they do is, you have to attend so many hours of tutorials so you'll be able to take the TSI. Because they don't want to push you in there and for you not to know what you're doing then take the test and fail it.

Participating Texas middle schools also administered the TSI exam to their 8th graders. In two of those schools, students who passed could take college courses in 8th grade. If the students did not pass, the principal of one school noted that they offered a summer bridge program, "which is also a college preparedness class that helps them to get that tutoring and the help they need."

In Denver, students were required to take the Accuplacer exam in order to qualify for college courses. At the beginning of the grant, students who did not take the exam were eligible to take developmental education classes. These classes were offered only for high school seniors but were also paired with a credit-bearing college class (such as English). The theory was that students could graduate from high school with any remediation out of the way and have received at least one course's worth of college credit. Over the grant period, the district began reconsidering the developmental education options and their partner community colleges began the process of phasing out those courses.

As additional students began qualifying for college courses, all three districts more actively guided students' coursetaking. One district staff person explained how the i3 grant helped to focus students' college coursetaking:

> [Students] were [initially]…taking pretty much classes and no direction. For instance, they probably were taking maybe an engineering class as an example, a criminal justice

> class, a medical terminology class. There was no degree planned out. Now the i3 grant, what I would say is, it has helped with aligning degree plans and all of that…we have had these conversations of how important it is to make sure that students stay on a career path.

By the end of the project, all three districts were implementing pathways to guide students' college coursetaking. Both of the Texas districts were required to develop pathways due to state policy. The pathways were developed by the Texas Education Agency (TEA) and postsecondary institutions could choose which pathways to offer. Students and parents were expected to select these pathways in 8th grade, although they could change pathways if the students' interests changed. The two districts, however, discouraged students from taking college courses that were not part of a meaningful sequence. In PSJA, there were multiple pathways available, and students had to be enrolled in one of these pathways to take courses through their primary postsecondary partner. In Brownsville, where the primary college partner was newly accredited, the college focused on developing course sequencing that allowed students to complete an Associate's degree in general studies, with a goal of offering more pathways in the future. In Denver, the former project lead created a number of pathway templates that were shared with district staff and college partners. One of the challenges Denver faced was the number of college partners (19) working with the school system, which increased the level of communication required to develop these pathways. One of the college liaisons that we interviewed said that the Denver schools varied in their implementation of specific pathways as a result of some of the logistical challenges associated with being a large district.

In addition to having students enrolled in pathways, some schools also merged their dual enrollment and AP courses. An adjunct faculty member described how five out of the six classes she taught were considered both AP/Dual Credit. Students were taught the content necessary for both courses, and at the end of the year, they received credit from the local college and also took the AP exam.

To help coordinate the expansion of coursetaking, all three districts provided college liaisons to all program schools. These liaisons helped facilitate logistical issues that arose with the increase in student enrollments. One liaison described her job:

> If the school has a need to contact somebody from the college, they reach out to me with the concern and then I reach out to the IHE with the concern and get them the feedback.... For instance, this morning we had one of our schools call in that one of the portals at the college was not working. I had to make the call and see what's happening. We're able to keep everything running smoothly.

As the number of students taking dual credit courses increased, districts and postsecondary partners sometimes struggled to ensure that they had the capacity to meet the demand. One postsecondary partner described the different approaches they have used to offer more courses to students:

> We have the courses at the campus, we have the adjunct professors, we have the online courses…we're also offering and have offered evening courses at the campus level, so the students who maybe can't fit it into their schedule during the evening, they can do it. We have also offered, and we're going to offer this next semester, Saturday dual enrollment courses, so that students can have that as an option to take the dual enrollment course.

A key approach to meeting the increased rate of enrollment was to have high school instructors with advanced degrees serve as adjunct faculty. The two Texas districts moved to incentivize teachers with advanced degrees, or teachers who were willing to continue their education, to become adjunct faculty by offering educational assistance and salary stipends. Denver started a pilot program in three schools to incentivize teachers to complete a "mini masters" program but the initiative was not district-wide and it was unclear at the time of our 2017 interviews whether this program would be scaled up at the district level. In Denver, however, the primary strategy to increase the number of adjunct faculty was to hire teachers who already had advanced degrees. More detail on how the capacity issue was being addressed is available in a monograph from JFF entitled, *Solving the Dual Enrollment Staffing Puzzle* (Hooker, November, 2017).

Overall, the quantitative and qualitative data indicated that the i3 grant led to an expansion in college coursetaking and that the various entities involved in the project had to modify their practices to accommodate this expansion.

Instructional Change

The College Ready Academic Program also includes an emphasis on instructional improvement. The ECEP program focuses

The Six Strategies of the Common Instructional Framework (Jobs for the Future, 2012)

Collaborative Group Work: Collaborative Group Work brings students together in small groups for the common purpose of engaging in learning.

Writing to Learn: Writing to Learn enables students to experiment every day with written language and to increase their fluency and mastery of written conventions.

Scaffolding: Scaffolding helps students connect prior knowledge and experience with new information and ideas.

Questioning: Questioning challenges students and teachers to use good questions as a way to open conversations and further intellectual inquiry.

Classroom Talk: Classroom Talk creates the space for students to articulate their thinking and strengthen their voices.

Literacy Groups: Literacy Groups provide students with a collaborative structure for understanding a variety of texts, problem sets, and documents by engaging in a high level of discourse.

on a set of six student-centered instructional practices, called the Common Instructional Framework (CIF, shown in the box on the previous page). We collected data around changes in implementation of these practices via the ECEP Staff Implementation Survey and through interviews and site visits.

On the survey, we asked teachers to report on the frequency with which they used specific instructional practices aligned with the CIF as well as their use of high-quality assessment practices. The response scale ranged from "never" (1) to "almost every day" (5). Results showed that teachers reported using the practices somewhere between once a month and once a week (scores between 3 and 4) across both survey administration time points. Although middle and high school staff reported slightly higher levels of CIF implementation for almost all scales in 2017 than in 2014, with the exception of an increase in middle schools' reported use of Collaborative Group Work, the differences were not statistically significant.

Table 8 shows the mean score on instructional practices scales in spring 2014 and spring 2017, broken out by high schools and middle schools.

Table 8. Use of Instructional Practices Aligned with CIF—Spring 2014 to Spring 2017

	Overall Mean					
	Middle Schools		High Schools			
Indicator	Spring 14	Spring 17	Spring 14	Spring 17	Sample Question	Response Scale
CIF-Collaborative Group Work	3.64	3.70†	3.47	3.56	Had students work together on projects or assignments	1=Never 2=A few times this year 3=Once or twice a month 4=Once or twice a week 5=Almost every day
CIF-Writing to Learn	3.29	3.35	3.30	3.31	Asked students to defend their own ideas or point of view in writing or in a discussion	
CIF-Scaffolding	3.89	4.00	3.93	3.89	Made connections between what's covered in your class and what's covered in other classes	
CIF-Questioning	3.70	3.76	3.51	3.62	Taught or modeled for your students how to ask good questions	
CIF-Classroom Talk	3.61	3.66	3.61	3.66	Asked students to explain their thinking	
CIF-Literacy Group	3.53	3.58	3.44	3.54	Asked students to read difficult or complex texts	
Assessment	3.76	3.83	3.71	3.74	Used rubrics to grade students' work	

† $p < .10$

While survey results indicated that significant instructional change was not occurring across all teachers, data from the interviews and site visits suggested that individual teachers were making large and significant changes in their instruction. For example, when one high school

principal was asked about implementation of the CIF, the principal answered using a 10-point rating scale to sum up implementation in his school:

> I'd say about a 7[or a] 6, [a] 7. We're not a perfect 10, but teachers are doing more. They know more about it than they would have in the past. We're like, "Okay. Those six strategies we know about, implementing the collaborative group." When we go in there, they know the lingo. We do send out information in the newsletter. I'll put stems for questioning on the newsletter.

One adjunct faculty member noted that the impact on her instruction has been "huge:"

> I'm old school. In the Catholic school I taught in, it was just lecture, lecture, lecture. It was mostly upper middle-class kids. I did that all through the '90s and that's just how I taught. Now, going through this program here, where the kids have some socioeconomic and educational disadvantages, the whole lecture structure is stupid. It just wouldn't work. I have to change how I am doing it so that they can be more successful. You can't change unless people are pushing you to change.

One of the themes that emerged from our visits was that staff were more likely to buy in and implement the CIF strategies when efforts were made to demonstrate how the CIF was aligned with other initiatives in the school and district. For example, one administrator explained how they were working with the instructional coaches around alignment by saying,

> So, we've been working with [the instructional coach], who is kind of helping us piece all of those [initiatives] together and [making] sure that our staff sees the connection between "Teach Like a Champion" strategies, between Early College strategies, and also our LEAP framework, which is how teachers are evaluated…But we really want to show staff that it's not competing, because sometimes they feel like things can be. So, we're trying to shine a light on things that show how they all work together.

Another theme that emerged from site visits throughout the project was the need to improve rigor in the classroom. Although some teachers were implementing the CIF strategies, there was concern that they were doing so in ways that did not always improve rigor. Several school leaders and coaches that we interviewed mentioned focused efforts on helping staff improve implementation of strategies with rigor. As one instructional coach said,

> I think there is a shift. When we started the work and we started talking to people about Writing to Learn or Classroom Talk in the beginning we got, yes, yes, yes, I do that, yes, yes, yes, I do that, yes, yes, yes, I plan for writing. And so this idea of let's take it one step deeper and look at what behaviors are inside the Common Instructional Framework that show us that our students are doing Writing to Learn or that our students are using Classroom Talk for a purpose. [This] has really allowed us to re-engage with things that people already felt that they were doing and I'm not going to

> say they were or weren't, but really to push the effectiveness of yes, you understand that students need to be talking, let's take a deeper look at what behaviors go with that.

This concern was echoed by two principals in different districts when asked about challenges that teachers were experiencing around implementation. One principal shared how teachers were not necessarily implementing the strategies at the desired level,

> Questioning is one, I'll tell you that. You're still asking a lot of recall questions. Teacher answers their [own] questions sometimes. The Writing to Learn because kids need to be able to articulate what they're learning, whether it be here or here.... They're trying to implement a lot of the Collaborative Group Work. That, they find okay. "You know what? I'm going to have them work in pairs." They think pair [and] share. They're doing this, but I think the Questioning within the actual teacher-to-student or student-to-student.... It's still kind of like, "What did so-and-so do in 1948?" It's very recall.

Another principal shared a similar perspective around Collaborative Group Work by saying,

> That's the one that is, I think most commonly just, let's just put the desks together and that's Collaborative Group Work. Right? I think that's the one that teachers feel is the easiest to do but sometimes it's the most difficult one because you're the facilitator and you've gotta make sure that you've assigned roles and that the students are doing their active learning.

In terms of student responses to the CIF strategies, staff indicated that students enjoyed the benefits of being in a classroom where CIF strategies were being implemented, whereas other students struggled in these classrooms. As one teacher put it,

> It's hard for them. They're used to sitting down, not participating in things, not getting up from their chair as a lesson. They're so used to sitting down and just copying notes or reading something from the book, so when you ask them to do an activity and work together with someone and discuss.... It's been hard.... That's been my challenge. Trying to get these kids to open up and participate.

However, another teacher observed that students were more engaged in the process by saying, "I've seen that change, where the kids are more engaged and excited about being more in groups versus just walking in and always being in rows and just listening to the teacher all the time." A district representative agreed that engagement had improved because of the CIF strategies:

> Every class I walked into where the teacher is implementing CIF, the student engagement was way above my expectation. In fact, I would say it was 100% student engagement in all like the five or six classes…I think that's another very, very positive impact that the grant has had on our district.

To provide a snapshot of implementation of the CIF in schools, we conducted classroom observations. In the fourth year of the project, the evaluation team observed classrooms of 13 teachers who were working with instructional coaches. We assessed the level of implementation of various CIF practices on a scale of 1-4, with 1 meaning "not observed" and 4 meaning "very descriptive of the observation." Table 9 shows the frequency of the ratings for the different CIF practices. The cells with the highest frequency of ratings are shaded.

Table 9. Ratings of CIF Practices

CIF Practices	Not Observed	A Little Descriptive	Descriptive	Very Descriptive	Mean
Students worked collaboratively in teams or groups.	3	1	3	7	3.00
Students used writing to communicate what they had learned.	3	0	3	8	3.14
Students participated in guided reading discussions.	8	1	1	4	2.07
Teachers asked open-ended questions that required higher-level thinking.	1	3	10	0	2.64
Teachers provided assistance/scaffolding when students struggled.	0	2	7	5	3.21
Students engaged in content-based discussion with each other.	1	4	6	3	2.79
Summary: Quality of CIF Implementation	0	3	8	3	3.00

Note: The mean is between 1 and 4 with 1 being not observed and 4 being very descriptive of the observation.

As the table shows, teachers implemented many of the CIF practices. The most commonly implemented ones were Scaffolding, Writing to Learn, and Collaborative Group Work. The least frequently implemented practice was Literacy Groups or, guided reading discussions. Here is a sample from the observation write-up of a highly-rated science lesson, which used several CIF strategies while teaching a concept about ecosystems:

> Prior to reading, students were put into pairs, purposefully. The teacher guided students to read the passages to learn about succession. She walked around, assessing comprehension and scaffolding as needed (e.g., "what vocabulary words are common between primary and secondary succession?"). She differentiated instruction depending on the needs of the students. For example, she provided guidance to a struggling student and used a pencil to point out ideas, but did not read for him. She made sure that he was on the right track.

Taken together, data from the surveys, interviews, and observations provided clear evidence that there were teachers making changes in their instructional practice; however, as of the end of the project, these changes were not yet widespread across all schools.

College Headstart

Under the College Headstart Design Element, schools were expected to provide students with early exposure to the culture and norms of college. These included activities such as explicit instruction on college readiness strategies in the classroom as well as college readiness support activities (e.g., advising on the courses needed for college, taking students to visit college campuses). It also included the creation of a college-going culture in which the school clearly demonstrated expectations that students go to college.

We asked staff, via the survey, to report on the implementation of the various components of a College Headstart. Results showed that faculty reported that the schools started with a generally strong college-going culture and that this did not change substantially over the course of the project. Further, faculty reported that they utilized college readiness instructional activities between once a month and once a week, a level which also remained constant over the course of the grant. One area where there was significant change was in the schools' provision of college readiness activities. Across time, middle and high school staff reported a statistically significant increase in the amount and frequency of college readiness support activities. Table 10 shows the mean scores on the three indicator scales that were designed to measure the extent to which schools provided a College Headstart.

Table 10. College Headstart—Spring 2014 to Spring 2017

	Overall Mean					
	Middle Schools		High Schools			
Indicator	Spring 14	Spring 17	Spring 14	Spring 17	Sample Question	Response Scale
College-Going Culture	3.32	3.39	3.26	3.27	The faculty and staff in this school expect every student to receive postsecondary education or training	1=Strongly Disagree 2=Disagree 3=Agree 4=Strongly Agree
College Readiness Instructional Activities	3.15	3.17	3.13	3.18	Worked with students on time management and study skills	1=Never 2=A few times this year 3=Once or twice a month 4=Once or twice a week 5=Almost every day
High School/ College Readiness Support[a]	3.82	3.94†	3.88	4.01*	Advising on courses to take to get ready for college	1=0% 2=less than 25% 3=26-49% 4=50-75% 5=greater than 75%

[a] Middle school staff received high school readiness support questions and high school staff received college readiness support questions.

** $p < .01$; * $p < .05$; † $p < .10$

The site visit data provided additional details around the work schools were doing relative to a College Headstart. One of the primary approaches to changing the culture of the high school was offering college courses to students. One high school counselor described how provision of the college courses had changed the school's atmosphere by the second year of implementation:

> The kids know that they want to enroll in the upper-level courses, or pre-AP, or AP classes to eventually get into a [dual credit]class, and that was something that was very different before. Many times, kids would just want the minimum, but now that they see other students wanting to take college classes, they're motivating each other saying, 'Oh, I want to do what he's doing. How are they doing that?' Just the culture in general. Now, parents call constantly wanting to know, 'How can I get my son or daughter in a college class?' when before, it wasn't really too much.

In Year 2, students had also started to notice a change in the culture of their school. One high school student commented that the school's emphasis on college was starting to apply to younger students,

> I feel that our school is starting to put the idea of college and postsecondary education in the younger classes. Like, I have a sibling and they talk more about colleges, they have more meetings, really [talk more] about colleges than we did when we were freshmen."

Another described how more and more students were taking college courses:

> It's like it has become like a trend. For example, my friends seeing me doing it, they're like, "How can I get there?" They ask. So, it becomes like a trend that everybody wants to follow. I think it's a good trend.

These perceived changes in college readiness continued throughout the grant. In all the student focus groups we conducted during Year 4 of implementation, students perceived that their schools were placing greater attention on college. For example, a high school student commented,

> I also think that the new staff members have more of a college mindset when they teach. I noticed this year, I've encountered a lot of people, or teachers, that are talking more about, this is how you're going to learn because this is how it's going to be in college.

