Equity-Focused Dual Enrollment Mathematics

Lessons for Improving the Outcomes of Historically Underserved Students

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HIGHER AIMS Improvement Network
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Chapter 1: Dual Enrollment Mathematics as an Equity Strategy

> ***From high school through graduate school, the half-life of students in the mathematics pipeline is about one year; on average, we lose half the students from mathematics each year. When mathematics acts as a filter, it not only filters students out of careers, but frequently out of school itself.***[1]

College mathematics requirements have been a significant barrier to college completion. To address this challenge, more district administrators are turning to dual enrollment as a strategy to help historically underserved students complete these requirements in their junior or senior year of high school. A dual enrollment course is a college course offered to high school students, taught by a college instructor or college-approved instructor, that allows successful completers to earn college credit while still in high school. While dual enrollment initially gained popularity as an option for academically advanced students to gain early access to college courses, a growing body of research recognizes the potential of dual enrollment courses to set a broad range of students on a path toward postsecondary degrees and careers of value.

This guide offers lessons learned for designing and implementing the first year of a dual enrollment mathematics course with an equity focus, and was written to address the why, what, and how of equity-focused dual enrollment mathematics planning and initial implementation. The primary audience is a leadership team composed of representatives from both a high school and a community college. The guide aims to provide an initial road map for designing and implementing such a course in a way that reduces inequalities and narrows opportunity gaps.

This introductory chapter to the guide describes the problem that dual enrollment is trying to solve, lays out some of the main challenges faced by partnerships of high schools and community colleges that want to offer dual enrollment mathematics courses, and argues for the importance of equity-focused dual enrollment, especially for mathematics courses. The introduction also orients the reader to the overall structure and origins of the guide, and introduces a working theory for improving outcomes for historically underserved students. Chapters 2, 3, and 4 focus on what equity-focused dual enrollment looks like in practice, through a focus on leading the work, forming a cohort of students, and supporting historically underserved students in the course.

1 National Research Council, 1989

1.1 The Problem

"Mathematics is the key to opportunity," begins the National Research Council report *Everybody Counts*. The 1989 report was a call to action. It argued for the importance of mathematics in everyday life, and it highlighted the stark differences in achievement between student groups. To address significant performance gaps, the authors recommended national standards for mathematics achievement, paired with local flexibility for how to organize schools and instruction to achieve those standards.[2]

Three decades later, the two overarching recommendations from *Everybody Counts* have largely been enacted. Most states have adopted the Common Core State Standards (CCSS). And the 2015 Every Student Succeeds Act (ESSA) provides schools and districts with greater local control over how to help all students achieve those standards. This focus is especially strong in California, where the Local Control Funding Formula (LCFF) enacted in 2013 localized planning and accountability.

And yet, despite these policy shifts, mathematics remains a major barrier to high school graduation, college admission, and timely degree completion.[3] Especially concerning is the recognition that this barrier does not affect all student groups equally. In California, grade 11 White and Asian students met or exceeded state mathematics standards at a rate of 53 percent and 74 percent, respectively — well above the state average of 31 percent. However, just 27 percent of Latinx students and 20 percent of African American students met or exceeded standards. Only 26 percent of economically disadvantaged students, and a mere 13 percent of students designated as English learners, met or exceeded standards.[4] A recent report from Just Equations concludes, "Mathematics practices and policies contribute to educational equity gaps, with African American and Latino/Latina students disproportionately judged below proficient or in need of remedial math coursework."[5]

Many student groups have been historically underrepresented in dual enrollment courses.

To address these gaps, college-level mathematics is increasingly being taught to high school students in what are known as **dual enrollment** courses. These courses are different from Advanced Placement (AP) courses, which use standardized assessments to determine college credit, in that (1) dual enrollment courses are taught by college instructors, (2) students must enroll in college, and (3) their overall course grade determines whether college credit is conferred.

2 National Research Council, 1989
3 Daro & Asturias, 2019
4 California Department of Education, 2018
5 Burdman, 2018

A central premise behind the push to expand dual enrollment is that most students by their senior year of high school are capable of college-level coursework.[6] Some evidence suggests that taking college-level coursework in high school can increase the likelihood that students enroll in college and complete a degree. For example, a 2018 working paper by JFF, an organization committed to aligning education systems with workforce needs to ensure economic advancement, found that compared with their peers, high school students who completed a dual enrollment experience had more positive educational outcomes. "They were 7% more likely to graduate high school, 15% more likely to enroll in college, and 25% more likely to subsequently complete a college degree."[7]

However, many student groups have been historically underrepresented in dual enrollment courses. A national study analyzing the demographic gaps of students who take AP or dual enrollment courses found that most of these courses had racial or ethnic gaps, and in about a quarter of districts, the dual enrollment participation gap was 7 percent or more.[8] In Iowa, a national leader in the expansion of dual enrollment, approximately 23.4 percent of White students participated in 2015–16, compared to 17.4 percent of Hispanic students and just 10.1 percent of African American students.[9]

California has been much slower to expand dual enrollment opportunities to its students, with just 1.7 percent of students participating in 2015–16.[10] However, recent changes in state policy are encouraging significant expansion of dual enrollment. The College and Career Access Pathways (CCAP) initiative, created by legislation in 2015,[11] made it easier to offer dual enrollment courses on high school campuses exclusively for high school students. In 2018, the California School Dashboard, which provides publicly accessible indicators of school performance across the state, added a new college and career indicator, which recognizes districts for encouraging students to complete one or two semesters of a college credit course.[12] And the California Promise Program, which provides financial support to qualifying students, is growing.[13]

But more equitable access does not guarantee more equitable outcomes. A study of dual enrollment in Texas found that White students who completed dual enrollment were 2.21 times more likely to enroll in college, compared to White peers who had not completed dual enrollment, whereas African American students who completed dual enrollment were 1.60 times more likely to enroll in college, compared to their African American peers who had not completed dual enrollment. The same study suggested more promising outcomes for economically disadvantaged students, who were 2.41 times more likely to attend a four-year college if they had completed dual enrollment (compared to peers who had not completed dual enrollment), whereas economically advantaged students were

6 Zinth & Barnett, 2018
7 Faulkner et al., 2018
8 Xu et al., 2019
9 Fink, 2018
10 Fink, 2018
11 Castro & Collins, 2018
12 California Department of Education, 2019
13 Rauner & Smith, 2020

2.03 times more likely to attend a four-year college (compared to peers who had not completed dual enrollment).[14]

What might explain student group disparities in dual enrollment outcomes? One possibility is that dual enrollment programs have not traditionally been designed for all student groups to succeed. For students whose parents did not attend college, or who are uncertain about their own college or career goals, or have significant responsibilities outside of school, these factors could interfere with their success.

