SREB

Dual Enrollment Research

A Comprehensive Review

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Southern Regional Education Board

SREB.org

SREB Dual Enrollment Initiative

To help states find solutions to difficult challenges around dual enrollment, the Southern Regional Education Board is leading a multi-year effort to engage policy and education leaders on issues including cost, quality and equity. The SREB Dual Enrollment Initiative will identify and share promising policies and practices and provide technical assistance as states implement them. The panel will focus the scope of the initiative as an examination of dual enrollment as (1) an early start to complete a college degree or credential, (2) a way to address regional and state workforce needs and (3) a way to ensure students master life success skills.

An advisory panel includes members from statewide K-12, higher education and two-year college agencies, local college and school districts, and legislatures and governors' offices across the SREB states. The group has identified shared concerns for study and recommendations: quality curriculum and instruction, funding models, return on investment, equity and access, and data and research.

This review of the research on dual enrollment provides a foundation for the Dual Enrollment Initiative's ongoing work and brings into focus important gaps in knowledge on dual enrollment.

Executive Summary

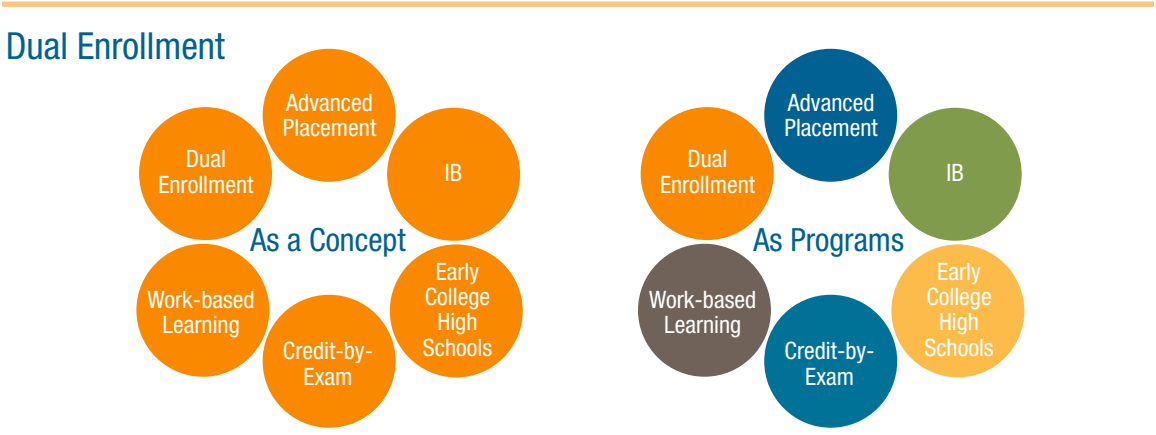
Critical Concepts and Limited Data: A Dual Enrollment Literature Review

SREB's comprehensive review of the dual enrollment literature, from a policy rather than a research perspective, is intended to help policymakers better understand what the research tells us (and what it doesn't) about dual enrollment. Staff analyzed more than 500 journal articles, master's theses, doctoral dissertations, web documents and books from 1959 to 2019.

The bottom line: The data is often limited in what it captures, and the findings are highly dependent on context. The research cannot be applied generally to all dual enrollment programs. Even when studies have used nationally representative data, they often observe only one or a few programs or types of intuitions, or the student samples are not truly representative of all who could benefit from dual enrollment programs. Finally, the research is not conclusive as to whether dual enrollment causes positive outcomes for students in high school and college or to what extent those outcomes are related to other factors.

Dual Definitions for Dual Enrollment

Because what "dual enrollment" means varies so much across states and even within them, we cannot apply the findings of one study to all programs. The term *dual enrollment* is used to describe both a *concept* and a *program*. As a concept, dual enrollment (or *concurrent enrollment*) allows students to take courses in which they can earn dual credit — both high school and college credit. This includes courses in Early College High Schools, Advanced Placement, International Baccalaureate, work-based learning and credit-by-exam programs. It also includes, of course, classes in dual enrollment programs.



These types of dual credit *programs* within the dual enrollment *concept* are quite different from one another, meaning research findings on one type cannot necessarily be applied to the others (although they often are). In particular, positive outcomes observed in studies of Early College High Schools have been generalized to apply to *dual enrollment programs*.

Early College High School and dual enrollment programs differ in important ways. According to federal definitions, Early Colleges award no fewer than 12 transferable credits in an organized plan of study, at no cost to students. They are more structured, offer specific support to help students succeed, and are often physically separate from traditional high schools.

Dual enrollment *programs*, by contrast, are not as structured. Governance structures and student requirements for these programs vary by state, and often by individual agreements between local school districts and colleges. Students may take one or more courses, not necessarily in a sequence, and often incur some cost to participate. Eligibility requirements vary, and the transfer of college credit is not guaranteed. So it is problematic to compare even *among* dual enrollment programs.

Clarifying the Research Findings

In addition to the problem of misapplying findings between ECHS and dual enrollment programs, researchers often cannot say that dual enrollment programs *cause* certain outcomes. While researchers have found some strong and reliable correlations between participation and positive outcomes, selection bias, along with ethical and practical impediments to developing experimental studies, makes it extremely difficult for researchers to determine cause. Longitudinal data is outdated. And variations in programs and student characteristics — parents' level of educational attainment, for example, or self-motivation or academic aptitude — could be responsible for observed outcomes. All things considered, researchers face critical restrictions in their ability to predict outcomes for all students.

State Actions to Connect Goals to Research

The goals cited for dual enrollment vary, but they often include contributing to workforce needs and educational attainment goals by saving time and money on postsecondary education. And research shows that dual enrollment programs *could* be designed to achieve those goals. But to determine whether they do, states will need to take these important, research-based courses of action which emerged from SREB's analysis.

1. Develop common definitions and terms that clearly distinguish between dual enrollment as a concept and as a program.
2. Define the goals of dual enrollment programs and align policies accordingly. Implement governance structures that foster strong partnerships, and policies that provide equitable access and adequate resources for students, teachers and institutions.
3. Identify key data points relating to state goals for dual enrollment and define common methods for collecting and reporting that data. Use it to monitor student outcomes and support new research that informs policy and practice.

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This literature review was prepared by Meagan Crowe, policy analyst. For more information, contact Meagan.Crowe@sreb.org

Introduction

In the fall of 2019, the Dual Enrollment Advisory Panel requested that SREB conduct a review of the current body of research surrounding dual enrollment. SREB took a **policy rather than research view** of the literature to help policymakers better understand what the research has to offer, its limitations, and what can be done to improve dual enrollment programs and support better research and policy in the future. As SREB wraps up the review, some issues have come into focus.

A growing body of research suggests that dual enrollment leads to positive outcomes for students. The research is complex and, without nuanced consideration, may be misleading for policymakers and state leaders. Some study limitations are overlooked in discussing positive research findings, and several researchers have pointed out that there are very few critical studies of dual enrollment.

Researchers face some stumbling blocks in analyzing the impacts of dual enrollment programs. First, there is no common definition of "dual enrollment." The phrase gets used for a *concept*, in which students either enroll in both high school and college or earn both secondary and post-secondary credit. Students can earn that credit in numerous ways, including through assessment, in work-based learning programs, in Advanced Placement and International Baccalaureate programs, in Early College High Schools, and of course in dual enrollment *programs*.

This confusion in definitions leads to misapplied findings from studies on programs *other than dual enrollment*. Findings from Early College High School studies, for example, are frequently applied to dual enrollment programs, but these programs vary greatly and data from one cannot be generalized to the other.

Generalizing, even among dual enrollment programs closely defined, is often difficult if not impossible.

Another problem is that findings on dual enrollment programs are often not *causal*. While researchers have found some *correlations* between participation and outcomes, insufficient data has led many to emphasize that programmatic variations and student characteristics may be more responsible for positive outcomes than participation itself. And ethical and practical considerations make it difficult — and often impossible — for researchers to conduct true experimental, causal studies.

Despite these challenges, there are several studies that are sufficiently robust that any omitted variables would have to be exceedingly large to completely alter the observed results. However, even where findings are approaching determining cause, caution should be exercised when attempting to apply them beyond the scope of the original study.