Every school that we visited used a variety of approaches to create a college-going culture. Schools conducted specific activities designed to encourage students to go to college such as: (1) college spirit days/weeks when students were encouraged to wear college clothing; (2) classrooms and common areas decorated with college-themed materials (e.g., pennants,

information sheets); (3) daily announcements, including information on college (e.g., college trivia questions); (4) career days or fairs; and (5) visits to college campuses.

At one of the high schools we visited, students mentioned a "lock-in" where students came together to work on applications, personal statements, and other documentation related to applying to college. Another school developed close ties with a number of local business and industry leaders who agreed to come to the school to conduct mock interviews so that students could have an opportunity to practice their interviewing skills. At least two schools that we visited set up dedicated space for career and college advisement. As one principal described it,

> We do have our "Go Center," which is a big support for students. They help them out with providing them the help with scholarships, help with filling out their college university applications, filling out their FAFSA. Help is provided there. They need to work with the college that they're thinking of going to. Then they get help with their essays. It's a big variety of help that they do get through the Go Center. Then we have our [test support] lab, which provides the help and support as far as getting them ready with the [college placement] exam.

Students at another school mentioned a similar resource center at their school and how this center served, formally, as a place to access career and college information, but also, informally, as a place where students, particularly seniors, could gather and check in with each other and share their experiences around preparing for college.

Part of a College Headstart involves explicit and focused preparation on college readiness skills. Both middle and high schools sought to increase the soft skills needed for college, including encouraging students to take more ownership of their learning. For example, one middle school had implemented a student portfolio project where students selected pieces of their best work throughout the year to include in a portfolio. The school organized student-led conferences where students could share their work with other students. In another middle school, all students were required to maintain a binder in which they made notations of their work-progress, homework, activities, etc. At one of the 6-12 schools we visited, students prepared presentations for their parents about their academic performance. The teacher described how this work arose out of ECEP:

> We sat down with the laptops. The students presented their work to their parents. Then the students fully led that and discussed, "Here's what I'm working on. Here's what I've been doing in all my classes. This is why my grades are the way they are." It definitely held them accountable for what's going on. That's been a huge shift and neat thing for students to take more responsibility for their education, which I think is an obvious direct result of grant and the Early College initiative.

In another school, a teacher discussed how students were now required to track their own

academic performance,

> You know, I think it's really helped my students be more confident and truly think about what the purpose is of the work they're doing. One of the things, so, aside from the reading strategies, the other big thing were the rubrics that we use to have students kind of, track themselves on how they are communicating, how they are collaborating, how they're owning their learning, all of that stuff. And I think that has really empowered the students to reflect on their own learning and to say, wait a minute. I didn't do so well with this today.

Our interviews with students themselves suggested that they were mindful of this shift in accountability. As one student put it,

> Also, they try not to hold our hand as much as we're used to. Specifically, one of our teachers, he'll warn us once about something, then he won't say anything for the rest of the semester. If you messed up, that's you, it's on you.

Although there was an effort to increase student accountability, particularly in the college courses, students reported that they understood why this emphasis was put in place, and they still felt supported. As one student said,

> I feel like there's no hand holding, but you're not on your own, either. You have faculty and staff who care about you, but they're also going to let you know you have to do things on your own. Because that's the way the college life is going to be. They're never going to leave you like, "Oh, you failed, I'm sorry."

While schools were encouraging students to take on more responsibility, one principal, from a school with a low graduation rate, mentioned that this shift became a source of tension. This principal discussed how holding students accountable to deadlines has been important, but because this school struggles with graduating students, there was also a need to remain flexible with students to make sure that more of them graduate, even if that meant a deadline is extended or a "re-do" is allowed from time to time. Because we only heard this from one principal, however, we do not know whether other staff perceived the same issue.

We also looked at teachers' explicit instruction of targeted college readiness skills in our observations. Table 11 shows the ratings of 14 classrooms across the seven schools we visited in Year 4 of implementation. It should be noted that we did not expect to see all of these practices in any given classroom; instead, these should be considered examples of practices teachers might use if they were integrating college readiness skills into their instruction. The cells with the highest frequency of ratings are shaded.

Table 11. College Readiness Practices Ratings

Practices	Not Observed	A Little Descriptive	Descriptive	Very Descriptive	Mean
Students used writing to communicate what they have learned.	4	2	4	4	2.57
Students were asked to write something lengthy and complex.	6	4	4	0	1.86
The teacher provided explicit instruction in writing or oral communication skills.	2	1	7	4	2.93
The teacher provided clear feedback on students' writing or presentation.	4	2	7	1	2.36
Students had to present or explain results of a project or activity.	8	0	2	4	2.14
The teacher encouraged students to elaborate upon their answers (oral or written).	2	2	6	4	2.86
The teacher provided explicit instruction in note-taking or students practiced note-taking skills.	12	0	2	0	1.29
The teacher provided explicit instruction in study skills.	12	0	2	0	1.29
Students were required to read complex texts.	10	3	1	0	1.36
Students were asked to plan out their time to accomplish tasks (inside or outside of the classroom).	12	0	2	0	1.29
The teacher encouraged students to seek help from different sources when they need it.	4	3	4	3	2.43

Note: The mean is between 1 and 4 with 1 being not observed and 4 being very descriptive of the observation.

The table shows that the most common readiness skill implemented was that of the teacher providing explicit instruction in or feedback on writing or oral communication skills. This is not unexpected as this is the area that closely aligns with the targeted CIF strategy of Writing to Learn. Although writing was common, few observers reported that students were asked to write anything lengthy or complex. This may be because longer writing activities occur less frequently and it happened not to have occurred during our observation days. There was also less of an emphasis in the classroom on strategies such as time management, note-taking, or organizational skills.

In addition, the survey and interview data showed that the schools put a relatively high emphasis on college readiness at the outset of the grant and that this only increased over time through the provision of additional college readiness support activities. Students in the focus groups also reported increased college-going expectations. The classroom observations suggest

that schools have been emphasizing writing as a key college readiness skill but that there still remain opportunities for improvement in explicit preparation of other college readiness skills.

Wraparound Student Supports

The Early College Model can result in dramatically increased expectations for many students. In order for these students to be successful, the model calls for increased academic and affective supports to be provided to students in terms of their high school work as well as their college work. This can take the form of helping students prepare for college placement exams or providing them with extra supports in their high school or college classes. In addition, the original Early College Model had a strong emphasis on improving the quality of staff-student relationships. The staff survey included three scales related to Wraparound Student Supports. One scale ("Student Supports") captured the extent to which students were provided academic and affective supports. "School Relationships" captured the extent to which there were high-quality staff-student relationships. The "Family Relationships" scale looked at the extent to which the schools had structures in place to build relationships with families. Table 12 shows changes over time for these three scales. High schools had a statistically significant increase in the frequency of academic and affective supports provided to students, but there were no changes in any of the other scales.

Table 12. Wraparound Student Supports—Spring 2014 to Spring 2017

	Overall Mean					
	Middle Schools		High Schools			
Indicator	Spring 14	Spring 17	Spring 14	Spring 17	Sample Question	Response Scale
Student Supports	3.72	3.78	3.67	3.81†	Percentage of students participating in sessions or classes to help students cope with social or emotional issues	1=0% 2=Less than 25% 3=26-49% 4=50-75% 5=Greater than 75%
School Relationships	2.96	3.01	2.96	2.98	The family and home life of each student is known to at least one faculty or staff member in this school	1=Not true at all 2=Somewhat true 3=Mostly true 4=Entirely true
Family Relationships	3.35	3.40	3.05	3.15	School faculty and staff meet or talk with parents	1=Never 2=A few times this year 3=Once or twice a month 4=Once or twice a week 5=Almost every day

** $p < .01$; * $p < .05$; † $p < .10$

The interviews and site visits provided additional detail about the types of supports that the district and schools offered. These data showed that the increase in supports was primarily in the areas of increasing students' college readiness and providing support to students in college classes.

As described earlier, one of the primary emphases in Texas was increasing the number of students who were testing as college ready, which would make them eligible for college courses. As a result, the two districts dramatically expanded their support around preparation for Texas' college readiness exam, the TSI. For example, one district offered a TSI pre-assessment, TSI classes in 8th-grade, TSI tutoring, and recently purchased TSI tutoring software. A district academic services representative stated,

> We have come up with an entire procedure and protocol for TSI testing that has now pushed it down to the 8th-grade level as well as up to the high school level. We have prioritized what students should be TSI testing and when they should take the TSI test, so I think that was one of our big initiatives that we've been implementing in our district to try to get more and more students eligible to take these dual enrollment courses so, yes, that is a very high expectation…. All of our campuses, high schools, and middle schools are TSI testing sites.

In both of the Texas districts, principals were given goals relative to the number of students who should be taking and passing the TSI and they were asked to report on progress toward those goals in the i3 Cabinet meetings. A coach described the work occurring in one high school:

> There is a huge push for getting children TSI ready and TSI tested…so they have seen some great success in TSI numbers and students actually passing the math TSI portion. The reading TSI portion still has a lot of work to be done but they have designated some teachers that are purposefully trying to prepare children for TSI. They have TSI tutoring sessions. They have TSI reviews. They have "TSI Try 1, 2, 3."

In Denver, there was a significant emphasis on getting students to graduate "remediation free," a definition that has been widely adopted for college readiness. To that end, the district undertook the development of high school transition courses in English and math that were designed to better prepare students for the rigors of college-level work. These courses were designed in collaboration with postsecondary partners by aligning regular 11th-grade English and math competencies with the prerequisites for college-level English and math at two of the local postsecondary institutions. Students who successfully completed these courses were considered exempt from needing remediation. At the end of the grant, four schools were piloting these courses with the goal of district-wide scale up.

In addition to providing more rigorous high school courses aligned with college-level courses, a potential benefit of these newly-developed high school transition courses is that they may reduce the number of students needing to take a developmental education course. According to a college representative, in the early years of implementation, much of the focus was placed on enrolling students in developmental education or courses without college prerequisites; however, the shift to the newly-designed high school transition courses was seen as an important improvement for the district. The representative said,

> We won't use the [transitions course] outcomes to place students into college-level classes, but the courses themselves will be high school courses, not transcripted by the college, so there won't be pre-reqs to [enroll]. We won't have to look at teaching credentials for those teachers. We've aligned it to the high school curriculum, which is what it is anyways, and we'll use authentic assessments for placement of those students into college classes.

This representative also indicated that an additional benefit of this strategy was that it allowed students to have extra supports for acclimating to the college environment without having poor grades from a developmental course appearing on their college transcript, which could have negative future consequences for students.

Ensuring that students can pass college placement exams and take college credit courses was seen as one of the first steps to moving toward an Early College. Schools also provided a variety of supports when students took college courses. For example, high schools in PSJA provided tutorials and supports so students were successful in their college courses. In Denver, tutors were on-site at the high schools. One community college sent tutors to the high schools. In addition, there were volunteer organizations that provided tutoring and other assistance.

Students who were enrolled in college courses also had access to services on the community college campuses, although it was not clear how many students took advantage of these opportunities. One college representative stated,

> They have access to...every student service that we offer here on campus, ... We have trips to, not only our student services center, we call it the one stop shop, where we have advising, testing, admissions office... [but also] a veteran's office. So [the students] visit, so that they know it's all in one place. Everything that we have. Tutoring labs, computer labs, that's open for you as well as the students...so every single service that we have here for the students you will also have access to.... They tour our library as well, so that they know they have an online service.

Our interviews with school staff indicated that all schools we visited were providing Wraparound Student Supports to meet students' needs. These services came primarily in the

form of general academic tutoring or tutoring around test preparation (i.e., TSI in Texas; SAT, ACT, Accuplacer in Denver). In addition, many of the schools we visited had data teams in place to monitor students' progress in middle school, high school, and college courses and to identify students who were in need of additional academic support. The two Texas districts also engaged in regular discussions of student readiness data during their Cabinet meetings.

School-Level Organizational Practices

This Design Element includes a set of School-Level Organizational Practices that are expected to be in place to assist in implementing the other Design Elements. These practices include: (1) a strong postsecondary partnership, (2) ongoing and job-embedded professional development, (3) ongoing teacher collaboration, and (4) use of data to inform instruction.

Postsecondary Partnerships

One organizational structure that needs to be in place for the Early College Model to succeed is a strong postsecondary partnership between the schools, districts, and postsecondary institutions. All three districts had formal agreements with postsecondary partners that delineated responsibilities relative to college coursetaking, although the partnerships were in very different stages at the start of the grant. One district had a long-standing partnership with a postsecondary institution that has been a leader in the Early College movement. The postsecondary partnership in another district got off to a slow start because the primary partner, a two-year college, had just split off from a four-year institution and was undergoing accreditation. The third district had a large number of partnerships that were negotiated with individual schools. Despite the differences, a senior project staff member commented that the postsecondary partners have overall been very supportive of this work:

> Frankly speaking, without this grant bringing a lot of big new resources to the table other than expertise, goodwill and a shared interest, the college partners have leapt right in. They haven't said, 'I don't want to play because where's my money?' They have stepped up; but I do think it is when they see that vested shared interest and have some history and some trust there.

The three districts structured their partnership coordination efforts differently. In the two Texas districts, the postsecondary partners were active members of the districts' i3 Cabinet (the local decision-making structure), attended the monthly meetings, and participated in problem-solving discussions. In Denver, there were no standing meetings but rather, weekly conversations between the district project lead and the postsecondary partners. At the end of the project, however, the team was looking at modifying that structure so as to have regularly scheduled meetings as in the Texas districts.

The key goal of the postsecondary work was to increase the number of students taking college courses while still in high school. The partnerships recognized that it was necessary to focus,

not just on getting students more credit, but on getting college credit that would lead to something tangible. As described under the College Academic Program, all three districts focused on creating pathways for students. One district staff member stated,

> The focus really has been…around creating intentional pathways in the schools and making sure that those intentional pathways are aligned with other initiatives across the district. Rather than just building up concurrent enrollment programs, it's really about how you develop scopes and sequences of courses that go through the 9th-grade all the way in until a kid graduates and has credits for college.

Also, as described under the College Ready Academic Program, the expansion in the number of students taking college courses has led to a need for more faculty to teach those courses. The districts and partners worked together to develop creative solutions to solve these problems.

Overall, the project has clearly resulted in improved relationships between the districts and their neighboring institutions. One college representative said that the district's embrace of the i3 grant has helped them do something they have been trying to do for a while: "We've been wanting and trying to push this but we've not been able to until we recently [had] a district partner who is willing to do it." All representatives believed that these relationships would continue developing even after the grant ended.

Ongoing and Job-Embedded Professional Development

To support school staff in making the changes necessary for an Early College, the expectation was that schools would provide ongoing professional development that was embedded in their daily work. Survey results showed that school staff increased their participation in a variety of professional development activities over the course of the grant. Table 13 shows the percentage of staff who responded that they engaged in specific activities at least once a month or more frequently. The table also includes the mean score for each item from the spring 2014 and spring 2017 survey administrations. As the table shows, there were increases in participation levels for coaching, collaboration, professional learning communities, and webinars.

Table 13. Embedded and Integrated Professional Development—Spring 2014 to Spring 2017

	% Indicating at Least Once a Month		Item Mean	
Professional Development Activity	Spring 14	Spring 17	Spring 14	Spring 17
On-site coaching				
Middle Schools	58.9%	64.7%	2.93	3.04
High Schools	53.5%	60.0%	2.81	2.95†
Joint planning or collaboration with other staff at my school				
Middle Schools	80.4%	83.7%	3.66	3.79†
High Schools	75.0%	78.2%	3.42	3.55

Professional Development Activity	% Indicating at Least Once a Month		Item Mean	
	Spring 14	Spring 17	Spring 14	Spring 17
Professional learning communities (e.g., data teams, critical friends, study groups)				
Middle Schools	72.9%	74.6%	3.29	3.38†
High Schools	64.3%	73.4%	3.06	3.30**
Observing other classrooms in my school				
Middle Schools	49.2%	51.1%	2.70	2.74
High Schools	40.0%	43.5%	2.46	2.57
Workshop/institutes				
Middle Schools	44.0%	46.5%	2.65	2.72
High Schools	38.0%	43.5%	2.52	2.65*
Joint planning or collaboration with individuals outside of my school				
Middle Schools	44.0%	44.2%	2.63	2.68
High Schools	38.9%	40.4%	2.47	2.54
Online communities of practice				
Middle Schools	34.4%	35.1%	2.21	2.28
High Schools	35.6%	34.6%	2.21	2.27
Webinar				
Middle Schools	23.8%	32.3%	1.97	2.26**
High Schools	27.9%	31.4%	2.06	2.25**
Graduate courses				
Middle Schools	24.8%	25.8%	1.91	1.96
High Schools	29.0%	29.4%	2.09	2.09

Note. Response options and values are: Never = 1; A few times this year = 2; Once or twice a month = 3; Once or twice a week = 4; Almost every day = 5; ** $p < .01$; * $p < .05$; † $p < .10$

It is important to note that these professional development activities (coaching, workshops and webinars) were generally supported by the grant; as such, it is likely that collaborative teacher activities (described next) would be a more sustainable strategy for professional growth.