One way to begin addressing these challenges is for high schools and community colleges to form partnerships to design and implement high-quality dual enrollment programs. According to a 2018 Career Ladders Project study, these programs have the following characteristics in common:

For dual enrollment to be implemented with a clear, consistent focus on equity, the leaders responsible for the relevant systems need to organize their courses and programs to close opportunity gaps.

- *Intersegmental and aligned across educational systems*
- *Carefully structured — coherent, not random collections of courses*
- *Geared toward certificate, degree, and transfer pathways that give students an early start on choosing and completing a program of study*
- *Strengthened by student supports and work-based learning experiences*
- *Driven by strong partnerships among colleges, high schools, and other community institutions — and a commitment to strengthen these relationships over time*[15]

This guide was written to help partnerships between high schools and colleges design and implement a dual enrollment math course in a way that embodies these characteristics and is aimed at reducing inequalities and narrowing opportunity gaps. This guide does not focus on the overall design of a dual enrollment program — that is, a coordinated set of dual enrollment offerings designed to serve a wide range of students. Instead, it focuses on the design of a single dual enrollment math course and its first year of implementation. It is strongly recommended that this course be integrated into a dual enrollment program as a larger equity strategy for supporting all students. But starting with a single course can be a good way to begin building the cross-organizational relationships, planning structures, and work routines necessary for students to succeed.

14 Struhl & Vargas, 2012

15 Castro & Collins, 2018

For dual enrollment to be implemented with a clear, consistent focus on equity, the leaders responsible for the relevant systems need to organize their courses and programs to close opportunity gaps. Good legislation can help by pointing dual enrollment in the right direction, removing bureaucratic hurdles, and providing needed resources. But most policies are only loosely coupled to the core structures, work processes, and cultural norms that define much of K–12 and higher education.

1.2 Dual Enrollment Mathematics: A Cautionary Tale

The following vignette illustrates some of the challenges that high school–community college partnerships can face when offering dual enrollment math for the first time. Although the case is fictionalized, it was developed based on the authors' first-hand experiences studying and working with high school–community college dual enrollment math partnerships in California. The challenges surfaced in this vignette are explored throughout this guide.

> *Some time ago, a community college and a high school decided to explore offering a new dual enrollment math course to high school seniors. A majority of the high school's students were African American, and nearly all of its students were eligible for free or reduced-price lunch. Roughly half the students also struggled with the second course in the Common Core math sequence (Integrated Math II), which includes significant algebra content. Students who received a C or lower in this course during their junior year were often unsuccessful with Integrated Math III in their senior year.*
>
> *Many of the students who struggled in Integrated Math II were interested in attending college, but they were uncertain whether they wanted to attend community college or one of the more competitive California State University campuses. The local community college found that students who struggled with math in high school often placed into remedial mathematics courses, such as introductory algebra, and struggled to complete the courses required to earn an associate degree. In fact, only about one in five students identified for remedial math at the community college went on to pass a college-level math course within six years. For these students, passing a college math course was the single biggest barrier to degree completion.*
>
> *To help more students complete a college math course sooner, the community college and the high school partnered to offer high school seniors a new college statistics course called Applied Statistics. Unlike traditional statistics, Applied Statistics was designed to be an alternative pathway for students who had struggled with algebra. The course integrated algebra content as needed to support mastery of college-level statistics content.*

At community colleges offering Applied Statistics, student success rates were significantly higher for students in this course than for students in the traditional math pathway.

Although Applied Statistics seemed to be a perfect match for high school seniors who had struggled with Integrated Math II, offering the course to high school seniors presented a number of unexpected challenges that the partnership needed to overcome.

Course selection and scheduling. *The partnership needed to figure out when to offer the course and who would teach it. Many high school seniors had afternoon and evening responsibilities, including sports, outside employment, and child care. To serve these students, the course needed to be offered during the school day at the high school. College faculty did not want to teach the Applied Statistics course on a high school schedule (5 days a week) in an unfamiliar context (a high school campus). Only one math teacher at the high school met the minimum qualifications (a master's degree in mathematics) to be eligible to teach the course as an adjunct. However, the college faculty union required that all instructors be paid directly by the college, rather than subcontracted through the high school. And the high school teachers' union contract governed six periods of the school day, during which teachers could not accept outside work. So the course had to be offered during the first period as part of an additional, outside teaching load.*

Student recruitment and enrollment. *The partnership needed to enroll students in the course. The college was eager to fill the section with at least 35 students — its standard minimum enrollment threshold. However, time was short. The high school counselors responsible for recruiting and placing students into the course were unfamiliar with Applied Statistics, and information about the focus students for the course and how the course transferred at the college level trickled down to them in bits and pieces. In the rush to fill seats, some advanced students were placed into the course, though they would have been better suited for AP calculus, and struggling students who might have been a good fit were overlooked. Other students were placed into the course without their knowledge, and were unprepared for the expectations and workload of the college-level course. Still others were surprised to learn that even though the credits they earned for the course applied toward their general education requirements for college, they would have to take additional math courses in college to be on track for the STEM-focused degree they were interested in.*

Supporting student success. *Once the Applied Statistics dual enrollment class began, students needed support understanding and navigating their first college-level course. To many students, taking a class with a familiar instructor in a familiar setting made the course feel like high school, not college. As a consequence, the instructor had difficulty helping students*

understand that this course was different. The instructor needed support teaching the Applied Statistics course. Also, as it was a college-level course, students' grades in the course would impact their college transcript. Early on, many students struggled with the college-level content. The curriculum design emphasized group work over direct instruction, and both the instructor and the students were unfamiliar with this pedagogical approach. And some students didn't have the literacy background to understand the contextualized problems they were being asked to solve.