Finally, even among dual enrollment programs there is great variation. Governance structures and student requirements for these programs vary by state and at local and institutional levels. Students can take one or more courses, not necessarily in sequence, and often incur some cost to participate. Eligibility requirements vary and the transferability of college credits is not guaranteed. So generalizing, even among dual enrollment programs closely defined, is often difficult if not impossible.

Methodology

SREB analyzed more than 500 source documents discussing dual or concurrent enrollment, covering a span of time from 1959 to 2019. The search terms "dual enrollment," "concurrent enrollment" and "dual credit" returned sources that included published and unpublished master's theses, doctoral dissertations, journal publications, books and web documents. All reference lists contained in either previous literature reviews or source documents dated from 2016 to 2019 were reviewed to ensure that SREB's literature review was comprehensive, including the most recent research available.

SREB produced both an annotated bibliography and an accompanying table to annotate each source's completion date, research method, data source and sample size, research questions, findings, recommendations, and suggestions for further research.

Research Categories and Source Counts
SREB Dual Enrollment Literature Review, 2020

AP and DE Courses	21	National Overviews	9	Student Motivations	13
College Enrollment	9	Participating Institutions	19	Student Perceptions	15
College Transitions	16	Participation Studies	9	Teachers/Advisors	14
Data	4	Policy Overviews	29	Technical Education	7
Disaggregated Findings	27	Postsecondary Outcomes	87	Tech Prep	8
Funding	17	Programs: Implementation, Effectiveness, Issues, etc.	53	Underrepresented and Low-SES Students	28
Gender and Race	12	Related Issues	23	Unfound and Unknown	3
Literature Reviews	10	Rural	3	Workforce Outcomes	5
Mathematics or Economics	8	State Overviews	53		

Both the annotated bibliography and the table sort each source into one of 26 categories according to the predominant findings from the study, with notations where a source may speak to more than one. Postsecondary outcome studies were the most numerous. "Unfound and Unknown" includes sources that SREB could not locate.

Sources were put into the category "Disaggregated Findings" when the research looked at a specific topic; typically these are location studies or reviews of reading and writing courses. "State Overviews" were typically either participation and outcome studies or policy overviews specific to one state. Sources in the "Related Issues" category most often discuss college and career readiness, or else student characteristics related to their success both in and beyond dual enrollment courses.

Sources that compared dual enrollment to other programs such as Advanced Placement were included. Regular news articles, blog posts and outdated web documents were excluded, although they were reviewed for their source references. This literature review considers a final sampling of 502 source documents, 98 of which are referenced in this report. In an attempt to capture a representative sampling of the full scope of available research while maintaining brevity, staff tried to include the most referenced dual enrollment studies in this review. A full bibliography will be available on the SREB website.

Gaps in the Dual Enrollment Research

No Shared Definition

States do not share a common definition for dual enrollment. This leads to confusion and difficulty separating research among the different types of programs that allow students to earn dual credit — both secondary and postsecondary.

Dual enrollment programs are often very different from others in which students can earn both secondary and postsecondary course credit, such as Advanced Placement, International Baccalaureate, Early College High Schools and work-based learning and credit-by-exam programs. And because programs differ, research findings from one cannot necessarily be applied to another, although they frequently are. Many positive outcomes attributed to dual enrollment programs were actually observed in studies on ECHS.

States need to adopt common, but separate definitions for dual enrollment: one that refers to the concept or activity of earning dual credit, and one for the secondary-postsecondary institutional partnership program in which students may do so.

According to the federal definitions for dual enrollment and ECHS, first established by the 2015 Every Student Succeeds Act, dual enrollment and Early College are both:

> partnerships between at least one institution of higher education and one local educational agency that allow participants to earn both postsecondary credits that transfer to the partnering IHE and credits toward a regular high school diploma.

However, dual/concurrent courses are specified for secondary school students who have not yet graduated from high school, while "participants" are not identified for Early College programs. ECHS programs also differ in that they are "organized courses of study in which a participant earns no less than 12 transferrable college credits at no cost to the participant or the participant's family." They are more structured, offer specific support to help students succeed, and are often physically separate from traditional high schools.

In addition to distinguishing dual enrollment from ECHS, it is necessary to point out that while students can earn both college and high school credit for Advanced Placement and International Baccalaureate courses, these programs also differ from dual enrollment. Research findings cannot be extended from one to the other. Early College High Schools and the AP and IB programs were designed for different student groups, so access, curricula, course designs, even locations vary extensively.

Finally, dual enrollment programs are not themselves structured identically, either across state lines or within states. Governance structures and student requirements for these programs often vary at local or institutional levels. Students can take one or more courses, not necessarily in sequence, and often incur some cost to participate. Eligibility requirements vary and the transferability of college credits is not guaranteed.

For the purposes of this report, dual enrollment will be used to refer to "dual enrollment," "concurrent enrollment" and "dual credit" programs.

Data Constraints

Confusion in definitions, insufficient data, and variation in policies and practices mean that outcomes observed in one dual enrollment program cannot be applied to another. Insufficient data contributes to this uncertainty, forcing researchers to make significant assumptions when analyzing the effects of these programs.

Much of the data available to researchers either offers a limited sample size, is specific to one or a few programs or partnerships, does not adequately link K12 to postsecondary, or is old and lacks critical programmatic and student-level detail. These challenges create significant difficulties for researchers in determining the extent to which outcomes are attributable to students versus the programs in which they participate.

Confusion in definitions, insufficient data, and variation among students and programs leads to research that is context dependent and findings that lack consensus and cannot necessary be applied beyond their study of origin.

Additionally, unobserved variables such as parents' level of educational attainment, and individual characteristics like self-motivation or academic aptitude — known as selection bias — may make a student more likely to pursue dual enrollment, as well as more likely to succeed in college. And programs vary wildly, both between and within states. Difficulty in controlling for individual and programmatic variables leads to limitations that should be considered when informing policy.

In sum, there is insufficient recent, disaggregated, longitudinal student-level data that would allow researchers to adequately control for individual student and program-level factors. And, perhaps most importantly, the findings cannot apply as broadly as they might, were there more similarities between dual enrollment programs including consensus on definitions and data collection practices.

The following are the national data sources that are used most frequently by researchers.

The Common Core of Data, America's Public Schools
National Center for Education Statistics

> This data is intended to "provide a complete listing of all public elementary and secondary schools in the country" and "to provide basic information and descriptive statistics on all schools, their students, and their teachers." For more information, visit https://nces.ed.gov/ccd/pubschuniv.asp.

High School Longitudinal Study of 2009 (HSLS:09)
National Center for Education Statistics

> This is a nationally representative, longitudinal study of more than 23,000 ninth graders from 944 high schools in 2009. The data set includes surveys from students, their parents, their math and science teachers, school administrators and school counselors. High school transcripts were collected beginning in the fall of 2009, and students in grades nine and 11 were given new assessments in algebraic skills, reasoning and problem solving. Follow-ups were conducted in 2012, 2013, and 2016 — four years after high school graduation. The study includes 10 state representative datasets. For more information see The National Center for Education Statistics, https://nces.ed.gov/surveys/ hsls09/.

The Integrated Postsecondary Education Data System (IPEDS)
National Center for Education Statistics

IPEDS is "a system of interrelated surveys conducted annually by the U.S. Department of Education's National Center for Education Statistics (NCES). IPEDS gathers information from every college, university, and technical and vocational institution that participates in the federal student financial aid programs." Data sets include information on institutional characteristics, institutional prices, admissions, enrollment, student financial aid, degrees and certificates conferred, students' persistence and success, and institutional resources. For more information see The National Center for Education Statistics, https://nces.ed.gov/ipeds/about-ipeds.

National Education Longitudinal Study of 1988 (NELS:88)
National Center for Education Statistics

This is a nationally representative, longitudinal study of eighth graders in 1988. The original sample included 24,599 participants, one parent of each student, two of their teachers and their school principal. High school transcripts were collected in 1988, with follow-ups in 1990, 1992, 1994, and 2000, when postsecondary transcripts were reviewed. Surveys collected information on students' home lives and life choices. Additionally, student assessments and transcript data were collected. For more information see The National Center for Education Statistics, https://nces.ed.gov/surveys/nels88/.