Teacher Collaboration

Staff are also expected to collaborate on an ongoing basis. Overall, middle school staff reported higher levels of collaboration on most indicators compared to high school staff. There was also a statistically significant increase in middle school teachers' collaboration levels from baseline to Year 4. High school staff reported increased levels of collaboration from spring 2014 to spring 2017 in joint lesson planning, logistical issues, peer observation and feedback, and instructional strategies, although logistical issues were the only change that was statistically significant (possibly because of the small number of schools). Table 14 shows the frequency of collaboration around different topics. The first set of columns show the percentage of respondents who indicated that they engaged in these specific aspects of collaboration at least once a month. The second set of columns shows the means at both time points.

Table 14. Frequency of Teacher Collaboration on Specific Topics—Spring 2014 to Spring 2017

Topic of Collaboration	% Indicating At Least Once a Month		Item Mean	
	Spring 14	Spring 17	Spring 14	Spring 17
Lesson or unit planning				
Middle Schools	84.3%	89.4%	3.81	4.04**
High Schools	76.1%	78.4%	3.51	3.66
Logistical issues (e.g., planning field trips, ordering materials)				
Middle Schools	58.2%	68.0%	2.96	3.20**
High Schools	50.3%	56.8%	2.76	2.96*
Student behavior				
Middle Schools	92.6%	93.1%	4.14	4.21
High Schools	78.5%	78.3%	3.60	3.60
Assessments				
Middle Schools	86.5%	90.4%	3.70	3.86*
High Schools	77.9%	78.4%	3.50	3.54
Peer observations and feedback				
Middle Schools	70.9%	79.4%	3.31	3.54**
High Schools	63.1%	68.9%	3.11	3.25
Content learning				
Middle Schools	82.8%	85.9%	3.79	3.92†
High Schools	74.5%	75.7%	3.51	3.56
Instruction/instructional strategies				
Middle Schools	84.8%	90.0%	3.83	3.99*
High Schools	77.1%	79.6%	3.57	3.66
Individual student needs				
Middle Schools	89.8%	91.4%	3.99	4.11†
High Schools	79.3%	81.0%	3.65	3.71

Note. Response options and values are: Never = 1; A few times this year = 2; Once or twice a month = 3; Once or twice a week = 4; Almost every day = 5; ** $p < .01$; * $p < .05$; † $p < .10$

The data in the table suggest that most of the schools were already engaged in collaborative efforts, such as Professional Learning Communities, prior to the project; however, there was an increase at the middle school level. A new type of collaboration introduced as part of the grant was instructional rounds, which was being supported by instructional coaches across all the schools in the two Texas districts.

In instructional rounds, teachers went in teams to observe another teacher, often in a subject other than their own. The team would collect data on an area of focus identified by the teacher being observed and then debrief with the teacher about what they saw. This was seen as a powerful way of supporting and sustaining instructional change. One teacher noted the value of seeing teachers in other subjects:

> You learn so much from each other. Especially because math, math we have an awesome Algebra I team. It's always like, “What is it that you do? How do you do that?” You go in there like, “Wow. I could do that in English”.

Use of Data

Another organizational practice involved the use of data to drive instruction; using data was also a focus of many of the teachers' collaborative activities. Survey data showed that the use of data was one of the areas showing the most substantial change from the start to the end of the project. Table 15 shows the frequency with which school staff engaged in specific uses of data to inform decisions. The first set of columns shows the percentage of respondents who indicated that they engaged in these specific aspects of data use at least once a month. The second set of columns shows the change in means for each item.

Table 15. Data Use—Spring 2014 to Spring 2017

	% Indicating At Least Once a Month		Item Mean	
Data Use Activity	Spring 14	Spring 17	Spring 14	Spring 17
Communicate with other school staff on data use				
Middle Schools	72.8%	78.6%	3.28	3.51**
High Schools	65.6%	70.7%	3.10	3.30*
Communicate with leadership on data use				
Middle Schools	68.0%	73.6%	3.14	3.34**
High Schools	60.0%	68.8%	2.94	3.18**
Analyze student progress or performance data				
Middle Schools	80.3%	83.5%	3.48	3.67**
High Schools	70.7%	77.5%	3.28	3.48**
Utilize results of assessments				
Middle Schools	81.5%	83.0%	3.56	3.70*
High Schools	75.1%	78.1%	3.39	3.47
Use data to make decisions about modifying instructional practices				
Middle Schools	81.1%	84.2%	3.59	3.75*
High Schools	75.1%	78.6%	3.45	3.53

Note. Response options and values are: Never = 1; A few times this year = 2; Once or twice a month = 3; Once or twice a week = 4; Almost every day = 5; ** $p < .01$; * $p < .05$; † $p < .10$

Survey data also indicated that the staff in these schools were engaged in a substantial amount of the targeted behaviors related to data use. Overall, middle school staff reported higher levels of data use on most indicators compared to high school staff; middle schools also showed an increase in data use across all indicators from spring 2014 to spring 2017. High schools showed statistically significantly higher data use around communication with other school staff, communication with leadership, and analysis of student progress or performance data.

All the schools we visited were involved in engaging in discussions around data. School staff used data from a variety of sources, including instructional coaches, administrator walkthroughs, state assessments, college placement assessments, and student progress monitoring data in high school and college courses. Most of the individuals we interviewed discussed using data to identify and work with struggling students. As one high school administrator said,

> When we look at benchmarks, when we assess, we're able to, through the data, find those students and really target those students who are having difficulty. We have different academies for them. We have different STAR [state test] academies on the weekends where they can come in. That's just for the STAR accountability. We also have academies for the TSI, which are the courses, the tests they need to get into the college classes.

One teacher that we interviewed discussed how data-driven discussions happened in a variety of ways, both formally and informally:

> We do a few different things. Every week we have a lot of collaborative sessions with other teachers where we talk about classroom data, classroom plans. Sometimes it'll happen in those sessions. Then other times, it is that one-on-one, [or] I'll…be in a lesson and I'll get immediate feedback, like a note on my desk of things that can be improved and things that are going well. Or, because I have instructional coaching once a week, …that's kind of when that happens.

Some of this data monitoring involved improving college and career readiness. For example, a high school administrator at one school mentioned how the school and district collaborated by saying,

> We partner with our future center and talk about what our goals are with the [district] scholarship foundation around what percentage of students do we expect to complete a FAFSA? What percentage of students do we expect to apply to at least one scholarship, to at least one college? We set goals around that and review them as a department, use that data.

One of the most promising practices around data use was the data sharing that occurred between postsecondary institutions and districts in Texas, which allowed these districts to track progress toward TSI readiness and college credit accumulation. EdTX staff facilitated conversations between the districts and postsecondary partnerships to develop a common understanding of data definitions and to help ensure that the quality of the data was high. A representative from PSJA described how the data were used:

> The data dashboards [were] set up because of the i3 grant and because we wanted to look at data. The dashboards really allowed us to track the college course information and matriculation of students while in high school and then after high school…. And so [the IHE staff] place the data into our Sharepoint as to the number of kids that finish, that enrolled college, the number of students that finish the semester, their GPAs and so on and so forth and then our staff sets up the dashboard and breaks it down by campus..., filtering that information as to look who finished.

Implementation at the School and District Levels

Overall, data collected around implementation at the school and district level showed that, while changes can occur, changing existing comprehensive schools is a slow process. Results showed that most schools were expanding access to college courses and were expanding their college readiness supports to students. In Texas, this included a significant emphasis on preparing students for the state college readiness exam. In our focus groups, students reported feeling more of an emphasis on college, creating an environment where it was "trendy" to take college courses. Results also suggested that instructional change was occurring with some teachers but was not necessarily widespread throughout the school.

The data also suggested that schools were changing their organizational structures in ways that would allow increased sustainability of the ECEP practices that were implemented as part of the grant. For example, one of the areas that saw the highest reported change was in data use. Middle schools also showed positive changes in the amount of collaboration.

The next section describes the student-level impacts of the supports and the school-level changes that occurred.

Section IV: Impact on Student Outcomes

The ECEP project was focused on impacting student outcomes in three primary areas: (1) college preparatory coursetaking, (2) staying in school, and (3) college credit coursetaking. Impacts in each of these outcome domains are discussed separately below.

Key Points

- Impacts were analyzed separately by state and then pooled together to look at overall program impact. Results are presented for the full sample and then for specific sub-groups and the individual states.
- There were no statistically significant impacts on the percentage of students taking or successfully completing a college preparatory course of study overall or for each individual state.
- There was no statistically significant overall impact on the dropout rate, although there were statistically significant results for specific sub-groups and for the individual states. For the pooled results, fewer ELL students dropped out, a result that was statistically significant. In Texas, treatment students had statistically significantly ($p \leq .05$) lower dropout rates overall and for ELL and initially low-performing students. In Denver, dropout rates were higher overall and for ELL, this increase was statistically significant ($p \leq .10$).
- The program reached its goal of having 90% of students taking some sort of college credit-bearing course. Enrollment was descriptively higher in the treatment schools than in the comparison schools, although the difference was not statistically significant.
- There were no statistically significant differences in the number of Carnegie units earned by treatment students in college credit-bearing courses overall. Denver treatment schools did have a statistically significantly ($p \leq .05$) higher number of credits earned in college credit CTE courses than comparison schools.

Outcomes A and B: College Preparatory Coursetaking

Past research conducted on small, stand-alone Early Colleges showed positive impacts on successful completion of a college preparatory curriculum in 9th grade and throughout high school (Edmunds et al., 2012; Edmunds et al., 2015). The current evaluation looked at the impacts on two outcomes for schools in their second and third years of implementation (2014-15 and 2015-16).

The first outcome was the percentage of 9th graders enrolled in a college preparatory course of study, defined for 9th grade as including college preparatory mathematics (Algebra I or higher) *and* English. This measure was designed to examine the extent to which students had access to

a college preparatory curriculum, an indicator of whether coursetaking policies were in place to ensure that students have the opportunities necessary to be ready for college.

The second outcome was the percentage of 9th graders who had successfully completed college preparatory mathematics *and* English as defined by the percentage who enrolled in and passed both of these courses. This measure was designed to capture whether students had access to the courses and whether they were successful in those courses, an indicator of coursetaking policies as well as the extent to which students were provided instruction and support that allowed them to succeed.

To provide context for the impacts, Table 16 presents the overall frequencies, by state, for the full college preparatory coursetaking sample including both treatment and comparison schools. As the table shows, nearly all (97%) of the 9th graders in Texas took Algebra I and English I or higher, indicating that all schools had policies in place to ensure that students took a college preparatory course of study at the outset of the grant. As a result, we would not expect any change in enrollment in college preparatory courses in Texas. In Denver, approximately 76% of students took college preparatory courses, thus leaving room for potential impact. The table also shows, however, that about 66% of Texas students and 40% of Denver students had taken and passed at least one English **and** one math college preparatory course. These results indicate that between one-third and more than one-half of students across the two states were not on track for college.

Table 16. Descriptive Statistics—Course Enrollment and Completion

Characteristic	2014-16
Panel A: Texas	(N=9,590)
% 9th graders enrolled in college preparatory course, English **and** math	96.6%
% 9th graders successfully completing at least one English **and** one math college preparatory course[4]	66.0%
% 9th graders enrolled in at least one college preparatory course, English	97.7%
% 9th graders successfully completing at least one college preparatory course, English	76.0%
% 9th graders enrolled in at least one college preparatory course, math	97.5%
% 9th graders successfully completing at least one college preparatory course, math	72.6%
Panel B: Denver	(N=4,930)
% 9th graders enrolled in college preparatory course, English **and** math	75.7%
% 9th graders successfully completing at least one English **and** one math college preparatory course	40.0%
% 9th graders enrolled in at least one college preparatory course, English	78.8%
% 9th graders successfully completing at least one college preparatory course, English	54.2%

[4] It is important to note that the outcome entitled "percentage of students successfully completing" the courses represents the percentage of all 9th graders who took and passed the desired courses. This is not considered a pass rate, which would be calculated only out of the students who took the course. This outcome includes students who did not take the course in the denominator.

Characteristic	2014-16
% 9th graders enrolled in at least one college preparatory course, math	79.0%
% 9th graders successfully completing at least one college preparatory course, math	47.4%

The impact results for two cohorts of 9th-grade students (2014-15 and 2015-16) are presented in Table 17. In the tables that follow, Panel A represents the impact estimates for both states combined. As mentioned in the methodology section, the pooled impact estimate is a weighted average of each state estimate with greater weight given to the more precise estimate (weights provided in Appendix C). We selected this method because it approximates the results we would have gotten had we run the analysis on the combined sample. With these data, the approach resulted in disproportionate weighting on one state or the other for the 9th-grade outcomes. For example, even though the Texas impact estimate for 9th-grade coursetaking was a precisely estimated zero with a p-value near one, it got a dramatically higher weight than the Denver estimate due to the relatively small variance of the estimate. Conversely, the Denver impacts were weighted much more heavily in the calculation of the combined impact for the successful completion outcome.

Because of the variability in implementation and impact by state, results are summarized here separately. Panel B includes the results for the Texas districts and Panel C presents the findings for Denver. As shown in the table, there were no statistically significant impacts on college preparatory coursetaking or successful completion for the pooled estimates or for the individual states.

In Texas, there were no differences in college preparatory coursetaking, which was expected given that coursetaking rates were already so close to 100%. The percentage of students successfully completing college preparatory courses was descriptively higher in treatment schools than in comparison schools and appeared to be driven primarily by more students successfully completing a college preparatory course in math.

In Denver, the percentage of students *taking* a college preparatory course of study was descriptively higher in the treatment schools, although the percentage of students *successfully completing* those courses was lower. Neither difference was statistically significant. The positive coursetaking rates appear to be driven by a larger percentage of students taking college preparatory mathematics courses, while the overall lower successful completion rates were driven by lower completion rates in English courses.

Table 17. Impacts on College Preparatory Coursetaking and Success—Main Sample (for 9th graders in 2014-15 and 2015-16)

Outcome	Treatment N	Treatment Adjusted Mean	Comparison N	Comparison Unadjusted Mean	Adjusted Impact	Standard Error	p-value
Panel A: Pooled Estimates							
% 9th graders enrolled in college preparatory course, English **and** math	7,723	89.5%	6,797	89.5%	0.0%	0.005	0.988
% 9th graders successfully completing at least one English and one math college preparatory course	7,723	53.7%	6,797	56.1%	-2.5%	0.022	0.259
% 9th graders enrolled in at least one college preparatory course, English	7,723	91.9%	6,797	92.2%	0.3%	0.005	0.644
% 9th graders successfully completing at least one college preparatory course, English	7,723	65.3%	6,797	69.3%	-4.0%	0.026	0.133
% 9th graders enrolled in at least one college preparatory course, math	7,723	91.0%	6,797	91.0%	0.0%	0.004	0.990
% 9th graders successfully completing at least college preparatory course, math	7,723	63.5%	6,797	61.7%	1.8%	0.036	0.611
Panel B: Texas							
% 9th graders enrolled in college preparatory course, English **and** math	4,917	96.2%	4,673	96.2%	0.0%	0.005	0.989
% 9th graders successfully completing at least one English and one math college preparatory course	4,917	67.0%	4,673	63.6%	3.4%	0.073	0.641
% 9th graders enrolled in at least one college preparatory course, English	4,917	97.5%	4,673	97.3%	0.3%	0.005	0.615
% 9th graders successfully completing at least one college preparatory course, English	4,917	75.8%	4,673	75.6%	0.2%	0.087	0.983
% 9th graders enrolled in at least one college preparatory course, math	4,917	97.3%	4,673	97.3%	0.0%	0.004	0.950
% 9th graders successfully completing at least college preparatory course, math	4,917	74.3%	4,673	68.9%	5.4%	0.080	0.500
Panel C: Denver							
% 9th graders enrolled in college preparatory course, English **and** math	2,806	82.5%	2,124	76.6%	5.9%	0.097	0.539

Outcome	Treatment N	Treatment Adjusted Mean	Comparison N	Comparison Unadjusted Mean	Adjusted Impact	Standard Error	p-value
% 9th graders successfully completing at least one English and one math college preparatory course	2,806	38.6%	2,124	41.6%	-3.0%	0.023	0.184
% 9th graders enrolled in at least one college preparatory course, English	2,806	79.7%	2,124	81.6%	-1.9%	0.051	0.713
% 9th graders successfully completing at least one college preparatory course, English	2,806	52.7%	2,124	57.1%	-4.4%	0.028	0.113
% 9th graders enrolled in at least one college preparatory course, math	2,806	88.9%	2,124	78.6%	10.3%	0.094	0.273
% 9th graders successfully completing at least college preparatory course, math	2,806	48.6%	2,124	47.7%	0.9%	0.041	0.819

We also analyzed the results by sub-groups of interest. For the pooled estimates and for Texas, we examined impacts for English Language Learners and students who entered high school below grade level ("low-performing" students). For Denver, we were able to consider two additional sub-groups—students who were economically disadvantaged and students who also had exposure to the middle school component of the intervention.[5] As Table 18 shows, the only statistically significant differences by subgroup were negative impacts in Denver on successful completion of the college preparatory course of study for ELL students and low-performing students.