Communication and coordination. *Perhaps most important, as unexpected challenges arose, the partnership did not have a regular structure for communicating about problems or strategizing about how to intervene. Regular communication breakdowns meant surprises that strained relationships and eroded partner trust. For example, the college was surprised when the class enrolled only 15 students, well below the 35 students it had expected. And the high school was surprised when the course credit did not transfer to the California State University system, as the high school had assured students that it would.*

In spite of these difficulties, the partnership between the community college and the high school continued and, over time, the outcomes improved. As relationships between the partners strengthened, some of the challenges were addressed in subsequent course offerings. However, students also bore the consequences of this learning process. Some students who never should have been enrolled failed the course. Other students who could have succeeded ended up dropping the course because they didn't get the support they needed. Still others passed the course but were unable to use the course credit to fulfill a college math requirement. When they enrolled in a four-year university, they still had to take another math course to meet the specific requirements of a business or nursing degree.

What began as an effort to remove math as a barrier for struggling students evolved in three years into an alternative to AP calculus. Turnover at both the college and the high school led staff to shift to a traditional college algebra course, and recruitment efforts ended up focusing on students most likely to succeed in a traditional math pathway.

As this vignette illustrates, what starts as an ambitious, equity-focused effort can easily become a largely traditional dual enrollment mathematics course.

1.3 The Need for Equity-Focused Dual Enrollment

The challenges described in this fictionalized vignette reflect common challenges for dual enrollment math courses — especially those focused on closing opportunity gaps. Table 1A summarizes these challenges.

Table 1A: Common Challenges for Equity-Focused Math Dual Enrollment

Challenge	Explanation
Course mismatch. The course does not meet the academic needs of historically underserved students.	College algebra and calculus are common dual enrollment math courses, but many historically underserved students do not have the math background needed to succeed in these courses. As a result, the courses serve only the most academically prepared students.
Useless credit. The credit students receive does not help them graduate or address significant barriers to college admissions or completion.	Sometimes dual enrollment courses are offered without the necessary approvals in place to meet the requirements for graduation, university admission, or transferability into a four-year program. Even when credit transfers, it may only count as elective credit rather than fulfilling a math requirement.
Reactive problem-solving. When problems emerge, the response is slow, uncoordinated, and/or inadequate.	A range of problems can emerge in the first few years a course is offered: Enrollment may be low; the instructor may struggle to teach new content; the students may be intimidated by college-level content; or policy changes at the high school, college, or university level may create problems for students.
Low enrollment. The course enrolls too few historically underserved students.	Only students who enroll in a course have the opportunity to benefit from it. If high schools are not deliberate in their recruitment, the course can end up filled with students who are not historically underserved, who do not have an adequate math background, or who are not committed to success. Low enrollment can also make the course financially unsustainable for the college.
High rates of course withdrawal or low grades. Many students receive Ds or Fs, or they end up withdrawing or dropping before completing the course.	Once enrolled, students need to pass the course to receive credit. When students drop, withdraw, or receive a D or F, the course is not helping them achieve their college or career goals. They also have missed out on the opportunity to take a course in which they could have been successful. And in some cases, their future financial aid eligibility may be at risk.

These challenges help focus the work of high schools and colleges when choosing to embark on a dual enrollment partnership. A common saying in the field of quality improvement is that "Every system is perfectly designed to get the results it gets."[16] Unless and until partnerships reorganize their systems to solve the problems summarized in Table 1A, the opportunity gaps they produce are likely to continue.

16 Conway & Batalden, 2015

This guide shares ideas for reorganizing dual enrollment as a strategy for reducing inequities in educational outcomes. If the purpose of dual enrollment is to increase equity, then high schools and colleges have a responsibility to ensure that dual enrollment is, in fact, reducing opportunity gaps. Doing so entails designing for student success, minimizing the costs of student failure, and working to improve and sustain student outcomes over time.

This approach is referred to as **equity-focused dual enrollment**, and it can be particularly important for dual enrollment math courses. As noted in a recent Just Equations report, "because inequities in math achievement have caused barriers to college access and success, equitable college opportunity requires equitable math opportunity." The report notes, "Marginalized students, in particular students of color and low-income students, often have insufficient access to quality instruction and other learning supports."[17] In the face of math courses that have traditionally sorted and filtered students, equity-focused dual enrollment can be an "opportunity pump"[18] — that is, a vehicle for closing gaps in student performance rather than reinforcing them.

As dual enrollment is expanded in California to serve new and different student populations, dual enrollment partnerships need to design and manage course offerings to meet the needs of historically underserved subgroups. In this guide, the term **historically underserved students** refers to student groups who historically have tended to complete high school math, enroll in college, and complete college degrees at lower rates than middle-class White students. Specific groups include students who are African American, Latinx, low-income, first-generation college-going, and/or from low-income families.[19]

To fulfill an equity purpose, dual enrollment offerings need to be explicitly designed to support historically underserved students. Table 1B summarizes a working set of design principles for the implementation of equity-focused dual enrollment. These principles are grounded in research on equity[20] and quality improvement.[21]

17 Just Equations, 2019
18 National Research Council, 1989
19 Zinth & Barnett, 2018
20 Burdman, 2018
21 Bryk et al., 2015

Table 1B: Design Principles for an Equity-Focused Dual Enrollment Offering

Principle	Description/Explanation
Equity-Focused	The goal of dual enrollment efforts should be to produce equitable outcomes for historically underserved students.
System-Oriented	Because "systems are perfectly designed to get the results they get," they need to be redesigned to achieve equitable outcomes. Doing so means identifying when and where systems are failing, and redesigning them for student success.
Student-Centered	Educational systems are often designed to work for institutions, rather than students. Dual enrollment offerings should be designed first and foremost to support students' successful completion of the course.
Partnership-Led	Successful implementation of equity-focused dual enrollment requires close working partnerships between community colleges and high schools.
Continuously Improved	High schools and community colleges are complex systems that exist in a larger, evolving educational ecosystem. To meet these evolving needs, equity-focused dual enrollment partnerships need to be designed to improve over time. Continuous improvement requires routine monitoring of student progress and success, identification of problematic performance, and just-in-time intervention to get students back on track.