National Student Clearinghouse

The Clearinghouse collects nationwide, inter/intrastate, longitudinal secondary and postsecondary data. Data includes student enrollment, transcript, persistence and attainment data. The Clearinghouse also verifies conferred degrees and certificates. It works, in part, through partnerships and statewide service agreements. This data is not available to the public. For more information, visit the National Student Clearinghouse website, or review this factsheet https://studentclearinghouse.info/onestop/wp-content/uploads/NSCFactSheet.pdf.

Beyond these sources, the most frequently collected data is from individual four- and two-year public and private institutions, state community and technical college systems, or individual dual enrollment programs.

Recommendations for Data Practices

SREB is in accord with the majority of researchers in recommending that states, institutions and programs continue (or begin) to collect longitudinal, disaggregated student-level data that links K12 to postsecondary to support future research. Data should include:

- measures of student characteristics that influence their success in dual enrollment courses, such as academic aptitude, family background, and parents' educational attainment and income levels
- student motivation for enrolling in dual enrollment courses
- programmatic factors such as available courses and restrictions on student participation
- delivery location and instructor qualifications

- advisement practices and student supports
- information about secondary and postsecondary partnerships
- alignment between secondary and postsecondary curriculum
- variations in learning standards and credit transferability
- accreditation type(s)
- first generation status
- better wealth data than free/reduced price lunch status, such as Federal Pell Grant and state financial aid eligibility

In their 2008 publication *Conducting Research to Answer Your Questions About Dual Enrollment*, researchers Karp and Jeong emphasize the need for better data collection and further research on dual enrollment. To that end, they offer three recommendations:

1. Develop a comprehensive state data system.
2. Construct the human infrastructure necessary for using the data system.
3. Send the message that research is important.

For any data to be most useful — specifically, applicable across programs or state lines — states will need to develop common definitions and terms for dual enrollment. States will also need common practices for collecting and reporting data and should evaluate institutional variation in the capacity to identify dual enrollment students and measure outcomes. Finally, data needs to link K12 and postsecondary.

Researchers Taylor and An (2017) strongly suggest that the IPEDS data system do the following, and SREB agrees. These recommendations might be modified and used as a guide to help states think about data collection.

1. Modify existing definitions for dual credit, dual enrollment and relevant survey instructions.
2. Report current dual-enrolled students separately in fall enrollment surveys.
3. Report current dual-enrolled students separately in 12-month enrollment surveys.
4. Report a sub-cohort of first-time students who earned college credits in high school on fall enrollment surveys and track their outcomes on graduation rates surveys and outcome measures surveys. But invest time to develop institutional reporting capacity, clear instructions and consistent reporting.
5. Dual-enrolled students impact other surveys and metrics, and further research and analysis should be conducted to understand how and to what extent.

In the Research and Planning Group of California Community College's 2014 Dual Enrollment Guide, Purnell provided an extensive sampling of student-level, program-level and institutional-level indicators, benchmarks, and data sources that states can use to help develop their own data collection plans. (To view a copy of these, see Appendix.)

States will need to be patient and manage their expectations for new research. States should consider regional data-sharing agreements to help support future research. This can be especially helpful for states with relatively small populations.

Since students self-select into dual enrollment programs and there are ethical concerns in assigning students to — or excluding them from — these programs, true experimental studies will be difficult to perform. Local districts or institutions could design new dual enrollment programs to run alongside their existing ones and randomly assign students to each to measure the impact of different polices or designs on student outcomes.

Beyond this, states will need to collect data consistently and on measures not typically collected in the past. Programs will need to collect data for at least three years, beginning with students in high school and tracking them into postsecondary, before researchers will be able to adequately measure the effects of dual enrollment on postsecondary outcomes. And again, states will need to align their definitions while exercising greater control over local policies and program designs if they hope to compare research findings.

Research Findings

Caution in Interpreting Results

While researchers have observed positive outcomes related to dual enrollment participation, student factors and variation across programs, institutions, local partnerships and governance structures lead to discrepancies in observable outcomes. Research findings from one program or partnership are not necessarily applicable to another. Additionally, data availability, difficulties in controlling for unobserved student characteristics, and impediments to employing experimental research designs — all of which will be discussed further in this report — prevent researchers from defining all aspects of the relationship between student and program variables and outcomes and, perhaps most importantly, from determining cause. From a policy standpoint, great caution should be exercised when defining what dual enrollment does or does not do, when attempting to apply findings beyond the state or program in which they were observed, or when speaking broadly to the dual enrollment concept.

How to Read this Section

The following section summarizes the primary research findings from SREB's literature review. This section is organized with consideration for the common concerns expressed by the SREB Dual Enrollment Advisory Panel. There are three major sections: Return on Investment, Equity and Access, and Quality Curriculum and Instruction. Each of these is further separated into topic areas. Each subheading has a summary of findings followed by a summary of research limitations.

To help policymakers understand the available data and to explore some common research limitations in greater depth, a few of the most-referenced studies have been selected for deeper analysis and are summarized in greater detail. These analyses include the study's sample and research methodology, findings and limitations.

Return on Investment

ROI for Secondary and Postsecondary Institutions

Research regarding institutions is primarily limited to descriptive, comparative observations of secondary and postsecondary institutions. In 2013, researchers Taylor and Lichtenberger found that Illinois high schools offering more dual enrollment opportunities were typically in more rural areas in the central or southern part of the state, in small or medium-sized districts, with larger proportions of white students and lower proportions of low-income students. They also had slightly higher graduation and attendance rates, and lower truancy and drop-out rates.

Researchers found differences in participating postsecondary institutions as well. More selective institutions were less likely to accept dual enrollment credit, and those that did saw lower graduation rates from dual enrollment students than did less selective universities.

Research devoted to the impact of dual enrollment programs on participating institutions is scarce.

Research devoted to the impact of dual enrollment programs on participating institutions is scarce. In one study, local partnerships were seen to be an effective, albeit resource- and time-intensive, K-16 strategy (Domina & Ruzek, 2012). Another study suggested that dual enrollment programs can increase the visibility of a participating community college, produce a better-prepared freshman class, and be an effective recruitment tool (Chapman, 2001). However, Kilgore and Wager found that high school and college administrators did not agree on the outcomes of dual enrollment programs, citing issues including scheduling conflicts between the schools, difficulties sharing student information and transferring credit, a lack of interest from the colleges, students and parents, and a general "paperwork nightmare" for administrators (2017).

Limitations

Studies regarding the return on investment for institutions are either purely descriptive of variation in program characteristics or are based on survey responses. There are no studies available that quantify the financial return on investment for institutions. Available findings are not applicable nationally or even statewide due to small sample sizes, low response rates and limited data. However, they do present questions for further research that policymakers and institutional administrators may find useful. Such questions are included later in this report.

ROI for States and Districts

The specific economic effects of dual enrollment programs are difficult to measure. Again, insufficient data raises difficulties for states, as Haskell points out: "An analysis of labor market outcomes, which many hold as the true test of these programs, remains at least several years away as the first high school graduates from these differentiated programs only recently began to graduate from higher education" (2015).

If we assume dual enrollment increases the likelihood that a student will earn a postsecondary degree and that the time to completion is decreased, states can benefit from increased labor participation rates and a more educated workforce. But those are big assumptions. Depending on funding structures in dual enrollment programs, states and individual households could realize savings *if* students graduated early.

The only study included in this review that looked specifically at how participation in dual enrollment led to workplace readiness skills *beyond those observed from general postsecondary completion* was conducted in Virginia (Carter, 2009). The data included 221 high school students who enrolled in one of Virginia's approved career and technical education dual enrollment courses during the 2008-09 school year. Students self-reported that they had a greater awareness of Virginia's 13 Workplace Readiness Skills and felt that the program developed those skills. However, the data is 10 years old, the sample size was small, and the study considered only outcomes for students in CTE dual enrollment courses, with only a small percentage of minority students.