Table 18. Impacts on College Preparatory Coursetaking and Success (for 9th Graders in 2014-15 and 2015-16)—by Subgroup

Outcome	Treatment N	Treatment Adjusted Mean	Comparison N	Comparison Unadjusted Mean	Adjusted Impact	Standard Error	p-value
Panel A: Pooled Estimates							
*% 9th graders enrolled in college preparatory course, English **and** math*							
English Language Learners	3,587	91.7%	3738	90.6%	1.1%	0.007	0.146
Low-performing students	4,972	91.1%	4530	90.7%	0.3%	0.007	0.658
*% 9th graders successfully completing at least one English **and** one math college preparatory course*							
English-Language Learners	3,587	49.9%	3738	54.0%	-4.1%	0.025	0.105
Low-performing students	4,972	47.2%	4530	51.2%	-4.0%	0.022	0.066^

[5] As noted under the methodology section, the Texas schools were almost entirely economically disadvantaged so we could not analyze those data separately. Additionally, almost all the students in treatment high schools went to treatment middle schools so we could not run a middle school participation analysis in Texas.

Outcome	Treatment N	Treatment Adjusted Mean	Comparison N	Comparison Unadjusted Mean	Adjusted Impact	Standard Error	p-value
Panel B: Texas							
*% 9th graders enrolled in college preparatory course, English **and** math*							
English Language Learners	2,376	96.7%	2,704	95.7%	1.1%	0.007	0.153
Low-performing students	3,586	96.0%	3,544	95.7%	0.3%	0.007	0.669
*% 9th graders successfully completing at least one English **and** one math college preparatory course*							
English Language Learners	2,376	64.8%	2,704	59.0%	5.8%	0.076	0.448
Low-performing students	3,586	63.8%	3,544	58.6%	5.2%	0.074	0.482
Panel C: Denver							
*% 9th graders enrolled in college preparatory course, English **and** math*							
English Language Learners	1,211	84.0%	1,034	79.2%	4.8%	0.111	0.665
Low-performing students	1,386	78.1%	986	75.9%	2.2%	0.100	0.825
Economically disadvantaged	2,244	83.7%	1,595	77.1%	6.5%	0.097	0.501
Middle school treatment	1,086	86.6%	399	76.4%	10.2%	0.106	0.336
*% 9th graders successfully completing at least one English **and** one math college preparatory course*							
English Language Learners	1,211	37.5%	1,034	42.8%	-5.3%	0.027	0.047*
Low-performing students	1,386	24.0%	986	28.8%	-4.8%	0.023	0.033*
Economically disadvantaged	2,244	34.7%	1,595	37.6%	-2.8%	0.022	0.203
Middle school treatment	1,086	46.4%	399	43.6%	2.8%	0.024	0.237

^ identifies impacts that were statistically significant at p≤.10 and *identifies impacts that were statistically significant at p≤.05.

The Early College Model is expected to influence the percentage of students who are on-track for college through two different mechanisms. The first is to change policies and expectations in such a way that more students have access to a college preparatory course of study. As more states move toward having students enroll in a default college preparatory course of study (as Texas has), there is less room for school improvement efforts to effect change through this mechanism.

The second mechanism for increasing the number of students on-track for college is by increasing the number of students who are successfully completing the courses. The Early College Model intends to do this by influencing the quality of instruction in the classrooms and by increasing the amount of academic and affective support that students receive. As is explained in the next section, it appears that these changes may have been made in isolated instances but that this change was not systemic enough to have an impact on student performance.

The results did show a statistically significant negative impact on successful completion of courses for both ELL and low-performing students in Denver. For ELL students, this was driven by lower enrollment and completion rates in English courses. Low-performing students had lower enrollment and completion rates in English and higher enrollment rates but lower completion rates in math. At this point, we do not have a good explanation for why this might be happening, but ELL students in Denver performed worse in treatment schools than in comparison schools across the entire spectrum of outcomes.

Outcome C: Staying in School

One of the expected impacts of the ECEP model is an increased percentage of students staying in school. The Early College theory of change posits that the increased access to college courses and the increased academic and affective student supports keeps more students in school. To test this premise, the evaluation looked at the impact of ECEP on a single cohort dropout rate. We identified all students in 9th-grade in 2013-14 (Year 1 of the intervention) and followed them to determine whether they dropped out of school within three years (through the start of the 2015-16 academic year). We were also able to look at the impact through four years in Denver (as of the writing of this report, 2016-17 dropout data were not available for Texas). To provide context for the results, Table 19 presents descriptive statistics for the full staying-in-school sample. As the table shows, approximately 3% of the full sample (both treatment and comparison) dropped out within 3 years in Texas and about 6% in Denver.

Table 19. Descriptive Statistics for Full Sample

Characteristic	Percentage
Panel A: Texas	(N=4,874)
% of 9th graders who dropped out of high school within 3 years	3.0%
Panel B: Denver	(N=2,756)
% of 9th graders who dropped out of high school within 3 years	5.8%
% of 9th graders who dropped out of high school within 4 years	7.2%

Table 20 shows the impact of the model on one cohort dropout rate. Students in the treatment group dropped out at a lower, but non-significant, rate than students in comparison schools, but with a statistically significant impact for ELL students. The pooled results masked substantial differences in impacts by state, however. In Texas, students in the treatment group dropped out a rate significantly lower than students in the comparison group (2.7% in the treatment group and 3.8% in the comparison group). The effect was particularly large for ELL students. In the treatment schools, ELL students dropped out at a rate less than one-third that of the comparison group. Low-performing students dropped out at a rate that was slightly more than half that of the comparison group.

In Denver, students in the treatment schools dropped out at a rate that was significantly higher than students in the comparison schools (6.5% in the treatment group compared to 4.7% in the comparison group). ELL students dropped out at a statistically significantly higher rate in treatment schools than in comparison schools. For the remaining sub-groups, the dropout rates were higher for students in the treatment schools than in the comparison schools but the differences were not statistically significant.

Table 20. Cohort Dropout Rate

Outcome	Treatment N	Treatment Adjusted Mean	Comparison N	Comparison Unadjusted Mean	Adjusted Impact	Standard Error	p-value
Panel A: Pooled Impact Estimates							
% students dropped out within 3 years—overall	4192	3.6%	3438	4.1%	-0.5%	0.005	0.307
English Language Learners	1553	4.4%	1563	5.2%	-0.8%	0.011	0.490
Low-performing students	2610	4.4%	2266	5.9%	-1.5%	0.006	0.023*
Panel B: Texas							
% students dropped out within 3 years—overall	2,511	2.7%	2,363	3.8%	-1.1%	0.005	0.038*
English Language Learners	855	1.5%	1,045	5.2%	-3.6%	0.015	0.014*
Low-performing students	1,661	2.9%	1,656	5.1%	-2.2%	0.007	0.002*
Panel C: Denver							
% students dropped out within 3 years—overall	1,681	6.5%	1,075	4.7%	1.7%	0.010	0.079^
English Language Learners	698	8.1%	518	5.2%	2.9%	0.017	0.081^
Low-performing students	949	8.9%	610	7.4%	1.5%	0.014	0.299
Economically disadvantaged	1,305	6.9%	845	5.9%	1.0%	0.009	0.254
% students dropped out within 4 years—overall	1,681	7.9%	1,075	6.0%	1.8%	0.012	0.131
English Language Learners	698	9.4%	518	6.6%	2.9%	0.018	0.119
Low-performing students	949	10.4%	610	8.9%	1.6%	0.018	0.391
Economically disadvantaged	1,305	8.6%	845	7.2%	1.4%	0.012	0.241

Note: Texas dropout data were not available for the 2016-17 year as of the writing of this report; as a result, the pooled and Texas dropout rates are only reported within 3 years. The Texas schools were 95% economically disadvantaged; as a result, no findings are reported separately for this sub-group for Texas or for the pooled outcome.

^ identifies impacts that were statistically significant at p≤.10 and *identifies impacts that were statistically significant at p≤.05.

College Coursetaking

A key part of the ECEP Model is expanding access to college coursetaking while students are still in high school. The expectation is that early access to college courses will facilitate the transition to college by giving students credit they can apply to a degree and by exposing students to the expectations of college-level courses.

In this study, we looked at students who were in 11th-grade in 2015-16 and 12th-grade in 2016-17. We considered the extent to which they had ever taken a potentially college credit-bearing course. As described in the methodology section, these courses were among three different types:

- *Transferable dual credit/concurrent enrollment courses*, defined for this study as courses offered by a two- or four-year institution for which a student can receive college credit upon successful completion of the course and for which that credit could transfer to another college.

- *Advanced Placement courses* for which students could receive college credit if they passed the associated exam. No exam scores were available for AP so we included any student who received a passing grade in the course, which may not have equated to receiving college credit for the course.
- *Career/Technical Education courses*, the vast majority of which were articulated courses in which students could earn college credit if they completed the course successfully and then enrolled in the postsecondary institution that offered the original course. It should be noted that credits earned through CTE courses are not necessarily transferable to other institutions.

We examined two outcomes related to these types of courses. The first outcome was *enrollment* in a potentially college credit-bearing course at any point over the previous three years (looking back to Grade 9 for students following a typical grade progression). We looked at enrollment in any of the three categories of courses described above and then enrollment only in courses that were potentially transferable (i.e., dual credit and AP).

The second outcome was the number of Carnegie units earned in potentially college credit-bearing courses. Note that this outcome is not equivalent to the number of college credits actually earned by students in high school because students can only earn college credit in AP courses if they pass the exam (data for AP exam scores were not available) and in articulated CTE courses after they enroll in the postsecondary institution that offered the course in the high school. Carnegie units are based on seat time, and one Carnegie unit is associated with a high school course that meets daily for one hour over the entire academic year. Carnegie units are typically translated into college credits at a rate of six to one. For example, a standard semester-long college course translates to ½ of a Carnegie unit in high school.

It is important to note that we looked at these outcomes using a cohort approach in which our sample was 12th graders for whom we examined their entire high school career. This approach differs from the way that dual enrollment participation rates are usually presented which is the percentage of students in Grades 9-12 who took college credit-bearing courses in a given year.

To provide context for the findings, Table 21 presents descriptive findings for the full sample of treatment and comparison schools combined. As the table shows, 85% of 12th graders in Texas and 87% of 12th graders in Denver enrolled in at least one potentially college credit-bearing course in their senior year or at some time over the previous 3 years. As the number of Carnegie units earned shows, more Carnegie units were earned in AP and CTE courses than in dual enrollment courses. In Texas, the highest proportion of credits came from CTE courses, and in Denver, the highest proportion came from AP courses.

Table 21. Descriptive Statistics for Main Sample—College Credit-Bearing Courses by End of 12th-Grade

Characteristic	Percentage or Mean (standard deviation)
Panel A: Texas	(N=3,826)
% taken at least one college credit-bearing course (any)	90.6%
% taken at least one college credit-bearing course (not CTE)	64.6%
Average # of Carnegie units from all potentially college credit-bearing courses	4.07 (3.22)
Average # of Carnegie units from dual credit courses (not CTE)	0.40 (0.83)
Average # of Carnegie units from AP courses	1.61 (2.07)
Average # of Carnegie Units from CTE courses	2.07 (2.07)
Panel B: Denver	(N=1,310)
% taken at least one college credit-bearing course (any)	87.1%
% taken at least one college credit-bearing course (not CTE)	73.4%
Average # of Carnegie units from all potentially college credit-bearing courses	2.21(2.13)
Average # of Carnegie units from dual credit courses	0.30 (0.70)
Average # of Carnegie units from AP courses	1.35 (1.90)
Average # of Carnegie Units from CTE courses	0.56 (0.88)

Table 22 shows the difference between treatment and comparison students for the college credit-bearing course outcomes. There was a descriptively positive impact on the percentage of students taking college credit-bearing courses, but this difference was not statistically significant.

In Texas, almost 96% of students in the treatment schools enrolled in some type of potentially college credit-bearing course, a level that was 10 percentage points higher in the treatment group than in the comparison group, although the difference was not statistically significant. Sixty-four percent (64%) of treatment students enrolled in non-CTE college credit-bearing courses, a rate that was approximately 4 percentage points higher than the comparison group. The average number of Carnegie units earned in non-CTE dual enrollment courses was approximately 50% higher in the treatment group (0.37 for the treatment group vs. 0.23 for the comparison group) although the difference was not statistically significant. The number of Carnegie units earned in CTE and AP courses were descriptively higher in comparison schools than in treatment schools, although the difference was not significant.

In Denver, 86% of treatment students were enrolled in some sort of college credit-bearing course, a rate that was slightly (but not significantly so) lower in treatment than in comparison schools. The percentage enrolled in dual credit or AP was 9 percentage points higher although not significant. In terms of Carnegie units earned, the only statistically significant impact was a positive increase in credits earned in CTE courses in treatment schools.

Table 22. Impacts on College Credit-Bearing Courses—12th-Grade

Outcome	Treatment N	Treatment Adjusted Mean (Standard Deviation)	Comparison N	Comparison Unadjusted Mean (Standard Deviation)	Adjusted Impact	Standard Error	p-value	Effect Size (Hedge's g)
Panel A: Pooled Estimates								
% taken at least one college credit-bearing course (any)	2766	94.8%	2380	86.0%	8.8%	0.060	0.145	--
% taken at least one college credit-bearing course (not CTE)	2766	67.8%	2380	63.4%	4.4%	0.060	0.468	--
Average # of Carnegie units from all potentially college credit-bearing courses	2766	3.74 (2.68)	2380	3.73 (3.22)	0.01	0.317	0.987	0.003
Average # of Carnegie units from dual credit courses (not CTE)	2766	0.40 (0.81)	2380	0.27 (0.73)	0.13	0.103	0.219	0.168
Average # of Carnegie units from AP courses	2766	1.50 (1.91)	2380	1.57 (2.14)	-0.07	0.241	0.777	-0.034
Average # of Carnegie Units from dual credit CTE courses	2766	2.10 (1.25)	2380	1.89 (2.11)	0.21	0.191	0.270	0.117
Panel B: Texas								
% taken at least one college credit-bearing course (any)	1984	95.9%	1842	85.6%	10.3%	0.070	0.137	--
% taken at least one college credit-bearing course (not CTE)	1984	64.4%	1842	60.2%	4.2%	0.062	0.501	--
Average # of Carnegie units earned across all potentially college credit-bearing courses	1984	3.99 (2.94)	1842	4.26 (3.49)	-0.27	0.831	0.746	-0.08
Average # of Carnegie units from dual credit courses (not CTE)	1984	0.37 (0.91)	1842	0.24 (0.69)	0.13	0.105	0.201	0.19
Average # of Carnegie units from AP courses	1984	1.47 (2.02)	1842	1.57 (2.12)	-0.10	0.328	0.759	-0.05

Outcome	Treatment N	Treatment Adjusted Mean (Standard Deviation)	Comparison N	Comparison Unadjusted Mean (Standard Deviation)	Adjusted Impact	Standard Error	p-value	Effect Size (Hedge's g)
Average # of Carnegie Units from CTE courses	1984	2.14 (1.33)	1842	2.44 (2.59)	-0.31	0.837	0.716	-0.12
Panel C: Denver								
% taken at least one college credit-bearing course (any)	772	85.9%	538	87.2%	-1.2%	0.031	0.699	--
% taken at least one college credit-bearing course (not CTE)	772	82.1%	538	72.9%	9.2%	0.105	0.381	--
Average # of Carnegie units earned across all potentially college credit-bearing courses	772	2.32 (2.02)	538	2.28 (2.20)	0.12	0.287	0.679	0.05
Average # of Carnegie units from dual credit courses (not CTE)	772	0.20 (.55)	538	0.36 (0.87)	-0.16	0.400	0.692	-0.18
Average # of Carnegie units from AP courses	772	1.57 (1.62)	538	1.56 (2.21)	0.01	0.249	0.980	0.00
Average # of Carnegie Units from CTE courses	772	0.61 (1.03)	538	0.28 (0.47)	0.32	0.149	0.03*	0.68

^ identifies impacts that were statistically significant at p≤.10 and *identifies impacts that were statistically significant at p≤.05.

Overall, results showed that almost every student in ECEP schools in Texas was enrolled in some sort of potentially college credit-bearing course. The majority of those credits were being earned in CTE courses, followed by AP courses. Additionally, the number of credits earned through dual enrollment courses was higher in treatment schools than in comparison schools. In Denver, there was a positive impact on enrollment in AP and dual credit but a negative impact on Carnegie units received from dual credit courses. This suggests that there were enrolled students who might not have successfully completed those courses.

It should be noted that dual enrollment credits can be considered "guaranteed" college credits that will transfer to any college within the state. On the other hand, AP credits reflect only those students successfully completing the AP course; a subset of those students likely took and passed the exam thereby earning some college credit. We did not, however, have data to indicate which percentage of students actually received college credit for the course. Thus, the

number of actual college credits earned through AP courses will likely be substantially lower than the number reported in these tables. Similarly, the vast majority of CTE credits will only be receivable as college credits if students enroll in the postsecondary institution that housed the course. These credits can be thought of as potential college credits but are not very transferable. Thus, the total number of college credits earned through all types of dual enrollment courses is likely higher than those earned just in non-CTE dual credit courses.