While these principles are applicable to the design of dual enrollment programs in general, they are especially important for dual enrollment in math, a subject area that has long been a barrier to opportunity for historically underserved students.

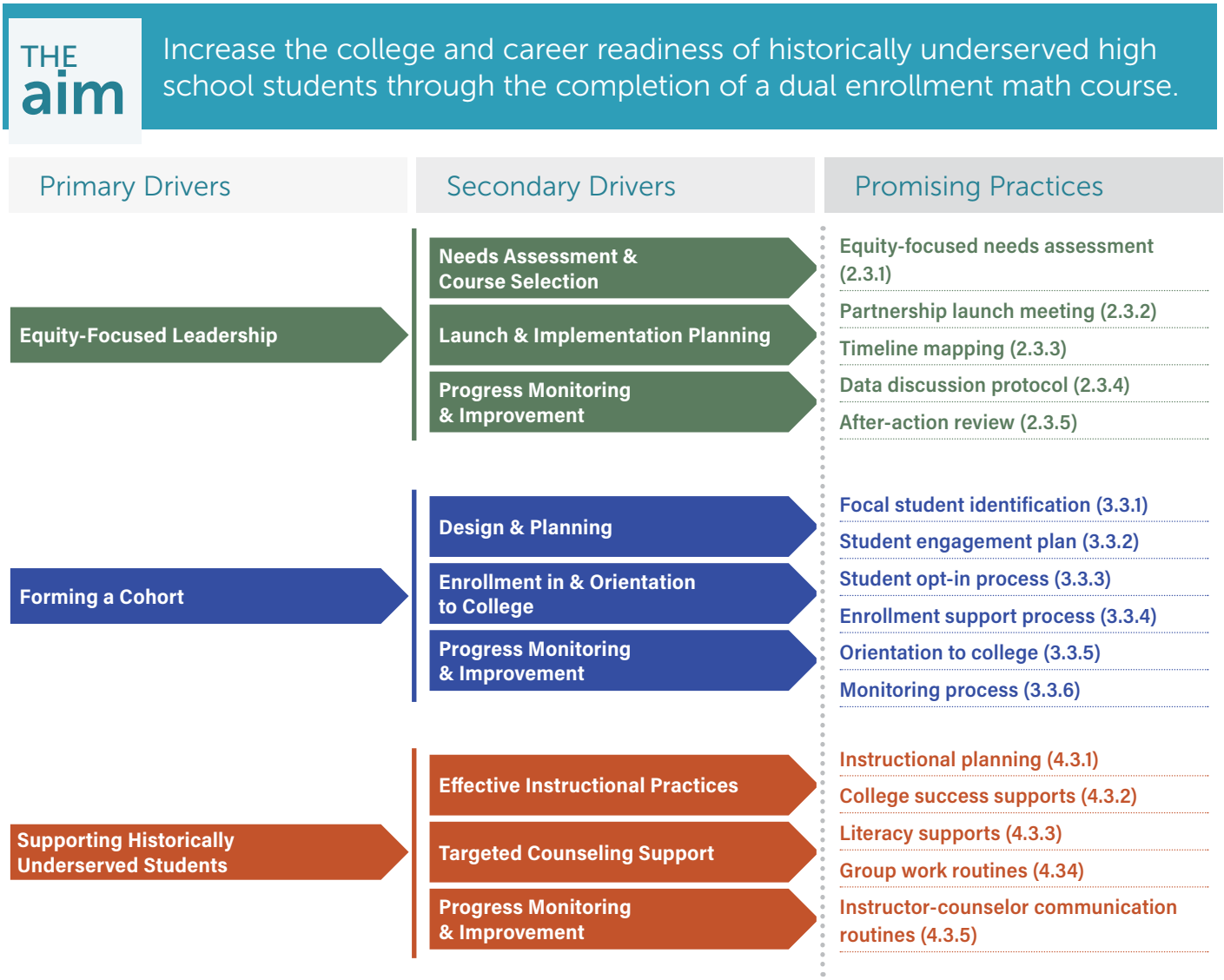
1.4 How to Use This Guide

This guide was written to address the why, what, and how of equity-focused dual enrollment math planning and initial implementation. This first chapter focused on why dual enrollment needs to be designed (or redesigned) to meet the needs of historically underserved students. Understanding the need for a new or different approach is an important first step toward deciding to invest the time, energy, and resources to create an equity-focused dual enrollment program. The guide makes the case that this investment is both important and necessary.

Chapters 2, 3, and 4 focus on what equity-focused dual enrollment looks like in practice. Specifically, what components of a dual enrollment program need to be implemented or modified to meet the needs of historically underserved students? To address this question, each chapter describes a key **driver** of equity-focused dual enrollment. In improvement science, a driver is a "structure, process, or norm" that needs to change to achieve a desired outcome.[22] Figure 1A summarizes a working theory of action for successful implementation of equity-focused dual enrollment programs.

22 Provost & Bennet, 2015

Figure 1A: A Working Theory of Action for Equity-Focused Dual Enrollment



The guide is organized by three primary drivers of equity-focused dual enrollment. The first driver is equity-focused leadership. A new dual enrollment course needs to be led by a partnership team responsible for designing, implementing, and improving the course. Chapter 2 helps leaders understand the core work of building a successful equity-focused dual enrollment partnership.

The second primary driver is forming a cohort. Once the partnership is established and a course has been designed, the team leading the partnership needs to identify, recruit, and enroll historically underserved students into the course. Chapter 3 helps the partnership team understand what it means to form a cohort of historically underserved students who have opted in to the course and are ready to succeed.

The third primary driver is supporting historically underserved students. Once the course begins, students need a range of supports to help them navigate what for many is their first college course. The importance of effective support is compounded by the stakes involved. Doing poorly in the course can affect a student's high school transcript and college transcript, eligibility for financial aid, and fulfillment of high school graduation and college admissions requirements. Chapter 4 helps the partnership team, dual enrollment instructors, and advising staff understand the challenges and strategies for supporting the success of historically underserved students.