Limitations

Research on the return on investment to states and districts is scarce. There is evidence that postsecondary completion and higher educational attainment lead to positive impacts on a state's economy and workforce. However, while there are numerous state and local dual enrollment program overviews, the lack of student-level data following dual enrollment students beyond postsecondary makes it nearly impossible to determine whether participation in such programs leads to positive impacts on a district's or state's economy or workforce. Findings are further complicated by students who move during or after postsecondary and are not tracked beyond state lines.

Further research is needed to determine whether dual enrollment positively impacts states' and districts' economies and workforces.

Data that tracks dual enrollment students through and beyond their postsecondary endeavors is insufficient. Further research is needed to determine whether dual enrollment positively impacts states' and districts' economies and workforces. To be the most effective, research should control for student- and program-level variables that affect postsecondary outcomes and must track students over time, including after high school and after postsecondary, as well as beyond state lines. States will need to look closely at high school and college partnerships and collect data related to local, state and regional workforce needs, tracking how those needs change as technology advances.

ROI for Students

Limitations Common in the Research

The following limitations apply generally to findings for student outcomes related to dual enrollment, and while they have been stated before, they cannot be stressed enough. The most commonly cited research findings attributing positive outcomes to dual enrollment often come from Early College High Schools, and thus have been excluded from this review.

Even when addressing access inequalities for underrepresented and low-SES students, where findings are relatively consistent, the research is context-dependent and lacks consensus. On almost every topic, researchers have been able to draw conclusions that are, at least partially, opposed to the findings of others.

It is very difficult to compare programs even within state lines, given variations in dual enrollment governance structures, definitions, policies, program designs and delivery. As a result, research findings from one program or partnership are not necessarily generalizable to another.

Finally, the absence of studies using an experimental research design limits the ability of researchers to determine causal relationships, or to measure the degree to which observations relate to participation in dual enrollment.

Secondary Student Outcomes

Few studies were conducted on secondary outcomes, but most that did observed positive outcomes for dual enrollment participants including exposure to a richer, more diverse high school curriculum and increased college aspirations. Students were observed working harder in their college courses in high school and were generally more likely to graduate. However, in 2014 Cowan and Goldhaber found that in one program in Washington students were less likely to graduate from high school, except for low-income students who were more likely to graduate.

Researchers have also observed improved postsecondary transitions for dual enrollment students, who have a better understanding of what it means to be a college student and make the transition more easily. They were less likely to take remedial courses, made better use of their first year in college, were more motivated to succeed academically, were more familiar with the study skills needed to perform well, and interacted better with their professors.

Limitations

Few studies looked at the effects of dual enrollment on high schoolers while they were still in high school, and those that did often used student surveys and high school GPA as their primary data. Both can be misleading for policymakers who may not be considering the limitations associated with such data. Students — and their survey responses — may be substantially different from others to whom findings may be indirectly applied, such as students in other locations, programs or student groups. Students who can earn higher GPAs, for example, may have an easier time selecting into dual enrollment programs and may be the type of student more likely to be interested in accelerated learning options.

Additionally, some researchers who use data for students entering college with credit from high school had trouble determining the type of course in which that credit was earned. This data sometimes excludes students who didn't make it to college, and it does not account for students who earned credit in another state or program. To determine whether dual enrollment participation leads to certain outcomes, researchers must be able to distinguish between types of dual enrollment programs and must include all students who took those courses and information on whether or not they earned credit.

Postsecondary Student Outcomes

Dual enrollment proponents have cited many positive postsecondary outcomes for participants, including increased college enrollment, improved GPA, college persistence, and completion rates, reduced time to degree, and reduced postsecondary costs.

Several studies find that dual enrollment participation increases college enrollment and may also decrease the need for students to take remedial courses. Still, some researchers found that dual enrollment participants were less likely to enroll in college — or were only more likely to enroll in two-year versus four-year colleges.

While dual enrollment proponents suggest that students benefit from a shorter time to degree completion, there are very few studies that actually support this assertion.

Researchers also found that students who had participated in dual enrollment had higher first-semester or first-year college GPAs and were more likely to earn college credentials. Similarly, a few researchers found that dual enrollment participants were more likely to persist beyond their first year in college. And while dual enrollment proponents suggest that students benefit from a shorter time to degree completion, there are very few studies that actually support this assertion.

Research lacks consensus on who benefits most from participating in dual enrollment. Some studies conclude that under-represented, low-income, and students from low socioeconomic backgrounds benefit most from dual enrollment participation, while one study suggests that the opposite may be true — racial minority and low-SES students benefit less than their more affluent white peers. Still others disagree and find that most students benefit regardless of sex, socioeconomic status or race.

Researchers have observed that those less likely to take dual enrollment, such as lower-performing and male students, are those who benefit the most. One national study found that males and first-generation students were more likely to experience positive effects than traditional students, while others find no difference in the effects for males and females. Common among the research are gaps in student outcomes for different racial, income, parental education, socioeconomic and English-speaking groups, even for those who participate in dual enrollment.

Common among the research are gaps in student outcomes for different racial, income, parental education, socioeconomic and English-speaking groups, even for those who participate in dual enrollment.

No matter who benefits more, researchers often find that the positive effects from dual enrollment fade after the first two dual-enrollment courses, after the first year of college, or after completing an associate degree. Bachelor's-seeking students are often unable to transfer dual enrollment credits and have to retake certain courses in their first year of college. Students may also choose to take a break after high school, or they may lack the foresight to choose courses in their first year that will count toward their eventual career degree path.

Limitations

Notably, in the introductory literature reviews that often precede study findings, several researchers point out that the vast majority of studies available on dual enrollment have hypotheses that dual enrollment leads to positive postsecondary outcomes for participants, while few studies are critical of these programs. Few studies have looked at how dual enrollment experiences have failed to benefit some students. Having dual enrollment students in college classrooms, for instance, may negatively impact the experience of traditional college students.

In addition to the general limitations above, researchers reporting higher college enrollments were unable to include certain student characteristics and motivations such as parental support and peer influence, as these variables were omitted in the data.

Perhaps most importantly, measures related to academic outcomes have been applied to dual enrollment based on observations that dual enrollment programs are correlated with outcomes for a student. For example, it is well known that students who take remedial courses tend not to perform as well in college and are less likely to complete a degree. And there is some evidence that students who take dual enrollment are less likely to take remedial courses. This does not mean, however, that students who take dual enrollment courses are necessarily more likely to perform well in college. It could simply be that students who are more likely to take dual enrollment are also less likely to need remedial courses and are characteristically more likely to have higher college aspirations.

Adelman, C. (February 2006). *The toolbox revisited: Paths to degree completion from high school through college.* Washington, DC: U.S. Department of Education.

This study followed a nationally representative sample of students from their eighth grade year in 1988 through December 2000, using the NELS:88 dataset. The study reviewed student transcript records and conducted interviews to determine what aspects of a student's schooling contributed to their completing a bachelor's degree by their mid-20's.

Overall, Adelman speaks to the importance of college momentum — that students who enroll in college immediately following high school, stay continuously enrolled and do not repeat courses are significantly more likely to complete a bachelor's degree. The researcher recommends expanding dual enrollment programs due to the finding in this and a previous study that having fewer than 20 credits by the end of the first year of college reduces the likelihood that a student will earn a bachelor's degree. Adelman stresses that students should earn a minimum of six college credits in high school to help bolster them against falling short of this 20-credit line. However, the connection between earning credits through dual enrollment and college completion is correlational.

Limitations

This study used an older dataset that, while nationally representative, excluded data for students who failed to graduate from high school, those who earned a General Education Diploma, those who had not enrolled in any postsecondary institution by the age of 26, and those who entered the postsecondary system but never attended a bachelor's degree-granting institution. The importance of student momentum in college is well supported, but this study does not provide the evidence needed to support the contention that dual enrollment participation improves student momentum overall and throughout a student's postsecondary career.

An, B. P., & Taylor, J. L. (June 2015). Are dual enrollment students college ready? Evidence from the Wabash National Study of Liberal Arts Education. *Education Policy Analysis Archives, 23*(58), 1–26. Retrieved from https://epaa.asu.edu/ojs/article/view/1781/1624.