To test why some of the enrollment impacts were not statistically significant despite their relatively large magnitude (10 percentage points), we conducted post-hoc power analyses. These analyses indicated that the college course enrollment outcome would have had to be approximately 14 percentage points to attain statistical significance. It would have been very hard to attain this kind of impact, particularly in Texas, because doing so would have required an enrollment rate close to 100%. This suggests that lack of variation in the outcome coupled with the size of the sample led to the lack of significance.

In addition to looking at impacts for the full population, we also looked at impacts for 11th graders and various sub-groups; these results are summarized here and the tables are provided in Appendix D. We found statistically significant positive impacts ($p \leq .10$) on enrollment in transferable college credit courses in 11th grade (9 percentage points). There were also overall statistically significant positive impacts on the number of Carnegie units earned from dual credit and CTE courses. However, these impacts were no longer statistically significant in 12th grade.

In looking at the impact on 12th graders for the targeted populations, we saw a statistically significant positive impact on the number of Carnegie units earned in dual credit courses by ELL students at the overall program level as well as in Texas. There was also a statistically significant positive impact on the number of Carnegie units earned by ELL students in CTE courses in Denver. All other impacts were not statistically significant.

For low-performing students, the only statistically significant impact was an increase in the number of Carnegie units earned in AP courses in Denver. There were descriptively positive impacts at the program-level on enrollment and Carnegie units earned in all three types of courses. In Texas, low-performing treatment students earned fewer overall credits, driven primarily by fewer CTE credits.

Finally, we also examined the impact on college coursetaking for students who remained in a treatment school for four years, giving them full exposure to the ECEP intervention. Overall, treatment students enrolled in college credit-bearing courses at a rate that was descriptively higher (8.8 percentage points), but the impact was not statistically significant. There were fewer Carnegie unit credits earned in treatment schools overall. In Texas, there were descriptively higher enrollment numbers and numbers of Carnegie units earned. However,

students earned fewer Carnegie units overall, in AP courses, and in CTE courses, which suggests a shift in students from enrolling in other college credit options to dual enrollment. The only statistically significant difference between treatment and comparison schools was in the number of Carnegie units earned in college-level CTE courses in Denver where the number earned in the treatment group was more than double that of the comparison group.

Next, we discuss the context and implications of the impact findings in more depth in the Discussion and Conclusions section.

Section V: Discussion

The ECEP evaluation results suggest that the work of transforming comprehensive high schools into Early Colleges is challenging, involving a reconsideration of many aspects of the high school experience. This section of the report synthesizes impact and implementation findings to identify a set of themes that highlight changes made by schools and, as appropriate, issues for schools to consider as they undertake this work. These themes should be considered along with the conclusions relative to implementation supports that are provided in the accompanying report, *Implementation Supports of the Early College Expansion Partnership*.

Key Points

- Districts and schools made changes to support college readiness, particularly around getting more students to take and pass college placement exams.
    - Issues to consider include ensuring that students are academically prepared to be successful in college courses, including successfully completing the necessary high school courses.
- Districts and schools expanded access to college credit-bearing courses such that, across the entire program, over 90% of 12th graders enrolled in a college credit-bearing course at some point during their high school career.
    - Issues to consider include ensuring that students have access to the type of college credit-bearing course that is most useful for them (CTE, AP, or dual enrollment) and note that increased enrollment in one occurs at the expense of decreased enrollment in another.
- Instructional change appeared to be occurring with individual teachers, and was most evident in places where administrators supported the work.
    - In addition to having leadership reinforce the desired instructional changes, issues to consider include ensuring that instructional changes are aligned with other efforts being undertaken in the district.
- ECEP schools increased their use of data, their collaboration with other teachers, and their participation in professional development activities over the duration of the grant.
- Dropout rates were lower in Texas in treatment schools but higher in Denver treatment schools. In both states, the ELL population was the sub-group most affected. Given the differences across states, it is possible that this was due primarily to significant dropout prevention efforts already in place in the Texas districts and not necessarily to the ECEP model.

- ECEP had substantial impacts on the community and district by expanding the number of schools identified as Early Colleges and by increasing community college-going expectations for their students.

Synthesized Findings

The following discussion is organized into several broad areas of emphasis for the project: (1) college-going culture and college readiness, (2) college coursetaking, (3) modifying instruction, (4) other changes at the school, and (5) other program impacts.

Creating a College-Going Culture Focused on College Readiness for All

The evaluation results provide evidence that the participating schools shifted to placing greater emphasis on college readiness, particularly by expanding the number of students taking and passing exams necessary to qualify for college courses. The Texas schools focused their efforts on preparing students to take the TSI exams, thus opening up a broader range of college courses for students. Based on staff implementation survey results, high schools showed a statistically significant increase on the implementation of college readiness activities from the first to fourth year of ECEP implementation. Further, across all student focus groups conducted in Year 4, students described an increased focus on college in their school.

One important aspect of college readiness is ensuring that students are successfully completing the high school courses they need. This involves two primary strategies: (1) providing access to high school courses designed to prepare students for postsecondary education, and (2) supporting instructional practices and academic/affective supports that allow students to successfully complete those classes. The current quasi-experimental study looked at impacts in both areas. Results showed that access to a college preparatory course of study was not necessarily problematic at the outset, particularly in Texas, where there was already a state-wide expectation that students would take these courses. As such, almost 100% of students in the treatment and comparison groups were taking the 9th-grade English and math courses necessary for college. In Denver, however, there was more room to grow, and the treatment schools did demonstrate descriptively higher enrollment rates in the core English and math courses of 6 percentage points (82.5% treatment vs. 76.6% comparison), although the difference was not statistically significant.

There remained substantial challenges, however, in ensuring that students were successful in these courses. At the program-level, the impact analysis showed an overall lower percentage of students successfully completing the targeted high school courses in treatment schools, although the differences were not statistically significant. In Texas, there was a descriptively higher successful completion rate, driven by higher completion rates in math courses. In Denver, the completion rates were descriptively lower, driven by lower completion rates in

English. There was also a statistically significant negative impact of ECEP on the successful course completion of ELL students.

These findings reinforce results from other studies that have found that providing students access to the right courses is not sufficient; students also need strong instruction and additional academic and affective supports to be successful (Allensworth, Nomi, Montgomery, & Lee, 2009). It is possible that, while some changes in instruction and supports were indeed implemented as part of ECEP, these changes were not implemented at a high enough level to impact course success.

Another possible explanation for these findings is that the primary emphasis for the project was placed on increasing access to college courses, with less attention paid to the students' performance in the high school courses that were necessary for success in college. Further qualitative research could explore whether schools felt a tension between providing access to college courses and ensuring students were successful in core high school courses.

Expanding Access to College Courses While in High School

Providing students with college-level courses is one of the key aspects of the Early College Model in preparing students for postsecondary education. In the current study, the expectation was that college coursetaking would help students see themselves as college students, familiarize them with the norms of college classes, and provide a jump-start on credits needed for a degree or other credential. Increasing the number of students taking college courses was a clear emphasis of the project, with a goal of having 90% of students taking at least one college credit-bearing course by the end of 12th-grade.

In the original small Early College Model, the emphasis was on providing students with college credit that could transfer to a four-year institution. As a result, even if they were associated with two-year colleges, the small Early Colleges emphasized transferable credits and attainment of an associate degree. When considering what college credit might look like for the range of students enrolled in a traditional high school, a broader lens needed to be taken to allow for students to take courses most appropriate for their needs and situation.

For example, there are a variety of mechanisms by which high school students can earn college credit. They can take and pass transferable, dual enrollment courses. They can take an AP course and pass the exam associated with the course. Alternatively, they can enroll in college-level CTE courses and pass the course, or, if the course is considered "articulated," pass the course and receive college credit when they enroll in a specific college. Each option has advantages and disadvantages related to portability of credits and eligibility to take the course.

Under the first option—transferable dual enrollment courses—students earn college credit when they successfully complete the course, credit that can then be applied to any public institution within the two states in our study. These types of courses could be considered the

"surest bet" because passing the course results in college credit; however, these courses are not guaranteed to transfer to private or out-of-state institutions. Additionally, these courses often require students to pass a qualifying exam (such as the Accuplacer or the TSI exam) as a prerequisite. Regarding taking AP courses, there is no qualifying exam, although some schools may require prerequisite courses or a certain level of incoming academic performance. Via the AP course pathway, students can pass the course to receive high school credit but only receive college credit for AP courses if they pass the exam, and many do not. Theoretically, AP credits are the most portable of the different college credits, although institutions vary widely in their acceptance of these credits. Finally, college-level CTE courses do not usually require a qualifying exam as a prerequisite and can lead students to a technical credential. However, these credits are much less portable, particularly if they are articulated credits that a student can only receive after they enroll in the specific institution which offered the course in the high school.

When looking at all three types of college courses in the current study, the project reached its goal, with over 90% of 12th graders participating in some sort of potentially college credit-bearing course, an estimated 9 percentage points higher than the enrollment rate in the comparison schools. However, of note, the comparison schools were also providing substantial access to college courses for their students, with 86% of their students enrolled in some sort of college credit-bearing course.

The patterns of college coursetaking differed by state. Schools in Texas were expanding student access to college courses for virtually all of their students, with 96% of the 12th-grade sample having participated in some sort of potentially college credit-bearing course. The Texas schools emphasized the transferable dual credit option more, which resulted in a 50% increase in the number of Carnegie units earned by treatment students relative to comparison students. However, this expansion of transferable dual credit courses did appear to come at the expense of other college credit options. Treatment students earned fewer Carnegie units in AP and CTE courses, resulting in descriptively fewer Carnegie units earned overall in potentially college credit-bearing courses. When considering these findings, it is important to note that the data we have do not allow us to determine the actual number of college credits received by students taking AP or college-level CTE courses.

In Denver, the percentage of students enrolled in a college credit-bearing course was essentially the same between treatment and comparison schools, although the percentage of treatment students enrolled in dual enrollment and AP courses was 9 percentage points higher. Despite this increase in enrollment, however, the number of Carnegie units earned in dual credit courses was almost half as large in the treatment schools as in the comparison schools. There was no difference in credit earned by AP courses. These results suggest that the expansion in dual credit enrollment may have resulted in more students failing the courses. This

issue was noted in one of the interviews with a Denver postsecondary instructor who said that more students were taking courses but that pass rates had dipped substantially.

It is important to note that Denver treated the grant as an impetus for changing the entire district. Thus, although there were a set of schools identified as ECEP schools and these schools received coaching services and extra focus from college liaisons, other schools in the district may also have been benefiting from the district's focus on college course enrollment. It is therefore possible that the comparison schools in Denver may have benefited from the grant as well, which could minimize the impact shown by the study.

Modifying Instruction

In order to better prepare students for college courses and to help students be successful in college courses, ECEP put a strong emphasis on instructional change supported by onsite instructional coaches. The project targeted six instructional strategies that were intended to increase student involvement in the learning process.

Findings from the evaluation suggest that, similar to other studies, changing instruction is challenging work that takes time. The survey data showed no significant changes in the reported frequency of use of specific targeted instructional practices, with the exception of a statistically significant increase in middle school teachers' use of Collaborative Group Work. Further, results from interviews and observations indicated that instructional change occurred in pockets and was most evident in cases where the administration was supportive and reinforced the instructional practices.

The findings also suggest that instructional change should be supported in the context of broader improvement efforts. For example, participants reported that it was easier to implement the instructional practices when the practices were aligned with other work in the district, particularly if they were embedded in teacher evaluation practices.

Other Changes in Schools

Increasing expectations for students also increases the need for student supports. The staff survey showed a statistically significant increase in schools' provision of academic and affective supports for students. Site visits suggested that this might have been at least partly due to the increase in supports provided to students who were getting ready to take the college placement exams. For example, the schools in Texas emphasized preparing students to pass the TSI placement exam, creating a new suite of activities to support students while they are doing so.

Although the ultimate beneficiary of the Early College Model is students, there were expectations that teachers' working environment should also change. Teachers were expected to participate in more professional development, collaborate more regularly, and use data

more regularly. The staff survey results showed significant increases in all of these areas over the life of the project, and these were all changes that we heard about in the site visits.

Other Program Impacts

When schools changed to a more college-going culture, expanded access to college coursetaking, and increased the supports provided to students, the expectation was that more students would stay in school, reducing the dropout rate and increasing the graduation rate.

Full program results showed a descriptive decline in dropout rates and a statistically significant decline of dropout rates for ELL students. These overall findings mask substantial variation by state. In Texas, the treatment schools had a dropout rate that was 1 percentage point lower than comparison schools. The impact was particularly large for ELL students, whose cohort dropout rate in treatment schools was less than one-third that of the rate in the comparison schools (1.5% for the treatment group vs. 5.2% for the comparison group). In Denver, the opposite occurred with dropout rates significantly higher in the treatment schools than in the comparison schools (6.5% for the treatment vs. 4.7% for the comparison). In Denver, ELL students in treatment schools dropped out a rate significantly higher than ELL students in comparison schools (8.1% for the treatment vs. 5.2% for the comparison).

Given the differences in impacts across states, it is hard to determine the extent to which the overall impacts are due to ECEP. It is possible that the dropout findings are related to other work going on in the district. For example, PSJA has been very active in dropout prevention work, including extensive proactive outreach from counselors; this work is not necessarily conceptualized as part of the Early College Model but certainly would be expected to impact the dropout rates. Future research should consider exploring the reasons behind state-level variation in these outcomes.

ECEP was intended to impact entire school districts, and the evaluation documented such changes as a result of the grant. All three districts used the i3 grant to increase their focus on postsecondary education and to move their district in a direction they wanted to go. All three districts saw an increase in the number of schools officially designated as Early Colleges by the state. By the end of the grant, all of the participating high schools in Texas had been designated as schoolwide Early Colleges. Denver had five of their 56 high schools designated as Early Colleges.

Regarding next steps and sustainability for the participating districts, PSJA continued its district-wide emphasis on Early Colleges, with the ECEP project providing structures to continue the work. Brownsville dramatically increased their Early College emphasis and focus. Denver also used the grant to move its district-wide dual enrollment efforts forward and received substantial community support in the form of $8 million of funding for dual enrollment efforts.

Section VI: Conclusion

The small Early College Model has been shown to be successful at improving student outcomes in high school and postsecondary education. Given the success of the model, there has been interest in scaling it up more broadly, particularly to try and reach students in comprehensive high schools. ECEP was one of the first large-scale efforts in the nation to explore the possibility of transforming comprehensive high schools into Early Colleges. Despite the strong evidence of the small Early College Model, there was an open question as to the extent to which the Early College design elements could be implemented in comprehensive high schools and the extent to which these schools would see similar impacts to the small Early Colleges. ECEP can be thought of as testing the possibility: can comprehensive high schools implement Early College strategies in a way that improves outcomes for all students? The results of the current evaluation suggest that comprehensive high schools can begin the process of transforming themselves into Early Colleges but that the road is long and challenging.

In their purest form, Early Colleges represent a comprehensive re-envisioning of high school, an environment focused on college for all, in which the secondary and postsecondary experiences are merged. Existing comprehensive high schools have evolved over time, adding a multitude of programs and approaches in an attempt to meet the needs of all of their students (Murphy, 2016). A long history of school reform work suggests that it is extremely challenging to change the culture and environment of existing comprehensive high schools (American Institutes of Research & SRI International, 2008; Mazzeo, Fleischman, Heppen, & Jahangir, 2016). The original Early Colleges experienced an advantage in that they were new schools created from scratch with a clear focus and purpose (Edmunds, 2012). Implementing the Early College Model thus requires high schools to make a number of substantive changes, including creating a more college-going culture, implementing college readiness activities, modifying instruction to be more rigorous and student-centered, providing student supports, and fostering increased learning and collaboration for school staff. Results from the evaluation suggest that changes have been made in some of these areas but that there are issues associated with implementing the Early College Model in comprehensive settings that still need to be fully addressed.

One of the challenges with the implementation of Early Colleges in comprehensive high schools is distinguishing what separates an Early College from a regular high school with dual enrollment options (as many high schools already have across the country). Based on this evaluation and others, we argue that Early College is not just “dual enrollment on steroids;” instead Early Colleges share a core set of common ideas:

- All students should be expected to obtain some form of postsecondary education. In many of the original small Early Colleges, this was conceptualized as a four-year degree but expanding the vision to comprehensive high schools requires recognizing that

postsecondary education can include, not only a four-year degree, but also a two-year degree or technical credentials. In traditional high schools, a subset of students are generally expected to go directly into the workforce after they graduate. The majority of participants in the project believed that ECEP resulted in increased expectations for their students and reported an increase in college readiness support activities, although there was no significant change, as reported in the survey, in the extent to which school staff reported changes in a college-going culture.