Together, these three drivers provide a foundation for what equity-focused dual enrollment looks like in practice. At the same time, those responsible for the day-to-day work of implementing a dual enrollment program often appreciate additional resources. To meet this need, each of the following chapters includes a set of **promising practices** that provide more detail on implementation. Although many of these practices will need to be adapted to local contexts, they may provide useful starting points for establishing or improving dual enrollment implementation.

1.5 How the Guide Was Developed

Many of the principles, strategies, and promising practices referenced in this guide were developed and refined through a WestEd-led project, the Higher Aims Improvement Network. Established in January 2017, with funding from the College Futures Foundation, the network aimed to support historically underserved high school students and to remove math as a barrier to college completion.

The network chose to focus on dual enrollment math as a means of accomplishing this aim. Students who take a dual enrollment course would not just be better prepared for college; they would also have completed and received credit for a college-level math course. And if the right course is selected, students might not need to take another math course in college unless they choose a math-intensive degree.

Accordingly, network members were aware that selecting the right course is important. The network wanted a **reform-based mathematics** curriculum — one focused on helping students make sense of mathematical ideas in real, relatable contexts, through interactive explorations of content. The course also needed to be accessible to a wide range of students, including the many students who have struggled with algebra. And the network wanted a course that would support a wide range of non-STEM degrees.

After a careful review of programs, the Higher Aims Improvement Network decided to adopt the Carnegie Math Pathways' Statway curriculum. In 2017, Statway was already being taught in many community colleges in California and across the country. In these community colleges, only about 20 percent of students who had entered college and had placed into introductory algebra went on to complete a college-level math course within the subsequent

six years. However, over 50 percent of community college students who enrolled in Statway successfully completed the course.[23]

The Statway curriculum and pedagogy are the product of the Carnegie Math Pathways Networked Improvement Community, which is committed to the equity principles outlined previously in this chapter. From its earliest conception, the purpose of Statway was to support the success of students who were not succeeding in a traditional math pathway. The reform-based design was strongly student-centered, and the overall organization of the network brought a systems lens to continuous learning and improvement. For these reasons, it was an easy choice for a dual enrollment course.

And yet, recruiting colleges to adopt the Statway course was surprisingly difficult. Some colleges already had a home-grown version of developmental statistics which, like Statway, blended remedial algebra content with college-level statistics. Some college math departments also resisted the idea of an alternative pathway that did require mastery of intermediate or college algebra content. And, perhaps most important, academic policy debates across California raised questions about the transferability of Statway as a college-level statistics course to the California State University system. In the face of this uncertainty, many colleges decided to wait until the transfer policy was clear before moving forward with adoption.

Despite these challenges, the Higher Aims Improvement Network successfully launched in 2017 with two high school–community college partnerships. This report reflects the learning from these partnerships over a three-year period, and draws on lessons from another Statway dual enrollment offering in the state, led by the Carnegie Math Pathways team, and from a range of dual enrollment experts inside and outside of WestEd.

The lessons shared in this guide are intended to inform the continued development and improvement of equity-focused dual enrollment math in California and across the country.

1.6 Further Reading

Although the guide provides specific, practical ideas for partnerships that are organizing dual enrollment efforts, it does not provide guidance about specific policy or compliance requirements, nor does it review the many different structures and models currently being tested. Additional readings are listed on the following two pages to point readers toward relevant resources.

23 Huang, 2018

Additionally, those working to establish a new dual enrollment math course should consider seeking technical assistance to support effective implementation. The California Coalition of Early & Middle Colleges (CCEMC);[24] Get Focused, Stay Focused;[25] and the Vision Resource Center[26] all provide interactive support in California.

1. *The Dual Enrollment Landscape in California: A CLP Working Paper,* by Naomi Castro & Linda Collins, 2018, https://www.careerladdersproject.org/wp-content/uploads/2019/06/DualEnrollmentWorkingPaper_Oct2018_Final.pdf. This report draws upon consultations with practitioners and researchers at 48 California community colleges to recommend policies and practices to support the design and implementation of dual enrollment programs that serve colleges' local communities. Focus areas include collection and management of data about dual enrollment; application and enrollment processes; faculty, staff, and program capacity; reaching underrepresented high school students; and integration of dual enrollment into both high school and college reform approaches.
2. *Opportunity for All: A Framework for Quality and Equality in Education,* by Jennifer O'Day & Marshall Smith, 2019, https://www.hepg.org/hep-home/books/opportunity-for-all. Rooted in an analysis of "the failures of past efforts to address and remedy systematic inequality," this publication argues for linking present standards-based policy frameworks to "a continuous improvement approach to build on and scale up successes and to address gaps in outcomes." Opportunity for All outlines a change strategy that "incorporates a balance of pressure and support from three sources: government and administrative policy, professional accountability and networking, and collective engagement of parents and other stakeholders."
3. *Branching Out: Designing High School Math Pathways for Equity,* by Phil Daro & Harold Asturias, 2019, https://justequations.org/resource/branching-out-designing-high-school-math-pathways-for-equity/. This report examines the role traditional high school math sequences play in filtering students out of STEM opportunities, as well as the unnecessary barriers these traditional sequences pose for students who wish to pursue non-STEM fields — barriers that disproportionately impact students of color and low-income students. To remedy these problems, the report argues for new, rigorous advanced math pathways that align with students' areas of interest and career goals.
4. *Getting Better at Getting More Equitable: Opportunities and Barriers for Using Continuous Improvement to Advance Educational Equity,* by Amber Valdez, Sola Takahashi, Kelsey Krausen, Alicia Bowman, & Edith Gurrola, 2020, https://www.wested.org/resources/getting-better-getting-more-equitable/. This study examines how education leaders think about and use continuous improvement to address persistent inequities that impact students of color and other underserved student groups. Based on interviews with 21 California leaders and practitioners, the study outlines barriers and challenges faced by education leaders in using continuous improvement to advance educational equity, and illuminates some of the promising practices emerging from the field.

24 https://dualenrollment.org/

25 http://getfocusedstayfocused.org/

26 https://visionresourcecenter.cccco.edu/

5. *Redefining Historically Underserved Students in the CSU: Moving Beyond Race and Economic Status to Close Equity Gaps,* by The California State University, http://www.dashboard.csuprojects.org/rethinkingthegap/Historically-Underserved-Student-Factor-Model.pdf. This short paper describes the development of the California State University system's development of a new "Historically Underserved Students" construct that allows for "a more accurate classification of true equity gaps." The new construct accounts for the relationship between a set of intercorrelated variables (race/ethnicity, socioeconomic status, college readiness, and college-going generation) that allow for the identification of additional students who are in need of more support, and may be helpful for partnerships as they work to identify the student populations that equity-driven dual enrollment programs are designed to serve.