This study used data from the Wabash National Study of Liberal Arts Education, "a longitudinal study of first-year, full-time undergraduate students who entered one of 23 four-year postsecondary institutions in 2008." Data represented students from 14 states and included survey feedback from the National Survey of Student Engagement and the WNSLAE Student Experiences Survey. They distinguished between students who earned college credit through AP or CLEP exams and those who took dual enrollment, and compared them to students who did not earn college credit (although these students may have participated in accelerated learning programs and not received credit.)

Among other characteristics, researchers found that students who earned exam-based credit (AP and CLEP) were more likely than dual enrollees and traditional students to be white or Asian, male, and have parents with post-bachelor's degrees. Students who earned dual enrollment credit tended to be more similar to non-credit earners, except that dual enrollment participants were more likely to have more educated parents.

Overall, they found that the effects of accelerated learning programs on college readiness were modest. Students who earned dual enrollment credit were more likely to be college-ready after the first year of college than non-credit-earning students. The influence of accelerated learning programs did not differ significantly between dual enrollment students and those who earned credit through exams.

Limitations

The comparison group included students who may have participated in an accelerated learning option but failed to earn college credit. Using these students as a comparison group could deflate the findings associated with dual enrollment programs.

The study may not be applicable to institutions across the United States, or to undergraduate colleges and universities, as liberal arts institutions and especially those in the Northeast and Midwest are overrepresented in the data set.

The researchers measured college readiness at the end of the students' first year of college, so they did not include students who may have dropped out during their first year.

They used a binary indicator of race, therefore discounting aspects of the relationship between dual enrollment and college readiness. They focused "only on the main effects of dual enrollment and not on interaction effects by, for example, race and parental education."

Students' Perceptions

Researchers observe positive impacts, beyond the purely academic, on students who participate in dual enrollment. Students can benefit from being exposed to norms and rules associated with college-going, such as rigorous courses and self-directed learning, and they can improve their social, critical-thinking, and coping skills. However, findings vary as to whether high school dual enrollment students benefit from their interactions with college faculty and traditional college students.

Findings vary as to whether high school dual enrollment students benefit from their interactions with college faculty and traditional college students.

One of the most frequently referenced studies used a sample of 26 students from two community colleges in New York. In her 2012 anticipatory social and role rehearsal exercise, Karp found that dual enrollment participation helped students practice meeting college expectations. A study by Marshall and Andrews of 33 graduates from Marquette High School who participated in a dual-credit program at Illinois Valley Community College found that students welcomed the opportunity to get ahead in college and that program participation improved their perception of the college they later attended.

In other studies, students self-reported that participation in dual enrollment programs helped prepare them for the rigors of college, particularly by improving their time management and study habits. Dual enrollment students also reported positive social experiences, with higher levels of satisfaction in their relationships with other students, faculty and staff than their peers with traditional high school and university experiences.

Limitations

Qualitative research findings are from survey, interview and focus group analyses. Self-selection bias and variation in student characteristics can confound studies that use self-reporting as the primary data collection method. Studies were conducted with mostly small sample sizes of respondents, including traditional and dually enrolled high school students, teachers and guidance counselors. Most examined one or a few high schools, programs or community colleges and are therefore not generalizable nationally, or even statewide.

Equity and Access

Underrepresented and Low Socioeconomic-Status Student Outcomes

States often specify that one of the goals of dual enrollment programs is to close the educational and economic gaps for underrepresented and low-SES students. However, studies quite consistently find inequalities of access to dual enrollment for students of color, specifically black students, those from low-income backgrounds and rural areas, and English learners.

Researchers find that white, Asian and female students, students whose parents have higher levels of education, and students in cities are more likely to participate in dual enrollment programs. Furthermore, high-achieving and high-SES students are still overrepresented in these programs.

Several SREB states have conducted large-scale studies on participation. One Kentucky study considered grade 11 and 12 students from academic years 2009-10 through 2012-13. It found that white and female students, those ineligible for the school lunch program, non-English learners, and students living in rural, less populated areas were more likely to participate (Lochmiller, et al., 2016). Another study in Florida similarly found that dual enrollment participants were more likely to be white, female, ineligible for the free or reduced-price lunch program, and non-English learners (Estacion et al., 2011).

Barriers to Access

Researchers have observed access barriers for different student groups. Researchers find that predominantly white schools have a greater likelihood of having students participating in dual enrollment. Similarly, dual enrollment programs tend to have relatively high eligibility requirements. Finances can be a significant participation barrier as lower-income students may have difficulty affording costs related to dual enrollment programs, including tuition and course materials.

Limitations

While the research is fairly consistent, it still features the same difficulties: in generalizing findings beyond a particular program or local partnership, in using older data in states where dual enrollment policies may have changed, and in asserting the degree to which any observed variables affect participation in dual enrollment. Researchers must make assumptions and cannot account for important student and school characteristics that may influence the findings. Quantitative studies that find inequities in access often do not account for certain individual variables when addressing variances in participation based on race and SES.

An, B. P. (2013). The impact of dual enrollment on college degree attainment: Do low-SES students benefit? *Educational Evaluation and Policy Analysis, 35*, 57–75. doi:10.3102/0162373712461933.

This study used data from the fourth follow-up of the NELS:88 longitudinal study performed in 2000. An used a sample of 8,800 students who attended postsecondary, including students who attended other high school programs such as Advanced Placement.

An conducted a series of robustness tests to show how likely his results are to change due to omitted variable bias. His findings are mostly certain in their direction and effect size. It is a robust study in which the findings may be considered nearly causal. However, from a policy standpoint, they deserve caution when being applied to dual enrollment programs, especially as many states have updated their legislation on dual enrollment since the data was released.

An found that dual enrollment participation has a positive relationship with postsecondary degree attainment, but reminds readers that "these results potentially remain sensitive to unobserved confounders." The effect on bachelor's degree attainment was not as strong as that on associate degree and certificate attainment, as bachelor's degrees are harder to attain. Finally, the effects of dual enrollment on degree attainment may have weakened over time.

Among first-generation students, those who participated in dual enrollment were more likely to attain a college degree than those who did not. However, dual enrollment participation accounted for almost none of the variation in degree attainment between first-generation students and those whose parents were college educated. Students with college-educated parents are as likely to attain a degree regardless of whether they participate in dual enrollment.

An states that "perhaps the important finding is that dual enrollment programs are not detrimental for low-SES students". He also found that dual enrollment participation mediates for less than 1% of the gap in degree attainment between first-generation students and those whose parents had at least some postsecondary education. In other words, students come into programs with background characteristics that have a stronger effect on their college degree attainment than participation in dual enrollment.

An also found that students who earned three college credits (one course) through dual enrollment were no more likely to earn a degree than those who did not earn any. When comparing dual enrollment students to AP students, An found little difference in degree attainment, consistent with findings from Speroni (2011).

Limitations

This study did not include data on students who did not attend postsecondary school; instead it estimated the likelihood that a student attends college. And it does not say how many students included in the sample were dual enrollment participants. An aptly points out that "students who do not attend post-secondary are likely different from students who take dual enrollment courses." The NELS:88 data, in addition to being 20 years old, does not capture other variables that may affect a student's degree attainment, such as the instructional environment, parental and peer influences, and college-going norms.

Students who do not attend postsecondary are likely different from students who take dual enrollment courses.

Quality Curriculum and Instruction

Advising and Instructor Qualifications

Although very few studies have addressed advising directly, high school advising is an important component that can help students be successful in dual enrollment programs. While high school advisors recognize the role they can play in dual enrollment programs, they report lacking the resources and knowledge available in the postsecondary arena that could make them more effective. One study of nine public high schools in three counties in North Carolina found that embedded advisors had a positive impact on students' participation in dual enrollment courses (Matthews, 2017).

Researchers have expressed concern over the qualifications of dual enrollment instructors. High school teachers may focus more on paperwork and deadlines than course content, and struggle to ensure course quality and rigor compared with college professors. High school instructors similarly reported that their lack of knowledge of college policies and procedures hampered their performance.

In her 2018 assessment of three Midwestern dual enrollment partnerships, McWain found that high school teachers needed to overcome significant challenges to be effective dual enrollment instructors. Teachers reported frustration at having to ensure college rigor in courses while adhering to rigid curricular requirements and facing additional pressure from administrators and parents, without access to the kinds of support that college faculty receive.