- All students should have the opportunity to attain some sort of a postsecondary credential as part of their high school experience. Providing early access to college credits is a key part of the model but those credits are expected to lead to a credential. In many of the original small Early Colleges, those credits led to an associate degree or two years of transferable college credit. When expanding the Early College Model to serve a wider range of students, the credentials also need to be more broadly conceptualized as noted above. This means that students will need to have a variety of opportunities for college credit coursetaking (dual credit, CTE, AP) depending on their needs and interests. The study results showed that the vast majority of students in the treatment schools were given access to some sort of college credit-bearing experience. The districts reported that they were trying to focus many of the coursetaking opportunities to be part of pathways to ensure that the courses taken could eventually lead to a meaningful credential. In the Texas schools, students did have the opportunity to earn an associate degree and the schools reported a growing number of students earning those credentials. Unfortunately, the data sources used in this evaluation did not allow for tracking those outcomes.
- College courses are not just an add-on to the school; instead, the focus on postsecondary readiness requires schools to reconsider how all aspects of the school (e.g., instruction, supports, high school coursetaking, the professional working environment) can support the common goal of postsecondary readiness for all. This is one of the key aspects separating an Early College from a high school that is simply adding on college courses. What kind of high school courses do students need to take? How does the content of those courses prepare students for postsecondary education? How does the instruction prepare students for further education? What kinds of supports do students need to be successful in this environment? How do teachers need to work together to reach the school's goal? We acknowledge that this is something that is easier for newly created schools to do than for comprehensive schools. The evaluation survey results showed that these changes were occurring in some areas but that there were also areas in which there was not significant movement, highlighting the challenges in moving large institutions.

Overall, this evaluation study shows that the Early College Model can serve as a focal point for districts that can guide and direct their work. The evaluation results also suggest that increasing access to college courses is important but that it will be most effective when it is part of a broader effort to more comprehensively improve high schools to ensure that all students are prepared for further education.

References

Allensworth, E. M., Nomi, T., Montgomery, N., & Lee, V. E. (2009). College preparatory curriculum for all: Academic consequences of requiring Algebra and English I for ninth graders in Chicago. *Educational Evaluation and Policy Analysis, 31*(4), 367-391. doi:10.3102/0162373709343471

American Institutes of Research, & SRI International. (2008). *2003-2007 Early College High School Initiative Evaluation: Emerging patterns and relationships*. Retrieved from Washington DC and Arlington, VA:

Benjamini, Y., & Hochberg, Y. (1995). Controlling the false discovery rate: A practical and powerful approach to multiple testing. *Journal of the Royal Statistical Society, Series B (Methodological), 57*(1), 289-300.

Berger, A., Turk-Bicakci, L., Garet, M., Song, M., Knudson, J., Haxton, C., . . . Cassidy, L. (2013). *Early College, early success: Early College High School Initiative impact study*. Retrieved from Washington, DC:

Bloom, H. S., Richburg-Hayes, L., & Black, A. R. (2007). Using covariates to improve precision for studies that randomize schools to evaluate educational interventions. *Educational Evaluation and Policy Analysis, 29*(1), 30-59.

Carnevale, A. P., & Desrochers, D. M. (2003). *Standards for what? The economic roots of K-16 reform*. Retrieved from Washington, DC:

Carnevale, A. P., Smith, N., & Strohl, J. (2010). *Help wanted: Projections of jobs and education requirements through 2018*. Retrieved from Washington, DC: https://georgetown.app.box.com/s/ursjbxaym2np1v8mgrv7

Durlak, J. A., & Dupre, E. P. (2008). Implementation matters: a Review of the research on the influence of implementation on program outcomes and the factors affecting implementation. *American Journal of Community Psychology, 41*, 327-350.

Edmunds, J. A. (2012). Early Colleges: Redesigning high schools for college readiness. *New Directions for Higher Education, 158*(81-90).

Edmunds, J. A., Bernstein, L., Unlu, F., Glennie, E., & Smith, A. (2013). *Graduating on-time: The impact of an innovative high school reform model on high school graduation rates.* . Paper presented at the Annual Meeting of the American Educational Research Association, San Francisco, CA.

Edmunds, J. A., Bernstein, L., Unlu, F., Glennie, E., Willse, J., Smith, A., & Arshavsky, N. (2012). Expanding the start of the college pipeline: Ninth grade findings from an experimental study of the impact of the Early College High School Model. *Journal for Research on Educational Effectiveness, 5*(2), 136-159.

Edmunds, J. A., Unlu, F., Glennie, E., Bernstein, L., Fesler, L., Furey, J., & Arshavsky, N. (2015). *Facilitating the transition to postsecondary education: the impact of the Early College model*. Paper presented at the Fall Research Conference for the Association for Public Policy Analysis and Management, Miami, FL.

Edmunds, J. A., Unlu, F., Glennie, E., Bernstein, L., Fesler, L., Furey, J., & Arshavsky, N. (2017). Smoothing the transition to postsecondary education: the impact of the Early College model. *Journal of Research on Educational Effectiveness, 10*(2), 297-325.

Edmunds, J. A., Willse, J., Arshavsky, N., & Dallas, A. (2013). Mandated engagement: The impact of Early College high schools. *Teachers College Record, 115*(7), 1-31.

Finkelstein, N. D., & Fong, A. B. (2008). *Course-taking patterns and preparation for postsecondary education in California's public university systems among minority youth. (Issues & Answers Report, REL 2008–No. 035).* Retrieved from Washington, DC:

Hooker, S. (November, 2017). *Solving the dual enrollment staffing puzzle: Strategies from the Early College Expansion Partnership*. Retrieved from Boston:

Jobs for the Future. (2012). *The Common Instructional Framework: Rubrics and support guides for teachers*. Retrieved from Boston, MA:

Mazzeo, C., Fleischman, S., Heppen, J., & Jahangir, T. (2016). Improving high school success: Searching for evidence of promise. *Teachers College Record, 118*(13), 1-32.

Meyers, D. C., Durlak, J. A., & Wandersman, A. (2012). The Quality Implementation Framework: a synthesis of critical steps in the implementation process. *American Journal of Community Psychology, 50*(3-4), 462-480.

Murphy, J. (2016). The evolution of the high school in America. *Teachers College Record, 118*(13), 1-18.

Raudenbush, S. W., & Bryk, A. S. (2002). *Hierarchical linear models: Applications and data analysis methods* Thousand Oaks, CA: Sage Publications.

Appendix A: Baseline Equivalence for Sub-Groups

Table A-1. Baseline Student Characteristics, by Sample—Economically Disadvantaged Students, Denver Only*

Sample	Sample Definition	Characteristic	Treatment Mean (SD)	Comparison Mean (SD)	Effect size of Difference
Analytic Sample for Outcomes A and B (9th-grade college prep coursetaking)	Cross-sectional sample of 9th graders in schools in their second and third years of implementation (2014-15 and 2015-16)	Denver	(N=2,224)	(N=1,595)	
		Baseline reading z-score	-0.143 (0.922)	-0.228 (1.019)	0.09
		Underrepresented minority	89.7%	90.0%	0.05
		Female	48.7%	49.3%	-0.01
Analytic Sample for Outcome C (dropout)	Longitudinal sample of 9th graders from 2013-14 followed through 2015-16 and 2016-17	Denver	(N=1,305)	(N=845)	
		Baseline reading z-score	-0.140 (0.955)	-0.194 (0.939)	0.07
		Underrepresented minority	89.7%	90.2%	-0.03
		Female	47.7%	48.9%	-0.02
Analytic Sample for Outcomes D and E (college credit courses)	12th graders enrolled in 2016-17	Denver	(N=581)	(N=387)	
		Baseline reading z-score	-0.134 (0.933)	-0.267 (0.929)	0.14
		Underrepresented minority	89.5%	88.4%	0.07
		Female	53.4%	54.3%	-0.02

*Baseline year is 2012-13 school year. Because the population of the Texas sample is almost entirely economically disadvantaged, there was no separate analysis run for economically disadvantaged students.

Table A-2. Baseline Student Characteristics, by Sample—English Language Learners*

Sample	Sample Definition	Characteristic	Treatment Mean (SD)	Comparison Mean (SD)	Effect size of Difference
Analytic Sample for Outcomes A and B (9th-grade college prep coursetaking)	Cross-sectional sample of 9th graders in schools in their second and third years of implementation (2014-15 and 2015-16)	Panel A: Pooled	(N=3,587)	(N=3,738)	
		Baseline reading z-score	-0.130 (0.972)	-0.159 (1.103)	0.03
		Eligible for free or reduced-price lunch	96.5%	96.1%	0.06
		Underrepresented minority	NA	NA	NA
		Female	48.6%	49.0%	-0.01
		Panel B: Texas	(N=2,376)	(N=2,704)	
		Baseline reading z-score	-0.110 (0.998)	-0.114 (1.134)	0.00
		Eligible for free or reduced-price lunch	97.9%	97.4%	0.11
		Underrepresented minority	NA	NA	NA
		Female	49.2%	48.2%	0.02
		Panel C: Denver	(N=1,211)	(N=1,034)	
		Baseline reading z-score	-0.169 (0.919)	-0.276 (1.023)	0.11
		Eligible for free or reduced-price lunch	93.7%	92.6%	0.10
		Underrepresented minority	90.0%	87.7%	0.14
		Female	47.6%	51.1%	-0.08
Analytic Sample for Outcome C (dropouts)	Longitudinal sample of 9th graders from 2013-14 followed through 2015-16	Panel A: Pooled	(N=1,553)	(N=1,563)	
		Baseline reading z-score	-0.149 (0.898)	-0.079 (1.149)	-0.07
		Eligible for free or reduced-price lunch	95.1%	96.2%	-0.16
		Underrepresented minority	NA	NA	NA
		Female	48.0%	46.4%	0.04
		Panel B: Texas	(N=855)	(N=1,045)	
		Baseline reading z-score	-0.189 (.863)	-0.023 (1.270)	-0.17
		Eligible for free or reduced-price lunch	97.5%	98.4%	0.25
		Underrepresented minority	NA	NA	NA
		Female	45.8%	45.2%	0.02
		Panel C: Denver	(N=698)	(N=518)	

Sample	Sample Definition	Characteristic	Treatment Mean (SD)	Comparison Mean (SD)	Effect size of Difference
		Baseline reading z-score	-0.100 (.941)	-0.190 (.905)	0.10
		Eligible for free or reduced-price lunch	92.1%	91.9%	0.02
		Underrepresented minority	89.4%	88.2%	0.07
		Female	50.7%	48.8%	0.05
Analytic Sample for Outcomes D and E (college credit courses)	12th graders enrolled in 2016-17	Panel A: Pooled	(N=982)	(N=1,024)	
		Baseline reading z-score	-0.168 (0.924)	-0.082 (1.189)	-0.081
		Eligible for free or reduced-price lunch	95.6%	95.8%	-0.027
		Underrepresented minority	NA	NA	NA
		Female	49.4%	50.9%	-0.036
		Panel B: Texas	(N=608)	(N=760)	
		Baseline reading z-score	-0.183 (0.926)	-0.021 (1.274)	-0.16
		Eligible for free or reduced-price lunch	97.5%	97.8%	-0.06
		Underrepresented minority	NA	NA	NA
		Female	45.4%	48.9%	-0.09
		Panel C: Denver	(N=493)	(N=391)	
		Baseline reading z-score	-0.102 (0.922)	-0.195 (0.914)	0.10
		Eligible for free or reduced-price lunch	92.1%	91.0%	0.08
		Underrepresented minority	89.7%	87.0%	0.16
		Female	53.3%	52.4%	0.02

*Baseline year is 2012-13 school year.

Note: The underrepresented minority population in Texas in this sample is over 99% of the population and results in a cell size of less than 5 for the non-underrepresented population. As a result, the data were not released.

Table A-3. Baseline Student Characteristics, by Sample—Low Performing Students*

Sample	Sample Definition	Characteristic	Treatment Mean	Comparison Mean	Effect size of Difference
Analytic Sample for Outcomes A and B (9th-grade college prep coursetaking)	Cross-sectional sample of 9th graders in schools in their second and third years of implementation (2014-15 and 2015-16)	Panel A: Pooled	(N=4,972)	(N=4,530)	
		Baseline reading z-score	-0.332 (0.905)	-0.358 (0.925)	0.03
		Eligible for free or reduced-price lunch	93.6%	95.0%	-0.16
		Underrepresented minority	97.3%	97.0%	0.05
		Female	46.9%	47.4%	-0.01
		Panel B: Texas	(N=3,586)	(N=3,544)	
		Baseline reading z-score	-0.192 (0.957)	-0.228 (0.936)	0.04
		Eligible for free or reduced-price lunch	94.8%	95.9%	-0.16
		Underrepresented minority	99.6%	99.3%	0.34
		Female	48.6%	48.3%	0.01
		Panel C: Denver	(N=1,386)	(N=986)	
		Baseline reading z-score	-0.695 (.771)	-0.827 (.886)	0.16
		Eligible for free or reduced-price lunch	90.3%	91.7%	-0.10
		Underrepresented minority	91.3%	89.0%	0.16
		Female	42.4%	43.8%	-0.03
Analytic Sample for Outcome C (dropout)	Longitudinal sample of 9th graders from 2013-14 followed through 2015-16	Panel A: Pooled	(N=2,610)	(N=2,266)	
		Baseline reading z-score	-0.359 (0.818)	-0.353 (1.054)	-0.01
		Eligible for free or reduced-price lunch	92.5%	94.8%	-0.24
		Underrepresented minority	96.4%	97.0%	-0.11
		Female	45.7%	44.2%	0.04
		Panel B: Texas	(N=1,661)	(N=1,656)	
		Baseline reading z-score	-0.211 (.850)	-0.238 (1.160)	0.03
		Eligible for free or reduced-price lunch	95.3%	96.1%	-0.12
		Underrepresented minority	99.4%	99.3%	0.11
		Female	45.9%	44.6%	0.03
		Panel C: Denver	(N=949)	(N=610)	
		Baseline reading z-score	-.619 (0.762)	-.664 (0.766)	0.06

Sample	Sample Definition	Characteristic	Treatment Mean	Comparison Mean	Effect size of Difference
		Eligible for free or reduced-price lunch	87.6%	91.3%	-0.24
		Underrepresented minority	91.1%	90.7%	0.04
		Female	45.3%	43.3%	0.05
Analytic Sample for Outcomes D and E (college credit courses)	12th graders enrolled in 2016-17	Panel A: Pooled	(N=1,591)	(N=1,429)	
		Baseline reading z-score	-0.366 (0.808)	-0.379 (1.107)	0.01
		Eligible for free or reduced-price lunch	92.3%	94.3%	-0.19
		Underrepresented minority	97.6%	97.3%	0.08
		Female	47.1%	46.9%	0.00
		Panel B: Texas	(N=1,221)	(N=1,188)	
		Baseline reading z-score	-0.246 (0.857)	-0.272 (1.186)	0.03
		Eligible for free or reduced-price lunch	94.3%	95.1%	-0.09
		Underrepresented minority	NA	NA	NA
		Female	45.2%	46.5%	-0.03
		Panel C: Denver	(N=370)	(N=241)	
		Baseline reading z-score	-0.763 (.643)	-0.903 (.714)	0.21
		Eligible for free or reduced-price lunch	85.7%	90.0%	-0.25
		Underrepresented minority	91.1%	87.6%	0.23
		Female	53.2%	48.5%	0.11

*Baseline year is 2012-13 school year

Note: The underrepresented minority population in Texas for Outcomes D and E is over 99% of the population and results in a cell size of less than 5 for the non-underrepresented population. As a result, the data were not released.

Exposure Sub-Groups

Table A-4. Baseline Student Characteristics, by Sample—Middle School Participants, Denver only*

Sample	Sample Definition	Characteristic	Treatment Mean	Comparison Mean	Effect size of Difference
Analytic Sample for Outcomes A and B (9th-grade college prep coursetaking)	Cross-sectional sample of 9th graders in schools in their second and third years of implementation (2014-15 and 2015-16)	Panel B: Denver	(N=1086)	(N=399)	
		7th-grade reading z-score	0.077 (0.959)	0.264 (1.136)	-0.19
		Eligible for free or reduced-price lunch	75.0%	65.7%	0.27
		Underrepresented minority	76.1%	63.9%	0.35
		Female	47.9%	48.9%	-0.02

*Baseline year is 2012-13 school year

Table A-5. Baseline Student Characteristics, by Sample—Students in Same High School for Three Years*

Sample	Sample Definition	Characteristic	Treatment Mean	Comparison Mean	Effect size of Difference
Analytic Sample for Outcomes D and E (college credit courses)	12th graders enrolled in 2016-17	Panel A: Pooled	(N=2,455)	(N=2,170)	
		7th-grade reading z-score	0.000 (0.835)	0.006 (1.142)	-0.01
		Eligible for free or reduced-price lunch	87.9%	88.8%	-0.05
		Underrepresented minority	93.9%	93.9%	0.00
		Female	50.2%	51.1%	-0.02
		Panel B: Texas	(N=1,738)	(N=1,693)	
		7th-grade reading z-score	-0.011 (.782)	-0.005 (1.159)	-0.01
		Eligible for free or reduced-price lunch	93.1%	93.7%	-0.06
		Underrepresented minority	99.6%	99.5%	0.10
		Female	49.6%	49.8%	-0.01
		Panel C: Denver	(N=717)	(N=477)	
		7th-grade reading z-score	0.029 (0.965)	0.046 (1.08)	-0.02
		Eligible for free or reduced-price lunch	75.3%	71.1%	0.13
		Underrepresented minority	80.1%	74.0%	0.21
		Female	51.7%	55.3%	-0.09%

*Baseline year is 2012-13 school year

Appendix B: Analytic Model

Below is the core analytic outcome model. A similar model was run for the sub-groups with the stratifying variable removed from the model.