The following practitioner-oriented resources are particularly useful for those involved in planning and implementing dual enrollment programs supporting historically underserved students. Particular components of many of these resources are highlighted throughout this guide.

6. *A Guide to Launching and Expanding Dual Enrollment Programs for Historically Underserved Students in California,* by Rogéair Purnell, 2014, https://rpgroup.org/Portals/0/Documents/Archive/Dual-Enrollment-Toolkit-Updated-Dec2015.pdf. This guide details strategies and evidence-based practices for recruiting, supporting, and increasing college-going and persistence among underrepresented youth in dual enrollment programs, along with information on costs, expenditures, and indicators to monitor program effectiveness.
7. *Dual Enrollment Toolkit,* by Career Ladders Project, 2016, https://www.careerladdersproject.org/new-dual-enrollment-toolkit/#:~:text=The%20Toolkit%20is%20an%20online,complete%20their%20high%20school%20diplomas. This online resource houses official legal opinions, advisories, guidelines, and a Frequently Asked Questions (FAQs) section to support college administrators, faculty, and staff who are planning to build partnerships with K–12 districts to support dual enrollment efforts.
8. *Bay Region Dual Enrollment Administrator Guidebook,* by Anna Johnson, Sharon Turner, & Janine Kaiser, 2018, https://docs.google.com/document/d/1dGQ7fUqrRlLf9OOL-IUXshBbtFpXGUev3AFTgHqK498/edit#. This guidebook documents emerging and promising practices in common dual enrollment challenge areas, including student supports, data and administrative procedures, and professional development. The guidebook is illustrated with exemplars, case studies, and practitioner perspectives from dual enrollment programs throughout the San Francisco Bay Area.
9. *Transforming Educational Systems Toward Continuous Improvement: A Reflective Guide for K-12 Executive Leaders,* by Christina Dixon & Simone Palmer, 2020, https://www.carnegiefoundation.org/resources/publications/transforming-educational-systems-toward-continuous-improvement/. This guide summarizes the findings of a Carnegie Foundation project to understand how executive leaders in education use improvement science principles to transform their organizations to be capable of producing new levels of system performance. The guide describes key dispositions, core practices, and levers of transformation used by executive leaders and, within each of these categories, vital elements of successful executive leadership.

Chapter 2: Leading Equity-Focused Dual Enrollment

2.1 The Need for Leadership

Typically the group responsible for overseeing a dual enrollment program is a* partnership team *representing the participating high school and college. This team determines the purpose and design of the program, and oversees its implementation. To meet the needs of historically underserved students, dual enrollment math offerings benefit from having a clear purpose, an intentional design, and a carefully monitored implementation, all of which are the responsibility of a partnership team. If implementation efforts fall short of the course's equity goals, the team should test changes to improve the course.

Much has been written on effective leadership in both K–12[27] and higher education.[28] However, unique challenges emerge with leadership of **intersegmental partnerships** — extended, voluntary collaborations between different organizations working on a common problem. With multiple organizations come multiple priorities, authority structures, and systems to navigate. The infrastructure and processes that work within one system can become strained when working across organizations. In dual enrollment partnerships, high schools and community colleges typically have different academic calendars, bell schedules, instructional hours, access to technology, extracurricular demands, staffing structures, course registration, and advising processes.

Equally challenging are the differences in institutional culture. For example, colleges typically treat students as full and independent adults. Academic freedom is highly valued and shapes how decisions are made from the academic senate down to the individual classroom. And processes for decision-making are highly deliberative and often progress slowly. In contrast, high schools often treat students as young people not yet equipped to make their own decisions. The content of many courses is dictated by state or national standards. And principals have significant decision-making authority.

27 Marzano et al., 2005; Khalifa, 2018; Bambrick-Santoyo & Peiser, 2012

28 Fitch & Van Brunt, 2016; Buller, 2015; Kouzes & Posner, 2019

These are just some of the differences that shape how high schools and colleges operate — differences that often become hurdles students must navigate. Because dual enrollment exists at the intersection of these systems, the design and implementation of these courses often surface tensions between the structures, processes, and norms inherent to each.

In traditional dual enrollment offerings, these differences are often less apparent. These courses are often taken by academically well-prepared juniors and seniors who have the clear intention of attending a four-year university. The classes are frequently offered outside the regular high school bell schedule, often on a community college campus. Courses are selected based on student interest, often to fill a gap in what is offered at the high school. And the students' parents, often college graduates themselves, tend to be well equipped to help their children navigate the differences between a dual enrollment course and a more usual high school course. In short, traditional dual enrollment is a lot more like starting college early, and it commonly focuses on students who have the preparation and support to make a successful transition.[29]

Changing the system to serve new and different students means establishing a different kind of partnership — one focused on developing the necessary structures, processes, and norms to reduce or eliminate the opportunity gaps experienced by historically underserved students.

In contrast, equity-focused dual enrollment math is more likely to surface differences between high school and community college systems. Such a dual enrollment course should be designed to support the success of historically underserved students who have not been well served by traditional high school math sequences. These students have often struggled to complete one or more high school math courses. They are more likely to be the first in their family to attend college, and they may not know whether they want to pursue a two- or four-year degree. They also are more likely to have work, child care, or other significant household responsibilities outside of school.

Changing the system to serve new and different students means establishing a different kind of partnership — one focused on developing the necessary structures, processes, and norms to reduce or eliminate the opportunity gaps experienced by historically underserved students. This chapter considers an equity-focused leadership process that can address the common challenges (summarized in Table 1A in Chapter 1) that can emerge when attempting to plan, launch, and sustain a successful, equity-focused dual enrollment math course.