In a 2016 state policy scan, researchers Horn, Reinert, Jang, and Zinth found common themes in teacher qualification requirements that states may want to consider when developing policies in this area:

1. Teachers had accreditor-approved qualifications.
2. High school teachers held equivalent qualifications as college faculty.
3. Dual enrollment instructors were required to hold a master's degree.
4. Instructors had to meet certain graduate credit requirements in the field in which they taught.

Limitations

Studies that focused on advising and instructor qualifications included interviews, surveys, and focus groups that, while providing valuable information, may not fully represent the feelings of advisors and instructors in all dual enrollment partnerships nationwide. These studies often had small sample sizes and were confined to one program or college.

Course Location

Researchers have observed that students benefit more, and report greater satisfaction, when they take dual enrollment courses on a college campus versus a high school campus. Researchers often assert that college-delivered courses are superior in their quality and authenticity, leading students to perform better. Questions arise as to whether courses taught on a high school campus are as rigorous and whether the college-going experience helps students learn norms and rules that better prepare them for subsequent postsecondary courses.

However, there is also evidence that high school campus courses may better serve students. Researchers found that those who took courses at the high school had higher grades and higher college aspirations than those who took them on a college campus. Likewise, students report a preference for face-to-face courses and generally perform better than those who take online or hybrid-style courses.

Offering dual enrollment courses exclusively on college campuses may also limit access to low-income students and students in rural areas. Access can be hindered by factors including challenges with transportation and concerned parents who do not want their children traveling to another campus. Students who are unfamiliar or uncomfortable with the college environment may perform worse. There is evidence as well that high school students' presence in college courses may negatively impact the performance of both the traditional college students and the non-traditional students (over the age of 21).

Limitations

This research often has relatively small sample sizes and analyzes self-reported survey data. Surveys can be unreliable as participants who are more likely to respond may have similar characteristics that affect the way they answer questions. Also, participants may choose not to answer some questions or to answer them falsely based on their perception of how researchers will use the results or perceived consequences for being honest.

Funding

States employ various methods to fund dual enrollment programs. One is the "hold harmless" or "hold almost harmless" plans, in which both the secondary and postsecondary institutions receive funding for dual enrollment participants. Funds can be allocated, for example, as per-pupil spending for a high school student or at a full-time equivalency rate. States that use these funding models include Florida, Texas, and Utah.

To help improve dual enrollment funding and to boost access for low-income students, WICHE recommends the following in its 2006 publication *Moving the Needle on Access and Success*:

1. Focus policy and financing system development on treating accelerated learning options as a package rather than as independent programs.
2. Do not allow competing education systems or competing policy and financing systems to break apart a comprehensive approach to accelerated learning options.
3. Build a comprehensive policy and financing system that is responsive to the needs of all students.
4. Work to ensure that the cost of participation does not create barriers for low-income and minority students.
5. Build ways to measure effectiveness and cost effectiveness into the comprehensive policy and financing plan.
6. Collect new data, use new analysis tools, and facilitate a new dialogue among state leaders, K-12 school leaders, and postsecondary institution leaders.

Points for Consideration

Dual enrollment programs offer the promise to help states reach workforce and educational attainment goals *if* programs can be designed to achieve the goals of accelerated learning. However, states first need common definitions and clear goals for dual enrollment. Enhancing data collection and reporting can help further research to determine what truly works in these programs and what does not. Without these steps, dual enrollment programs are not likely to reach their full potential.

*Dual enrollment programs offer the promise to help states reach workforce and educational attainment goals **if** programs can be designed to achieve the goals of accelerated learning.*

The following points were drawn from SREB's literature review to help states think about future steps to improve dual enrollment programs in order to meet goals like those set by the SREB panel. The points are research-based, derived from patterns observed across the literature and common limitations among repeatedly cited studies.

1. Develop common definitions and terms for dual enrollment.
2. Identify the goals of dual enrollment and align policies, including funding, to support these goals.
3. Implement governance structures that include dual enrollment program administrators, as well as secondary, postsecondary, and state and local leaders.
4. Set policies and provide resources for institutions that foster strong dual enrollment partnerships.
5. Identify key data points. Define common methods for collecting and reporting that data to support future research informing policy and practice.
6. Align course offerings with workforce needs and credential/degree standards. Credits must be transferrable.
7. Provide equitable access for students from all racial/ethnic and socioeconomic backgrounds.
8. Set eligibility requirements that lower performers can meet.
9. Provide adequate resources to support all students, such as financial assistance and advising.
10. Monitor student outcomes over time and adjust programs to increase positive outcomes.

Recommendations from the Research

The following recommendations are taken directly from the research but may have been modified by SREB to address dual enrollment programs specifically or to make them applicable to dual enrollment as a whole.

Advisors (Matthews, 2017)

1. Continue to employ fulltime embedded advisors in each of the nine high schools in the college's service area.
2. Expand program evaluation to include a more rigorous Likert item analysis.
3. Assess the efficacy of the embedded advisor program versus traditional dual enrollment advising models by tracking participants' credit accumulation and credential completion after high school.

Career Technical Dual Enrollment Courses (Zinth, 2014)

1. Responsibility for course fees should not fall to students or parents.
2. Course content and instructor credentials must mirror those of traditional postsecondary instructors.
3. Courses should incorporate industry curriculum and standards, and lead to certification.
4. States should ensure course transferability.

General Recommendations (Washington Student Achievement Council, 2016)

1. Continue to improve consistency in acceptance of dual credit.
2. Continue to improve communication about dual-credit opportunities.
3. Support opportunities for professional learning.
4. Identify and leverage existing resources (free or low-cost textbooks) to reduce costs.
5. Use data to improve policies and improve equity in dual credit opportunities.
6. Track progress on metrics developed to assess equity; identify and share best practices.
7. Expand funding to support students in all districts; subsidize fees and indirect costs of participation in dual credit programs; remove certain caps and grade requirements to expand eligibility; increase counselor-to-student ratios.

Higher Education Administrators' Responsibilities (Kilgore & Wager, 2017)

1. Higher education administrators are responsible to clearly communicate to participating students and their K–12 partners how dual enrollment credits may or may not transfer.
2. K–12 advisors should also be able to articulate directly to students the advantages and limitations of dual enrollment, particularly with regard to certain courses.
3. Given the difference between K–12 and higher education's perceived barrier of access to credentialed instructors, there may be an opportunity for higher education to offer more instructor credentialing program options to its K–12 partners.
4. There may be an opportunity for both entities to become more creative (within the bounds of existing legislation) to reduce costs to institutions, students and families.

Improve Dual Enrollment Partnerships (Carter, 2009)

1. Strengthen connections between colleges and high schools so middle-achieving students have additional opportunities to engage in college coursework while in high school.
2. Develop statewide agreements between secondary school systems and the community college system.
3. Provide a system that would invite student, faculty and parent inclusion rather than create obstacles preventing student enrollment and success.
4. Have local school districts investigate funding programs to encourage and support career and technical education faculty to pursue advanced degrees in order to attain eligibility status with accrediting agencies.
5. Develop an educational program for existing counselors or possibly employ a guidance counselor specifically for dual enrollment students.

Increase Equity in Dual Enrollment Programs (Patrick, 2019)

1. Make more students eligible to take dual enrollment classes by broadening entry requirements and giving students multiple points of entry.
2. Require that information about dual enrollment (including waived fees, course offerings, benefits of enrolling, and course requirements) be given to all high school students and families and be made available in the family's primary language.
3. Require partnering higher education institutions to establish agreements that include a plan for providing student advisement and support.
4. Ensure that college and high school programs serving underserved students are held to the same standards of rigor as traditional college courses. College courses offered within secondary schools should use the same syllabi and exams as comparable courses taught on college campuses.
5. Allow students to simultaneously gain high school and college credit upon successful completion of courses.
6. Provide more funding for a pipeline of strong and diverse school counselors.

(Gullatt and Jan, 2003)

1. Set high standards for program staff and students.
2. Provide personalized attention to each student.
3. Provide adult role models.
4. Facilitate peer support.
5. Integrate the program within K-12 schools.
6. Provide strategically timed interventions.
7. Make long-term investments in students.
8. Provide students with a bridge between school and society.
9. Provide scholarship assistance.
10. Design evaluations that contribute results to interventions.