Level 1 (student level):

$$y_{ij} = \beta_{0j} + \beta_{1j} Year_{ij} + \sum_{s=2}^{S} \beta_{sj} X_{sij} + e_{ij}$$

where:

y_{ij} = outcome of interest for student *i* in school *j*;

$Year_{ij}$ =cohort indicator;

X_{sij} = s-th student-level variables for low income, underrepresented minority, ELL, gender, standardized reading score at baseline, and standardized math score at baseline.

β_{0j} = adjusted mean outcome of interest for school j controlling for differences in student-level covariates;

β_{sj} = the association between the sth student-level covariate and outcome of interest;

e_{ij} = random effect of student *i* in school *j* assumed to be distributed with a mean of zero and variance of σ_e^2 ;

Level 2 (school level):

$$\beta_{0j} = \gamma_{00} + \gamma_{01} ECEP_j + \gamma_{02} State_j + \sum_{k=1}^{K} \gamma_{0(k+2)} B_{kj} + u_{0j}$$

where:

$ECEP_j$ = 1 if school *j* an ECEP (treatment) school, 0 otherwise;

$State_j$ =1 if school j located in Colorado, 0 if Texas;

B_{kj} = kth (k=1,2,…,K) school-level measures at baseline: percent passing 9th-grade standardized reading test, percent passing 9th-grade math test, and percent all students low income;

γ_{00} = adjusted mean of the outcome of interest in comparison schools in Texas;

γ_{01} = overall fixed treatment effect adjusted for the baseline matching variables and other covariates;

γ_{02} = association between schools located in Colorado and the outcome measure controlling for other covariates in the model;

u_{0j} = random effect of school j, assumed to be distributed with a mean of zero and variance of σ_u^2. Note that this term is also assumed to be independent of the student-level error term, e_{ij} .

Appendix C: Weights for Pooled Analysis

	Texas				Denver			
Outcome	Standard Error	Variance	Inverse Variance	Weight	Standard Error	Variance	Inverse Variance	Weight
% 9th graders enrolled in college preparatory course, English **and** math	0.005	0.000	45755.811	0.998	0.097	0.009	107.179	0.002
% 9th graders successfully completing at least one English **and** one math college preparatory course	0.073	0.005	188.101	0.088	0.023	0.001	1945.503	0.912
% dropout	0.005	0.000	36740.214	0.783	0.010	0.000	10159.687	0.217
% taken at least one college credit-bearing course	0.070	0.005	206.949	0.867	0.031	0.001	31.870	0.133
% taken at least one college credit-bearing course (not CTE)	0.062	0.004	256.463	0.964	0.105	0.011	9.493	0.036
Average # of Carnegie units earned across all potentially college credit-bearing courses	0.831	0.691	1.447	0.293	0.287	0.082	3.488	0.707
Average # of Carnegie units from dual credit courses	0.105	0.011	90.452	0.973	0.400	0.160	2.497	0.027
Average # of Carnegie units from AP courses	0.328	0.108	9.275	0.698	0.249	0.062	4.012	0.302
Average # of Carnegie Units from CTE courses	0.837	0.701	1.426	0.175	0.149	0.022	6.714	0.825

Appendix D: College Credit-Bearing Courses—Detailed Findings

Table D-1. Impacts on College Credit-Bearing Courses—11th-Grade

Outcome	Treatment N	Treatment Adjusted Mean (Standard Deviation)	Comparison N	Comparison Unadjusted Mean (Standard Deviation)	Adjusted Impact	Standard Error	p-value	Effect Size (Hedge's g)
Panel A: Pooled Estimates								
% taken at least one college credit-bearing course	3169	84.3%	2696	78.2%	6.1%	0.222	0.050	--
% taken at least one college credit-bearing course (not CTE)	3169	61.7%	2696	52.7%	9.0%	0.085^	0.052	--
Average # of Carnegie units earned across all potentially college credit-bearing courses	3169	2.39	2696	2.21	0.18	0.421	0.228	0.09
Average # of Carnegie units from dual credit courses	3169	0.31	2696	0.16	0.14	0.034*	0.133	0.24
Average # of Carnegie units from AP courses	3169	0.97	2696	0.94	0.04	0.770	0.134	0.03
Average # of Carnegie Units from CTE courses	3169	1.37	2696	1.11	0.26	0.052^	0.068	0.21
Panel B: Texas								
% taken at least one college credit-bearing course	2101	92.3%	1928	78.0%	14.3%	0.167	0.104	--
% taken at least one college credit-bearing course (not CTE)	2101	56.5%	1928	47.8%	8.7%	0.166	0.063	--
Average # of Carnegie units earned across all potentially college credit-bearing courses	2101	2.60 (2.08)	1928	2.44 (2.21)	0.16	0.761	0.532	0.07

Outcome	Treatment N	Treatment Adjusted Mean (Standard Deviation)	Comparison N	Comparison Unadjusted Mean (Standard Deviation)	Adjusted Impact	Standard Error	p-value	Effect Size (Hedge's g)
Average # of Carnegie units from dual credit courses	2101	0.25 (0.67)	1928	0.10 (0.34)	0.16	0.023*	0.069	0.46
Average # of Carnegie units from AP courses	2101	0.89 (1.35)	1928	0.84 (1.20)	0.06	0.775	0.201	0.05
Average # of Carnegie Units from CTE courses	2101	1.45 (1.09)	1928	1.50 (1.71)	-0.05	0.924	0.553	-0.03
Panel C: Denver								
% taken at least one college credit-bearing course	1,068	82.4%	768	78.8%	3.6%	0.525	0.057	--
% taken at least one college credit-bearing course (not CTE)	1,068	73.1%	768	63.5%	9.6%	0.303	0.093	--
Average # of Carnegie units earned across all potentially college credit-bearing courses	1,068	1.89 (1.92)	768	1.70 (2.09)	0.19	0.456	0.252	0.09
Average # of Carnegie units from dual credit courses	1,068	0.14 (0.51)	768	0.29 (0.76)	-0.15	0.637	0.323	-0.20
Average # of Carnegie units from AP courses	1,068	1.18 (1.48)	768	1.16 (1.97)	0.02	0.891	0.177	0.01
Average # of Carnegie Units from CTE courses	1,068	0.53 (0.94)	768	0.25 (0.43)	0.28	0.04*	0.138	0.64

^ identifies impacts that were statistically significant at p≤.10 and *identifies impacts that were statistically significant at p≤.05.

Table D-2. Impacts on College Credit-Bearing Courses—12th-Grade—ELL Students

Outcome	Treatment N	Treatment Adjusted Mean (Standard Deviation)	Comparison N	Comparison Unadjusted Mean (Standard Deviation)	Adjusted Impact	Standard Error	p-value	Effect Size (Hedge's g)
Panel A: Pooled Estimates								
% taken at least one college credit-bearing course	982	91.7%	1024	81.3%	10.4%	0.068	0.124	--
Average # of Carnegie units from all potentially college credit-bearing courses	982	3.33	1024	3.23	0.10	0.323	0.759	0.04
Average # of Carnegie units from dual credit courses	982	0.34	1024	0.20	0.14	0.069	0.040*	0.23
Average # of Carnegie units from AP courses	982	1.24	1024	1.29	-0.04	0.232	0.853	-0.02
Average # of Carnegie Units from CTE courses	982	1.93	1024	1.74	0.19	0.193	0.33	0.10
Panel B: Texas								
% taken at least one college credit-bearing course	608	91.6%	760	78.0%	13.6%	0.085	0.108	--
Average # of Carnegie units earned across all potentially college credit-bearing courses	608	3.55 (2.39)	760	3.84 (3.40)	-0.29	0.790	0.710	-0.09
Average # of Carnegie units from dual credit courses	608	0.23 (0.62)	760	0.08 (0.43)	0.15	0.070	0.036*	0.35
Average # of Carnegie units from AP courses	608	1.17 (1.57)	760	1.34 (2.01)	-0.17	0.318	0.604	-0.08
Average # of Carnegie Units from CTE courses	608	2.14 (1.27)	760	2.42 (2.75)	-0.28	0.820	0.730	-0.10
Panel C: Denver								
% taken at least one college credit-	374	86.0%	264	88.3%	-2.2%	0.029	0.433	--

Outcome	Treatment N	Treatment Adjusted Mean (Standard Deviation)	Comparison N	Comparison Unadjusted Mean (Standard Deviation)	Adjusted Impact	Standard Error	p-value	Effect Size (Hedge's g)
bearing course								
Average # of Carnegie units earned across all potentially college credit-bearing courses	374	2.19 (2.11)	264	1.91 (1.87)	0.28	0.295	0.335	0.15
Average # of Carnegie units from dual credit courses	374	0.28 (0.61)	264	0.45 (0.98)	-0.17	0.367	0.647	-0.17
Average # of Carnegie units from AP courses	374	1.42 (1.67)	264	1.18 (1.70)	0.23	0.229	0.308	0.14
Average # of Carnegie units from CTE courses	374	0.57 (1.09)	264	0.28 (0.43)	0.29	0.149	0.050*	0.68

^ identifies impacts that were statistically significant at p≤.10 and *identifies impacts that were statistically significant at p≤.05.

Table D-3. Impacts on College Credit-Bearing Courses—12th-Grade, Economically Disadvantaged Students—Denver Only

Outcome	Treatment N	Treatment Adjusted Mean (Standard Deviation)	Comparison N	Comparison Unadjusted Mean (Standard Deviation)	Adjusted Impact	Standard Error	p-value	Effect Size (Hedge's g)
Denver								
% taken at least one college credit-bearing course	581	81.8%	387	84.5%	-2.7%		0.446	--
Average # of Carnegie units earned across all potentially college credit-bearing courses	581	1.88 (2.01)	387	1.62 (1.73)	0.26		0.326	0.15
Average # of Carnegie units from dual credit courses	581	0.22 (0.57)	387	0.39 (0.90)	-0.17		0.648	-0.19
Average # of Carnegie units from AP courses	581	1.18 (1.54)	387	0.94 (1.54)	0.24		0.133	0.16
Average # of Carnegie Units from CTE courses	581	0.55 (1.09)	387	0.29 (0.46)	0.26		0.085^	0.58

^ identifies impacts that were statistically significant at p≤.10 and *identifies impacts that were statistically significant at p≤.05.

Table D-4. Impacts on College Credit-Bearing Courses—12th-Grade, Low-Performing Students

Outcome	Treatment N	Treatment Adjusted Mean (Standard Deviation)	Comparison N	Comparison Unadjusted Mean (Standard Deviation)	Adjusted Impact	Standard Error	p-value	Effect Size (Hedge's g)
Panel A: Pooled Estimates								
% taken at least one college credit-bearing course	1591	92.9%	1429	81.2%	11.7%	0.081	0.149	--
Average # of Carnegie units from all potentially college credit-bearing courses	1591	3.28	1429	3.13	0.15	0.263	0.565	0.06
Average # of Carnegie units from dual credit courses	1591	0.24	1429	0.16	0.08	0.062	0.169	0.15
Average # of Carnegie units from AP courses	1591	0.94	1429	0.81	0.13	0.167	0.438	0.09
Average # of Carnegie Units from CTE courses	1591	2.29	1429	2.16	0.13	0.170	0.450	0.07
Panel B: Texas								
% taken at least one college credit-bearing course	1,221	97.0%	1,188	82.3%	14.7%	0.096	0.128	--
Average # of Carnegie units earned across all potentially college credit-bearing courses	1,221	3.60 (2.21)	1,188	3.66 (3.26)	-0.06	0.872	0.948	-0.02
Average # of Carnegie units from dual credit courses	1,221	0.21 (0.56)	1,188	0.12 (0.49)	0.09	0.062	0.157	0.18
Average # of Carnegie units from AP courses	1,221	0.99 (1.55)	1,188	0.90 (1.43)	0.09	0.234	0.698	0.06
Average # of Carnegie Units from CTE courses	1,221	2.41 (1.26)	1,188	2.64 (2.57)	-0.23	0.815	0.773	-0.09

Outcome	Treatment N	Treatment Adjusted Mean (Standard Deviation)	Comparison N	Comparison Unadjusted Mean (Standard Deviation)	Adjusted Impact	Standard Error	p-value	Effect Size (Hedge's g)
Panel C: Denver								
% taken at least one college credit-bearing course	370	73.2%	241	76.8%	-3.6%	0.048	0.457	--
Average # of Carnegie units earned across all potentially college credit-bearing courses	370	1.24 (1.55)	241	1.02 (1.18)	0.21	0.224	0.342	0.18
Average # of Carnegie units from dual credit courses	370	0.14 (0.44)	241	0.30 (0.64)	-0.16	0.271	0.567	-0.24
Average # of Carnegie units from AP courses	370	0.68 (1.15)	241	0.47 (0.95)	0.22	0.125	0.081^	0.23
Average # of Carnegie Units from CTE courses	370	0.46 (0.85)	241	0.26 (0.43)	0.20	0.128	0.121	0.46

^ identifies impacts that were statistically significant at p≤.10 and *identifies impacts that were statistically significant at p≤.05.

Table D-5. Impacts on College Credit-Bearing Courses—12th-Grade, Students with Four Years of Exposure

Outcome	Treatment N	Treatment Adjusted Mean (Standard Deviation)	Comparison N	Comparison Unadjusted Mean (Standard Deviation)	Adjusted Impact	Standard Error	p-value	Effect Size (Hedge's g)
Panel A: Pooled Estimates								
% taken at least one college credit-bearing course	2455	95.1%	2170	86.3%	8.8%	0.062	0.158	--
Average # of Carnegie units from all potentially college credit-bearing courses	2455	3.78	2170	3.79	-.01	0.347	0.988	-0.00
Average # of Carnegie units from dual credit courses	2455	0.41	2170	0.28	0.13	0.106	0.239	0.27
Average # of Carnegie units from AP courses	2455	1.55	2170	1.61	-0.05	0.254	0.839	-0.02
Average # of Carnegie Units from CTE courses	2455	2.13	2170	1.90	0.23	0.193	0.231	0.13
Panel B: Texas								
% taken at least one college credit-bearing course	1738	96.1%	1693	85.7%	10.4%	0.072	0.148	--
Average # of Carnegie units earned across all potentially college credit-bearing courses	1738	4.04 (2.92)	1693	4.31 (3.51)	-0.26	0.831	0.751	-0.08
Average # of Carnegie units from dual credit courses	1738	0.38 (0.92)	1693	0.25 (0.71)	0.13	0.108	0.704	0.19
Average # of Carnegie units from AP courses	1738	1.51 (2.03)	1693	1.59 (2.12)	-0.08	0.344	0.813	-0.04
Average # of Carnegie Units from CTE courses	1738	2.15 (1.33)	1693	2.47 (2.60)	-0.32	0.836	0.704	-0.12

Outcome	Treatment		Comparison		Adjusted	Standard		Effect
Panel C: Denver								
% taken at least one college credit-bearing course	717	86.3%	477	87.8%	-1.5%	0.033	0.649	--
Average # of Carnegie units earned across all potentially college credit-bearing courses	717	2.41 (2.06)	477	2.30 (2.32)	0.12	0.326	0.721	0.05
Average # of Carnegie units from dual credit courses	717	0.18 (0.54)	477	0.38 (0.90)	-0.20	0.451	0.653	-0.23
Average # of Carnegie units from AP courses	717	1.66 (1.66)	477	1.65 (2.26)	0.02	0.275	0.952	0.01
Average # of Carnegie Units from CTE courses	717	0.62 (1.03)	477	0.27 (.45)	0.35	0.150	0.02*	0.78

^ identifies impacts that were statistically significant at p≤.10 and *identifies impacts that were statistically significant at p≤.05.

Appendix E: Sample Interview Protocol

Principal/ECHS Director

1. How long have you been principal at this school?
    a. (If new): How were you made aware of the goals and activities of this project?
2. What is the role of your district in the Early College grant (Denver)/i3 grant (Texas)?
    a. ECHS Director Only
        i. Describe your role in the school.
        ii. Describe your role in relation to the principal.
    b. Brownsville HS Principal Only
        i. Describe your role in relation to the ECHS Director.
3. Are there other initiatives taking place in your school? How does your work on the Early College initiative align with your other work?
4. Describe your experience with the leadership coaching (*Denver – Accountability and implementation consultant; TX – CIF Implementation Facilitator*). What does the leadership coach/accountability and implementation consultant do?
    a. In your school, who does the leadership coach/accountability and implementation consultant work with?
    b. *Brownsville/PSJA only* – What is the focus of your work with the CIF implementation Facilitator? The JFF Leadership Coach?
    c. What has been the impact of the coaching?
        i. What has been the influence, if any, of the leadership coach on your school's organizational capacity (i.e. leadership skills, examining data, school culture, school improvement planning, etc.)?
5. Describe your experience with the instructional coaching. What do the instructional coaches do?
    a. With whom do the instructional coaches work?
        i. How were those individuals selected?
        ii. Have all staff members had an opportunity to be coached?
    b. What has been the impact of the instructional coaching?

c. What seems to be the difference between teachers who are more responsive to the instructional coaching and those who are less responsive?