29 Moore, 2019

2.2 A Process for Equity-Focused Leadership

Launching a dual enrollment math course for historically underserved students requires joint leadership from the high school and the community college. The partnership team's work on the launch phase typically spans two academic years, with the first year focused on course selection and planning, and the second year focused on implementation and improvement. Once the course is launched, the partnership team may continue to meet, though its focus may expand to include additional sections or complementary dual enrollment offerings, topics that are not covered in this guide.

The partnership team has three main responsibilities: planning and coordination, recruitment and counseling, and instruction. Table 2A provides a rough timeline for the main responsibilities of the partnership team for launching a dual enrollment course.

Table 2A: Partnership Team Timeline and Responsibilities

Responsibility	Year 0: Fall Preparation	Year 0: Winter and Spring Preparation	Year 1: Implementation
Planning & Coordination	Assess Needs & Select Course	Launch Partnership & Plan Implementation	Monitor Progress & Continuously Improve the Course
Recruitment & Counseling		Recruit & Enroll Students	Monitor Progress & Support Enrolled Students
Instruction		Plan Scope & Sequence	Teach, Monitor Progress, & Continuously Improve the Course

Note: Planning for the second year of dual enrollment also happens during the Year 1 implementation.

Although this chapter focuses on the launch of a single new dual enrollment math course, the same process could be adapted for the implementation and monitoring of multiple courses as part of a coordinated equity strategy. Dual enrollment in English language arts or in career and technical education pathways, for example, might address other unmet needs for historically underserved students.

Given the work involved in an equity-focused dual enrollment partnership, aiming for multiple courses across several subject areas is advisable. However, starting with multiple courses is generally not a good idea. Launching a single course in a partnership's first year can serve as a test case for establishing an effective partnership, which can then go on to launch other dual enrollment courses.

Table 2B outlines a general process and several promising practices that support equity-focused planning and coordination by the partnership team.

Table 2B: Planning and Coordination Process and Promising Practices

Responsibility	Year 0: Fall Preparation	Year 0: Winter and Spring Preparation	Year 1: Implementation
Planning & Coordination	**Assess Needs & Select Course** (2.3.1) Equity-focused needs assessment	**Launch Partnership & Plan Implementation** (2.3.2) Partnership launch meeting (2.3.3) Timeline mapping	**Monitor Progress & Continuously Improve the Course** (2.3.4) Data discussion protocol (2.3.5) After-action review

The first planning step is to identify a compelling unmet need for historically underserved students in the district. There are often other — potentially competing — incentives for dual enrollment course selection. In California, for example, the state dashboard includes a College/Career Readiness (CCR) indicator that guides district planning processes. A student's completion of a semester of dual enrollment in an academic or career and technical education (CTE) subject improves the student's preparedness according to the CCR indicator. The CCR indicator incentivizes California districts to expand access to academic or CTE dual enrollment, but it does not ensure that courses are selected to address barriers experienced by historically underserved students.

An **equity-focused needs assessment** is one promising practice for ensuring a dual enrollment course is selected to meet a specific need experienced by historically underserved students. Promising practice 2.3.1 describes this promising practice in more detail. This exploratory work is led by representatives from both the district and the community college. Participation by leadership from the governing board, executive team, and the teachers' union is highly recommended. Only some of these participants may ultimately join the partnership team, but they can provide critical input on course identification and instructor selection.

Once a course is selected, the next step is to formally launch the partnership so it can begin the course-planning process. Ideally the team will include organizational or institutional leaders, counselors, and math representatives from both the high school and the college. This composition ensures the team will have the information, communication channels, and decision-making authority it needs to organize a successful course. Table 2C suggests possible representatives.

Table 2C: Possible Partnership Team Representatives

Role	High School	Community College
Organizational Leadership	Principal Associate Principal District Office Representative	Associate Dean Dual Enrollment Coordinator
Counseling	Counselor — Juniors Counselor — Seniors Counselor — Dual Enrollment	Counselor — Dual Enrollment
Math Instruction	Math Department Head Course Instructor	Math Department Representative Course Instructor
Other	Student Data Manager Union Representative	Institutional Researcher Union Representative

The core membership of the partnership team should be limited to approximately six people: one representative from the high school and one from the community college for each of the three main roles (leadership, counseling, and math teaching). Larger teams often have a hard time finding regular meeting times, and decision-making can become encumbered by lengthy discussion. If possible, the course instructor should be part of the partnership team.

The full partnership team's work should launch in the late fall or early winter. One promising practice for a successful start is a **partnership launch meeting** lasting a half-day or longer. A successful launch builds relational trust between team members, kick-starts the planning work, establishes shared goals, and sets a regular meeting schedule through the next academic year. Promising practice 2.3.2 describes this promising practice in more detail.

Once the partnership team is formed, regular meeting and planning routines begin. Implementing a new course requires significant administrative and scheduling work, in addition to the planning involved in recruiting students (Chapter 3) and preparing the course (Chapter 4). Given the length and complexity of the planning process, one promising leadership practice is **timeline mapping**, described in Promising practice 2.3.3. Creating a timeline helps the partnership envision the work, identify critical dependencies, and anticipate problems far in advance. A detailed timeline map is also a helpful tool for generating the right team meeting agendas and can anchor monitoring and improvement efforts.

A final consideration for the partnership team is progress monitoring and continuous improvement. Even the best-laid plans can fail to produce the desired outcomes, especially when a course is being offered for the

first time. Rather than waiting a full year to improve a course offering, engaging in progress monitoring and continuous improvement offers the opportunity to test changes in real time. In the spring, student recruitment and enrollment offers the first opportunity for monitoring progress. If enrollment is low or if focal students are underrepresented, the partnership team should support intervention efforts. Once the course begins, students' progress through the course should also be carefully monitored.

A **data discussion protocol**, described in section 2.3.4, is one promising practice for reviewing progress and making real-time adaptations to improve outcomes. However, in some cases learning happens that cannot be incorporated into real-time changes but that can contribute to improving future dual enrollment offerings. An **after-action review**, described in section 2.3.5, is another promising tool for taking stock of a particular phase of work. Three opportune times for after-action reviews are the end of recruitment and enrollment, the end of the first semester, and the end of the course.

2.3 Promising Practices for Equity-Focused Leadership

The following sections provide more detailed guidance on the five promising equity-focused leadership practices referenced in the prior section: an equity-focused needs assessment, a partnership launch meeting, a timeline mapping process, a data discussion protocol, and after-action reviews.