National Alliance for Concurrent Enrollment Partnerships Accreditation

One of the most frequently cited recommendations from the research is for dual enrollment programs to be accredited by the National Alliance for Concurrent Enrollment Partnerships. As of May 2019, 112 dual enrollment programs in 23 states, including Arkansas, Georgia, Kentucky and West Virginia, are accredited by NACEP. These programs must meet rigorous national standards of quality in terms of faculty, curriculum, student assessment, student support and program evaluation. NACEP accreditation may help dual enrollment programs attract more partners and students and also help students and families seeking college credit for completed courses. For more information, visit www.nacep.org.

Overcoming Income Gaps for Students in Dual Enrollment (Excel*in*Ed, 2018)

1. Evaluate: Conduct a statewide audit of course offerings and access.
2. Communicate: Inform families of courses necessary for college and career readiness and options to access those courses.
3. Improve: Identify policy solutions to improve access for students.

Program Leadership (An & Taylor, 2019)

In their literature review, researchers An and Taylor discuss findings that district and school leaders' support is crucial to dual enrollment programs' success. They state that the programs need not just top leadership but "key champions" such as coordinators, faculty and dedicated management and staff. These players can be especially valuable in supporting underrepresented students and English learners to succeed in dual enrollment. Quality leadership can enhance a program by supporting students' sense of purpose, developing a college-going culture, assessing eligibility for programs, hiring more bilingual teachers, enhancing partnerships and facilitating communication.

Research and Data (Bailey and Karp, 2003)

1. Gather information on the size and characteristics of the programs.
2. Examine the content of courses taught in transition programs.
3. Develop more precise information on the distribution of the characteristics of students in transition programs.
4. Develop a clearer explanation of the mechanisms through which credit-based transition programs can help middle- and lower-achieving students gain greater access to and have more success in college.
5. Conduct clear, methodologically sound evaluations of credit-based transition programs.
6. Conduct research on the impact of different program models on student outcomes.

Teachers (McWain, 2018)

1. Teachers and administrators need more support, such as collaborative "teams" to help with professional development and course design.
2. Designate coordinators for dual-enrollment programs.
3. Push for more membership in the certifying body NACE.
4. Increase support for dual-enrollment instructors.
5. Incorporate coursework and policy positions that will encourage better conditions and improve practice for these faculty.

Questions for Policymakers

The following questions come directly from the research, but may have been modified by SREB to address dual enrollment programs specifically.

For State Leaders (Hoffman, 2005)

1. Is the mission of dual enrollment to serve a wide range of students?
2. Is the program embedded within a K-16 structure and a high school reform initiative?
3. Is there equal access for all qualified students across all the state's schools?
4. Are concurrent credits used as a proficiency-based acceleration mechanism?
5. Do the secondary and postsecondary sectors share responsibility for dual enrollment students?
6. Does the program collect data for purposes of assessing impact and improving the program?
7. Are funding mechanisms based on the principle of no cost to students and no harm to partnering institutions?

(Palaich, Blanco, Anderson, Silverstein, & Meyers, 2006)

1. What state costs are associated with dual enrollment participation?
2. What state benefits are associated with dual enrollment participation?
3. Will an investment in a group of students participating in dual enrollment create a return in state tax revenue? In what time frame? Compared to students not participating?
4. What would be the state impact of significantly more students participating?
5. Do the institutions and schools providing these services have the resources necessary to effectively provide them?
6. What changes, if any, are needed in state funding? State data collection?
7. Are there efficiencies associated with either the provision of this service for a single student or for a cohort of students? In what time frame will savings from these efficiencies be realized?
8. Do all students have an equal opportunity to participate in these programs?

For School District Leaders (Palaich, Blanco, Anderson, Silverstein, & Meyers, 2006)

1. What school district costs are associated with participation?
2. What school district benefits are associated with participation?
3. Does the school district providing these services have the needed staff and discretionary resources?
4. Is this effort sustainable over time? What changes, if any, are needed in formula funding?
5. What would be the impact of significantly more students participating?
6. Are there school district efficiencies in the provision of this service either for a single student or for a cohort of students? If yes, how can these efficiencies be realized?
7. Do all students have an equal opportunity to participate in these programs?

(Boswell, 2001)

1. Should there be a statewide policy ensuring access to postsecondary options, or is it best to allow communities and institutions to adapt those relationships to meet local needs?
2. Is statewide funding required to ensure equity across the state?
3. What financial incentives should be provided to encourage participation among secondary schools and colleges and universities? Or does providing per diem support to both colleges and universities represent "double-dipping" at the expense of the taxpayers?
4. Should financial assistance or incentives be provided to students to reduce or eliminate the tuition burden for high school students successfully completing dual enrollment courses?
5. How do we ensure that dual enrollment programs are indeed providing high-quality college-level education to high school students?

For Postsecondary Institution Leaders (Palaich, Blanco, Anderson, Silverstein, & Meyers, 2006)

1. What postsecondary institution costs are associated with participation?
2. What postsecondary institution benefits are associated with participation?
3. Does the postsecondary institution providing these services have the needed staff and discretionary resources?
4. Is this effort sustainable over time?
5. What changes, if any, are needed in formula funding?
6. What would be the impact of significantly more students participating?
7. Are there postsecondary institution efficiencies either in the provision of this service for a single student or for a cohort of students? If yes, how can these efficiencies be realized?
8. Do all students have an equal opportunity to participate in these programs?

For School Leaders (Palaich, Blanco, Anderson, Silverstein, & Meyers, 2006)

1. Does the school providing these services have the needed staff and discretionary resources?
2. Is this effort sustainable over time? What changes, if any, are needed in funding?
3. What would be the impact of significantly more students participating?
4. Are there school efficiencies either in the provision of this service for a single student or for a cohort of students? If yes, how could these efficiencies be realized?
5. How are students recruited for participation in accelerated learning programs?
6. Do all students have an equal opportunity to participate in these programs?

(Purnell, 2014)

1. Who can partner with us to advance our dual enrollment program?
2. What regulations exist that will support or hinder our efforts?
3. What students will we serve?

4. What blend of high school and college courses will students take and where?
5. How will we get students ready to begin college coursework?
6. How will we support students in their college classes?
7. How will we find and support the right faculty?
8. What does high school-college collaboration really mean?
9. How will we obtain and keep sustainable funding?
10. How will we know if we are succeeding?

Appendix

Sample Student-Level Indicators and Benchmarks

Student-Level Indicator	Indicator or Measure	Benchmark or Threshold	Data Source
Academic preparation and readiness	• Reading grade level and GPA • College and career readiness scale or index (e.g., Conley's college readiness)	• Academic proficiency according to test scores • GPA (≥ 2.0) for term, cumulative • Credit completion	• Students' high school & college transcripts • Assessment test scores • Student interviews • Student surveys • Student focus groups
Affective adjustment	• College and workplace norms and expectations • Affective readiness (e.g., motivation, maturity, behavior) • Metacognitive skills and knowledge (Almeida, Steinberg, & Santos, 2013) • Problem solving • Time management • Persistence • Goal setting	• 85% on-time attendance • 90% completion of assignments • GPA • Positive movement on pre- and post-metacognitive measures (e.g., Conley's college readiness scale, student self-report)	• Attendance records • Student surveys • Student focus groups • Classroom observations • Counselors' notes and records • Instructor feedback on individual student progress reports
Academic progress	• High school and college course completion vs. attempted (including drops and withdrawals) • Course name • Subject area • Development or college level	• Completion of 12 to 24 credits • With C or better – counts for HS and college credit • With D – only high school credit • Met Satisfactory Academic Progress16 indicators • Cumulative 2.0 average • Completion of 2/3 of college courses attempted • Completion of a sequence of courses linked to movement from developmental to college-level courses or a particular course of study	• District data • School student transcript data • College student record data • Students' applications
Student achievement and outcomes	• Retention • Persistence • Progress toward completion • Completion of high school requirements and college courses • Postsecondary enrollment & graduation • Completion of career and technical-related certificates, licenses or certification	• Passing California High School Exam Exit (CAHSEE)17 • 'a-g' requirement completion • Completion of 2/3 of courses attempted with C or better • Term-to-term enrollment • On time graduation as outlined by individual educational plans • Enrollment in postsecondary institution within two years of high school graduation • No need for remedial coursework upon college entry • Receipt of a degree or credential within 6 years of college enrollment	• District data • School student transcript data • College student record data • Standardized test & assessment scores