6. Related to this initiative, what other services/tools have your and your staff received? Were there services you wish were included?
7. The Early College grant (Denver)/i3 grant (Texas) focuses on six instructional practices (Common Instructional Framework): Collaborative Group Work, Writing to Learn, Scaffolding, Questioning, Classroom Talk, and Literacy Groups.
    a. To what extent have these practices been implemented in your school?
        i. What has been the impact of the Common Instructional Framework in your school?
    b. Which practices have proved challenging?
    c. In classrooms where there have been changes, what have been the students' reactions to the change in instruction?
8. A core aspect of the model is providing a College Headstart, including access to college courses, creating a college-going culture, and providing assistance with college applications. What strategies is your school using to provide a College Headstart?
9. *Denver Only* – We know that your school participated in the Middle School Curriculum Training/Work Session. What aspects of the middle school curriculum have been implemented in the school?
10. What type of work have you done with the middle school/high school (i.e., vertical alignment, joint planning, etc.)?
    a. Describe any communication between the middle and high school around preparing middle school students to succeed in high school (i.e. study skills, pre-college prep courses, etc.).
11. What partnerships (postsecondary institutions, business) does your school have in place? What programs do your partners assist with?
12. What kinds of conversations are you having around student data?
    a. Is it a part of the Early College professional development?
    b. Are the conversations across content area and/or grade level?
    c. What kind of data do you receive from your college partners?

13. What changes have occurred in your school so far as a result of the Early College grant (Denver)/i3 grant (Texas)?
14. What challenges have you faced in implementing the Early College grant (Denver)/i3 grant (Texas) so far? How have you been able to resolve them or what help do you need in resolving them?
15. As you know this is the last year of the grant, what parts of the work do you think will continue after the grant ends?
    a. What do you see schools/districts doing to prepare themselves to sustain the work of the grant moving forward?
    b. What parts do you think won't continue? Why?
    c. What is the role of the external partners in sustainability?
16. What lessons have you learned from implementing the project so far?
    a. Reflecting back on the last three years, what recommendations do you have for improving the program?

Appendix F: ECEP Implementation Survey

School: _____ Date: _____

Your school is participating in a project led by the Early College Expansion Partnership (ECEP). This survey is designed to measure your school experiences in areas that the project is designed to influence. We will use this information to describe what schools are doing. We also hope to connect this information to student outcomes and determine which aspects of the program are most critical. As a result, we ask you to be very honest in reporting what is actually happening in your school.

Please do your best to answer questions based on your knowledge; if there is a question you absolutely cannot answer, please skip that question.

We will also share a summary of the results of this survey with your individual school for school improvement planning. However, the results will not be broken out by position. As a result, this survey is anonymous and will not be traced back to you.

Thank you very much for your time.

For comparison group:

Your school is participating in a study designed to understand the implementation of a specific reform effort. Your school is not participating in this reform effort but your school is similar to other schools that are. This survey is designed to measure your school's experiences in a variety of areas that are targeted by the reform we are studying. We will use the survey information to understand if the reform is working. If it is working, we want to understand which aspects are most critical. As a result, we ask you to be very honest in reporting what is actually happening in your school.

Please do your best to answer questions based on your knowledge; if there is a question you absolutely cannot answer, please skip that question.

We will also share a summary of the results of this survey with your individual school for use in your school improvement planning. However, the results will not be broken out by position. As a result, this survey is anonymous and will not be traced back to you.

Thank you very much for your time.

1. What is your role in this school? *(Please choose the ONE that <u>most</u> applies.)*

- ○ Administrator (go to Q2)
- ○ Support Staff (skip to College Readiness)
- ○ Teacher (skip to College Readiness)
- ○ Instructional Coach (skip to College Readiness)
- ○ Counselor (go to Q2)
- ○ Other_____(skip to College Readiness)

College Headstart

2. Below is a list of courses. Please identify the kinds of courses that would be on a typical class schedule for two sets of first-time 9th-grade students: those students who are below grade level and those students who are on grade level. (In cases of a structured sequence of courses or a bridge course leading to a higher level course in the same year, please mark the highest level course a typical student could expect to take in 9th grade.)

	<u>A below-grade-level</u> 9th grader would have:	*<u>An on-grade-level</u> 9th grader would have:*
a. English/Language Arts: Remedial English/English I or a higher course	○	○
b. Mathematics: Introductory Mathematics/ Algebra I or Integrated Mathematics I or higher	○	○
c. Science: Biology, a Physical Science, or Earth/Environmental Science/ No science	○	○
d. Social Sciences: World History, Civics and Economics, or US History/No Social Studies	○	○
e. Foreign Language: Foreign language/ No foreign language	○	○

3. This year, what percentage of your students *(Mark <u>one</u> for each question.)*:

	Less than 25%	26-49%	50-74%	75-99%	100%
a. Were enrolled in honors courses?	O	O	O	O	O
b. Were enrolled in Advanced Placement courses?	O	O	O	O	O
c. Were enrolled in dual enrollment courses?	O	O	O	O	O
d. Were enrolled in college-credit earning courses?	O	O	O	O	O
e. Were enrolled in STEM pathways?	O	O	O	O	O
f. Were enrolled in Career and Technical Education (CTE) pathways?	O	O	O	O	O
g. Were on track to meet minimum admission standards for the university system?	O	O	O	O	O
h. Were on track to earn 12+ college credits?	O	O	O	O	O

College Readiness

The following questions concern curriculum and instruction in your school.

4. This question asks you to report on your instructional practices. **Note: If you are an administrator please answer this question relative to the teaching practices of most teachers in your school *(Mark <u>one</u> for each question.)***

This school year, how frequently have you…	*Never*	*A few times this year*	*Once or twice a month*	*Once or twice a week*	*Almost every day*
a. Asked students to solve problems based on life outside of school?	O	O	O	O	O
b. Had students work together on projects or assignments?	O	O	O	O	O
c. Emphasized making connections between what goes on inside and outside of school?	O	O	O	O	O
d. Made connections between what's covered in your class and what's covered in other classes?	O	O	O	O	O
e. Asked students to defend their own ideas or point of view in writing or in a discussion?	O	O	O	O	O
f. Asked students to write more than 5 pages on a topic?	O	O	O	O	O
g. Asked students to explain their thinking?	O	O	O	O	O
h. Asked students to apply what they have learned to solve a new problem?	O	O	O	O	O
i. Asked students to engage in in-depth discussions about what they have read or learned?	O	O	O	O	O

This school year, how frequently have you…	*Never*	*A few times this year*	*Once or twice a month*	*Once or twice a week*	*Almost every day*
j. Asked students to analyze or interpret documents or data?	O	O	O	O	O
k. Asked students to do a formal oral presentation?	O	O	O	O	O
l. Expected students to take detailed notes on a lecture or presentation?	O	O	O	O	O
m. Worked with students on time management and study skills?	O	O	O	O	O
n. Asked students to communicate what they had learned in writing?	O	O	O	O	O
o. Asked students to read difficult or complex texts?	O	O	O	O	O
p. Used rubrics to grade students' work?	O	O	O	O	O
q. Explained your expectations for an assignment up front?	O	O	O	O	O
r. Given students feedback or comments on their work **before** they turned it in for a grade?	O	O	O	O	O
s. Provided models or exemplars so students could see high-quality work?	O	O	O	O	O
t. Taught students note-taking skills and/or note-taking strategies?	O	O	O	O	O

This school year, how frequently have you…	*Never*	*A few times this year*	*Once or twice a month*	*Once or twice a week*	*Almost every day*
u. Asked students to assess their own work?	O	O	O	O	O
v. Asked students to assess their peers' work?	O	O	O	O	O
w. Modeled questioning for students?	O	O	O	O	O
x. Encouraged students to ask good questions?	O	O	O	O	O
y. Used student-developed questions to guide discussions?	O	O	O	O	O
z. Grouped students based on data?	O	O	O	O	O
aa. Modeled the different types of questions particular to your subject and when to use them?	O	O	O	O	O
bb. Create literacy groups that match students with the appropriate text?	O	O	O	O	O

Student Supports

The next set of questions focus on aspects of personalization and affective and academic supports for students.

5. Please estimate the percentage of students for whom the school provides the following services. *(Mark <u>one</u> for each question.)*

	0%	*Less than 25%*	*26-49%*	*50-75%*	*Greater than 75%*
a. Advising on courses to take to get ready for college	O	O	O	O	O
b. Advising on choosing college classes	O	O	O	O	O
c. College exam preparation (test-taking skills for SAT/PSAT, ACT, Accuplacer or other college placement exams)	O	O	O	O	O
d. Advising on skills students need in college (e.g. notetaking skills, time management, self-advocacy, etc.)	O	O	O	O	O
e. Have college faculty present about expectations in college	O	O	O	O	O
f. Tours of college campuses	O	O	O	O	O
g. Advising parents about college admissions and financial aid	O	O	O	O	O
h. Helping students through the college admissions process.	O	O	O	O	O
i. Helping students through the financial aid process	O	O	O	O	O
j. Sessions or classes to help students cope with social or	O	O	O	O	O

	0%	*Less than 25%*	*26-49%*	*50-75%*	*Greater than 75%*
emotional issues					
k. Academic tutoring connected to a specific class	O	O	O	O	O
l. Small-group and individualized instruction	O	O	O	O	O
m. Summer orientation or bridge sessions for entering students	O	O	O	O	O
n. Other: _____	O	O	O	O	O

6. Please mark the extent to which the following statements about the relationships in this school are true.

	Not true at all	*Somewhat true*	*Mostly true*	*Entirely true*
a. The family and home life of each student is known to at least one faculty or staff member in this school.	O	O	O	O
b. Faculty or staff members follow up when students miss their classes.	O	O	O	O
c. Faculty and staff members respect all the students in this school.	O	O	O	O
d. Students respect all the faculty and staff members in this school.	O	O	O	O
e. Faculty and staff in this school care whether or not students come to school.	O	O	O	O
f. Other:_____	O	O	O	O

7. How often do the following events around students and their families take place?

	Never	*A few times a year*	*About once or twice a month*	*About once a week*	*More than once a week*
a. Mentors or advisers meet with students	O	O	O	O	O
b. School faculty and staff meet with each other to discuss students.	O	O	O	O	O
c. School faculty and staff meet or talk with parents.	O	O	O	O	O
d. School faculty and staff visits the homes of students.	O	O	O	O	O
e. Parents meet with each other in groups established by the school.	O	O	O	O	O
f. Attempts are made to communicate with parents who do not speak English.	O	O	O	O	O

8. How much do you agree with the following statements? *(Please choose the ONE that <u>most</u> applies.) Please note - we define postsecondary education or training as: 2-year college, 4-year college, technical college, or postsecondary credential.*

	Strongly Disagree	*Disagree*	*Agree*	*Strongly Agree*
a. The faculty and staff in this school expect every student to receive postsecondary education or training.	O	O	O	O
b. All faculty and staff in this school believe that, if given enough support, all students can successfully complete college preparatory courses.	O	O	O	O

	Strongly Disagree	*Disagree*	*Agree*	*Strongly Agree*
c. The faculty and staff at the school explicitly and purposefully focus on postsecondary aspirations	O	O	O	O
d. The faculty and staff at the school focus on specific activities that lead to enrollment in a postsecondary institution.	O	O	O	O
e. The vision of this school is tied to preparing every student for postsecondary education without remediation.	O	O	O	O
f. The school does activities designed to get all students to think of themselves as students who can succeed in a postsecondary institution.	O	O	O	O

Professional Working Environment

These set of questions cover issues such as collaboration and professional development.

9. How frequently do you collaborate with other school staff on the following: *(Mark <u>one</u> for each question.)*

	Never	*A few times this year*	*Once or twice a month*	*Once or twice a week*	*Almost every day*
a. Lesson or unit planning	O	O	O	O	O
b. Logistical issues (e.g. planning field trips, ordering materials, etc.)	O	O	O	O	O
c. Student behavior	O	O	O	O	O
d. Assessments	O	O	O	O	O
e. Peer observations & feedback	O	O	O	O	O

f. Content learning	O	O	O	O	O
g. Instruction/instructional strategies	O	O	O	O	O
h. Individual student needs	O	O	O	O	O

10. How frequently do you participate in the following activities? *(Mark <u>one</u> for each question.)*

	Never	*A few times this year*	*Once or twice a month*	*Once or twice a week*	*Almost every day*
a. On-site coaching	O	O	O	O	O
b. Joint planning or collaboration with other staff at my school	O	O	O	O	O
c. Professional Learning Communities (e.g. data teams, critical friends, study groups, etc.)	O	O	O	O	O
d. Observing other classrooms in my school	O	O	O	O	O
e. Workshops/Institutes	O	O	O	O	O
f. Joint planning or collaboration with individuals outside of my school	O	O	O	O	O
g. Online communities of practice	O	O	O	O	O
h. Webinars	O	O	O	O	O
i. Graduate courses	O	O	O	O	O
j. Other professional development_____	O	O	O	O	O

11. How much professional development have you received in the following areas over the past year?

	None	*A single presentation*	*Multiple sessions*	*Multiple sessions with on-site follow-up*
a. General instructional strategies	○	○	○	○
b. Leadership practices	○	○	○	○
c. Data-driven instruction	○	○	○	○
d. College and career readiness (e.g. course selection, time management, etc.)	○	○	○	○
e. Peer collaboration	○	○	○	○
f. Other: _____	○	○	○	○

Data Use

12. How frequently do you participate in the following activities?*(Mark <u>one</u> for each question.)*

	Never	*A few times this year*	*Once or twice a month*	*Once or twice a week*	*Almost every day*
a. Communicate with other school staff on data use.	○	○	○	○	○
b. Communicate with leadership on data use.	○	○	○	○	○
c. Analyze student progress or performance data.					
d. Utilize results of assessments	○	○	○	○	○

e. Use data to make decisions about modifying instructional practices.	○	○	○	○	○

Postsecondary Partnerships

The following questions concern any postsecondary partnerships your school may have.

13. Do you have a formal relationship with your local postsecondary institution? *If the answer is "YES," then the participant is led to the next question. If NO, then question #14 is skipped.*

14. Please check the services your local postsecondary institution provided you last year.

	Financial Support	*Provide internships*	*Mentor or tutor*	*Serve as guest speakers/guest instructors*	*Provide curriculum materials*	*Provide access to dual credit/college-credit courses*	*Provide other resources*
a. 4-year institutions	○	○	○	○	○	○	○
b. 2-year institutions	○	○	○	○	○	○	○
c. Technical Colleges	○	○	○	○	○	○	○
d. Other_____	○	○	○	○	○	○	○

School Improvement Efforts

15. **(Principals only)** Please list and briefly describe any school-level interventions or other key school improvement efforts occurring in your school. *[Text box]*

Leadership

The following question asks about your schools leadership team practices.

16. Please indicate the extent to which you agree or disagree with the following statements about the leadership team at your school:

The leadership team:	*Strongly Disagree*	*Disagree*	*Agree*	*Strongly Agree*
a. Provides effective leadership at this school.	O	O	O	O
b. Monitors instruction on a regular basis.	O	O	O	O
c. Provides feedback to teachers about instructional practices.	O	O	O	O
d. Creates an environment where all staff are responsible for student learning.	O	O	O	O
e. Communicates high expectations for all students.	O	O	O	O
f. Facilitates using data to improve student learning.	O	O	O	O

Instructional and Leadership Coaches

Have you received services from an **instructional coach**? *If the answer is "YES," then the participant is led to the question. If NO, then question skipped.*

17. Please indicate the extent to which you agree or disagree with the following statements about the role of instructional coaches at your school:

The instructional coaches:	*Strongly Disagree*	*Disagree*	*Agree*	*Strongly Agree*
a. Help teachers incorporate effective instructional practices into the classroom.	O	O	O	O
b. Help teachers and staff implement student support services	O	O	O	O
c. Model effective instructional strategies in the classrooms	O	O	O	O
d. Provide effective professional development in the schools.	O	O	O	O

e. Provide feedback on a regular basis.	O	O	O	O
f. Work with teachers to plan lessons	O	O	O	O

18. What has been the most beneficial aspect of the coaching? Why?

19. What has been the least beneficial aspect of the coaching? Why?

Have you received services from a **leadership coach**? *If the answer is "YES," then the participant is led to the question. If NO, then question skipped.*

20. Please indicate the extent to which you agree or disagree with the following statements about the leadership coaches at your school:

The leadership coaches provide professional development around:	*Strongly Disagree*	*Disagree*	*Agree*	*Strongly Agree*
a. Planning, implementing and managing effective instruction	O	O	O	O
b. Classroom observations and assessing instruction	O	O	O	O
c. Planning, implementing and managing postsecondary partnerships	O	O	O	O
d. Planning, implementing and managing the school's college-going culture	O	O	O	O
e. Using data to improve instruction	O	O	O	O

21. What has been the most beneficial aspect of the coaching? Why?

22. What has been the least beneficial aspect of the coaching? Why?

Demographic Information

Please tell us a bit about your background.

23. Number of years of experience in education: _____

24. Number of years in current role at any school (as administrator, counselor or faculty): _____

25. Number of years in current role at the current school: _____

THANK YOU FOR YOUR TIME!!!