Source: Purnell, 2014

Appendix

Sample Program-Level Indicators and Benchmarks

Student-Level Indicator	Indicator or Measure	Benchmark or Threshold	Data Source
Secondary-postsecondary partnership	• Degree of collaboration between secondary and postsecondary partners around… - Funding - Coordination - Management - Reporting - Credentialing - Articulation	• Clearly defined funding sources and instructional and management responsibilities for each of the participating partners	• MOU or letter of agreement review (every 2 years)
Recruitment reach and selection	• Demographic diversity of student body – gender, race/ethnicity, age, academic preparation, socio-economic status (e.g., free and reduced price lunch eligibility)	• Diversity across categories • Number of underrepresented students • Number of students who are first in their families to go to college	• Local high school data-base • Student application materials • Student survey
Curriculum and course design	• Sequenced course • Scaffolded course • Accelerated coursework • College-level courses content	• Approval of courses by both partners • Alignment of high school and college requirements	• Curriculum committee review & approval of course content • College student record data • Student education plans
Supportive services	• Embedded tutoring • Academic and personal guidance and counseling • Structured advisories (e.g., AVID) or small group activities	All students: • Mandatory counseling appointments (e.g., three per term) • Attend 85% of advisory meetings Students who are on probation: • Mandatory tutoring and/or use of available campus services (e.g., math lab)	• Student survey & focus groups • Counseling reports & notes • School attendance records • Take up of support services
Faculty and staffing	• Experience working with non-traditional students • Desire to work collaboratively e.g., willingness to design integrated projects • Ability and interest in teaching at a community college • Will to mentor and advise students • Belief that students can and will be successful	• Credentials e.g., Master's degree plus additional disciplinary-specific graduate study (Barnett et al., 2011) • Course assignments and projects (e.g., integrated project) • Innovative approaches (e.g., social justice lens) • Participation in team meetings • Collegial classroom culture (e.g., small group activities, peer-to-peer mentoring opportunities)	• Resume review • Syllabi • Student course evaluations • Performance evaluations • Observations • Regular check-in meetings

Source: Purnell, 2014

Appendix

Sample Institutional-Level Indicators and Benchmarks

Student-Level Indicator	Indicator or Measure	Benchmark or Threshold	Data Source
Quality	• Rigorous academics • Sense of community and support among students • Culture of high expectations and accountability among staff and students	• Courses meet college standards • Students arrive at college ready to take collegiate-level courses • Students arrive at college with the metacognitive skills necessary to succeed: - Problem solving - Time management - Persistence - Goal setting	• Curriculum committee review • Student and staff surveys • Teacher/instructor evaluations • Survey of postsecondary partners
Productivity	• College readiness • Students' persistence, retention and completion rates • Recruitment and retention of underrepresented students	• Students test into college-level courses • Students complete at least 2/3 of college courses attempted with a C or better • Students complete HS graduation requirements • Students earn up to 20 college credits • Students maintain a cumulative GPA of at least 2.0 • Underrepresented groups are succeeding at equal or greater rates than similar peers within the school or district	• Placement test scores • Student transcripts or records review
Viability	• Diversity of funding streams (public and private sources) • Support from key secondary and postsecondary partners • Navigation by secondary and postsecondary of different frameworks and reporting requirements • Program and secondary and postsecondary partners' reputations	• Successful braiding of various funding streams to cover program costs (Almeida et al., 2013) • MOU with clearly articulated roles and responsibilities for each partner • Press release or college-wide communications	• Financial reports provided by budget manager school district and community college • MOU elements such as coordination of funding, responsibilities and follow-up of key contacts, realization of identified benchmarks and accountability measures • Survey of administrators, instructors and teachers • Input from parents, caregivers and external partners (e.g., nonprofit organizations)

Source: Kinnick, 2012

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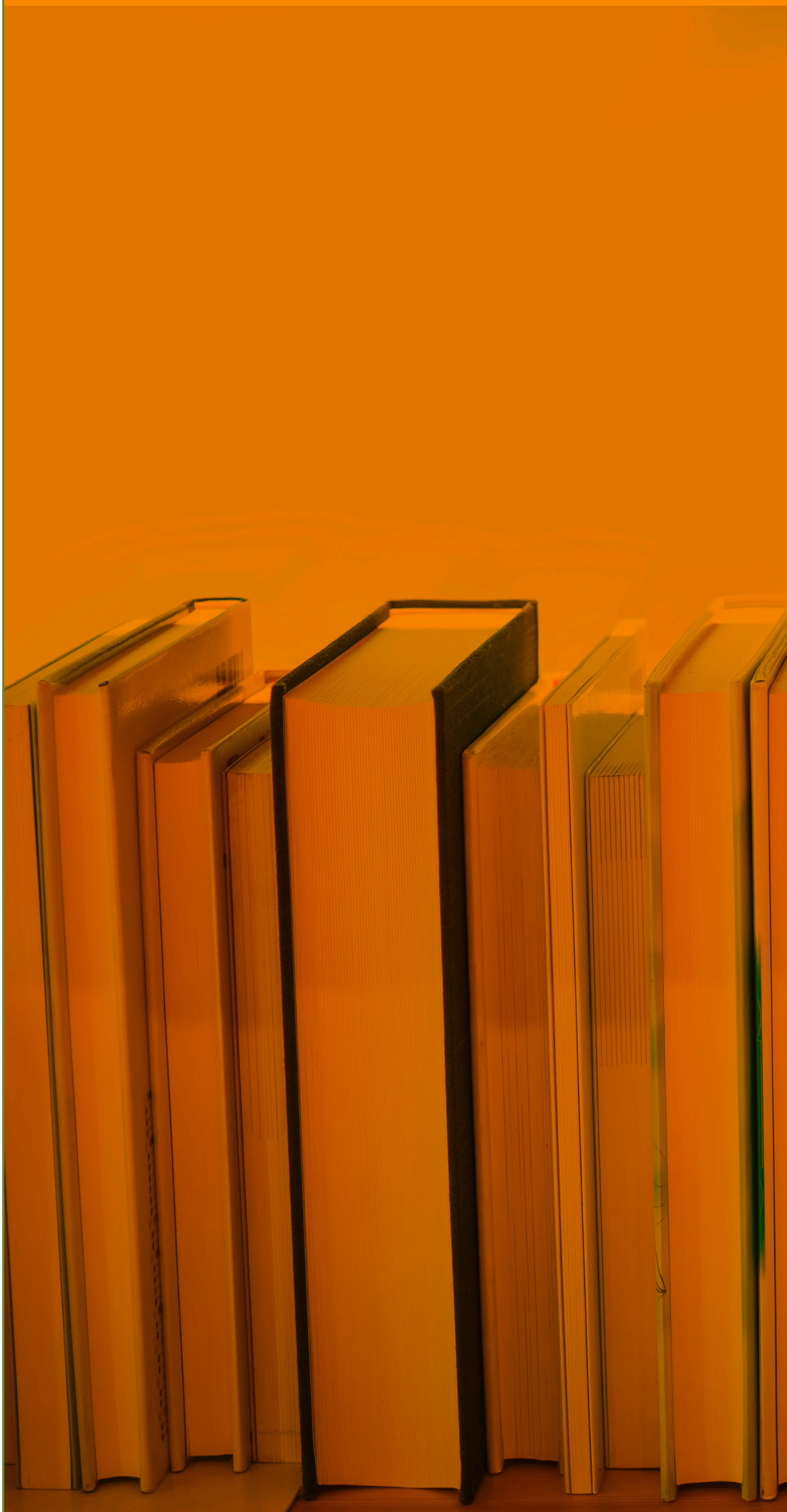

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Southern Regional Education Board
592 10th St., N.W.
Atlanta, GA 30318-5776
(404) 875-9211

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