2.3.1 Equity-focused needs assessment

Purpose

Help ensure that a dual enrollment course addresses a specific, significant barrier facing historically underserved students by considering the following:

- **Student criteria.** Who are the historically underserved students not being effectively supported by the current system?
- **System analysis.** Where, specifically, are these students being underserved? Which are the biggest barriers to their success?
- **Course analysis.** Which college math courses are best suited to meet the needs of these students?
- **Course and support identification.** Which course and associated supports will be offered for dual enrollment? Who will teach the course? When will it be offered? What text(s) or instructional technology will be used?

Who Is Involved

An exploratory partnership team, which generally should include a high school principal, high school math department chair, college math department representative, and college dual enrollment coordinator.

Steps

1. **Identify students.** Review academic data on math course completion for different subgroups at the high school and the college. Compare data to requirements for graduation, college admission, and college completion. What are the characteristics of students for whom math is a barrier?
2. **Conduct analyses.** Based on these data, where are students underserved? Conduct empathy interviews with students, math teachers, counselors, and parents to better understand the barriers experienced by the identified students. What strengths do these students bring, and where have they struggled? What opportunities and barriers exist to supporting their success?
3. **Inventory courses and supports.** Which college courses are best suited to addressing the barriers identified above? What other supports are available to help address these barriers? Who is willing and able to teach the course?
4. **Select a course.** Given the preceding analysis, which course will be offered for dual enrollment, and with which supports? Who will teach the course and when will it be taught? What are the minimum criteria for allowing a student to take the course?

Common Breakdowns

- **Starting with the solution.** The opportunities to learn are significantly reduced if the assessment process begins with a solution already identified. Instead, begin the assessment process by reaffirming the importance of remaining student-centered. Select the course and associated supports best able to meet student needs.
- **Blaming students.** It is tempting to misattribute the outcomes of a system (e.g., a high remediation rate for Integrated Math II) to the ability of individual students (e.g., thinking "These students just aren't capable of college-level work"). However, any systematic differences between subgroups of students exist

because the system is organized to produce these differences. The goal of equity-focused dual enrollment is to create a system in which all students can succeed.

Supporting Factors

- Individuals with access to the necessary data and the ability to organize data in a way so that the team can make meaning from the data.
- A carefully selected set of data displays.
- Participation by a community college math faculty member who understands the math course options, available instructors, and any associated logistical or bureaucratic challenges.
- Scheduling problems. The identified course should be offered at a time and location that works for the focal students.

Tools & Resources

- *A Guide to Launching and Expanding Dual Enrollment Programs for Historically Underserved Students in California,* by Rogéair Purnell, https://rpgroup.org/Portals/0/Documents/Archive/Dual-Enrollment-Toolkit-Updated-Dec2015.pdf
- *Interview for Empathy* (an interview protocol), http://dschool-old.stanford.edu/wp-content/themes/dschool/method-cards/interview-for-empathy.pdf

2.3.2 Partnership launch meeting

Purpose

Help ensure that the planning work for a new dual enrollment offering begins with shared norms, clear roles, and a regular meeting routine; also collectively define what success looks like for an equity-focused dual enrollment course.

Who Is Involved

For planning the launch meeting, the organizational leads representing the high school and community college sides of the partnership (ideally the high school principal and the community college dual enrollment manager); for participating in the launch meeting itself, the partnership team members.

Steps

1. **Confirm team membership.** It is important that all members of the partnership team are able to attend the launch meeting, as many important decisions will be made at this meeting.
2. **Schedule the launch meeting.** Ideally the partnership team has at least a half day (4 hours) reserved to launch the planning work. Find a comfortable space where the meeting can be conducted without interruption, at either the college or the high school. For collaborative work, it is helpful to have a whiteboard and technology for projecting slides and/or working on documents.
3. **Identify meeting objectives.** Consider the most important objectives to accomplish during the first meeting, such as the following:
    a. Establish shared norms. How will the partnership team work together?
    b. Identify and assign roles and responsibilities. Who will be responsible for what?
    c. Build a shared understanding of the equity-focused needs assessment. Why is the course being offered?
    d. Set equity goals. Who is the course designed to serve? How many students will enroll? How many students will pass the first semester with a C or better? How many students will pass the second semester with a C or better?
    e. Schedule future team meetings. When, where, and how will the team meet through the end of the year?
    f. Map out the timeline (see 2.3.3). Review academic calendars and deadlines. What needs to be accomplished by when?
    g. Articulate clear next steps. Who will do what by the next meeting?
4. **Develop the agenda and facilitation plan.** The agenda for the launch meeting should be designed to accomplish the meeting objectives. Be sure to schedule breaks and opportunities for informal social interaction. For each item on the agenda, identify how much time will be allocated, who will lead the conversation, what materials or handouts are required, and any important facilitation notes. As with lesson planning, it is often helpful to anticipate where problems might emerge and what adaptations might be necessary.
5. **Hold the meeting and debrief.** With the right team identified, a clear set of objectives, and an elaborated facilitator's agenda, the meeting will hopefully go smoothly. In the spirit of continuous learning and improvement, reserving the last 5–10 minutes of the meeting to do a "plus/delta" of how the team experienced the launch meeting is especially important.

Common Breakdowns

» **Groupthink and hierarchy.** Meetings can get derailed by too much agreement. The most frequent reason for too much agreement is the authority relationship between team members. For example, a math teacher or counselor may not feel comfortable disagreeing with the high school principal, or an adjunct instructor may not feel comfortable expressing an opinion to a tenured member of the math faculty. The norm "All teach, all learn" can be a helpful way to recognize that every team member brings a unique and important perspective to the planning process.

» **Poor documentation or follow-up.** Even the best meetings can break down if key decisions are not well documented or if the follow-up communication is poor. Be sure someone is responsible for taking notes during the meeting, regularly summarize back to the group when key decisions are being made, and establish a common collaborative space in which all notes and materials can be shared.

Supporting Factors

» A skilled facilitator with a clear vision for what needs to be accomplished and how to guide or nudge a group past potential roadblocks.

» A shared collaboration space where everyone can access documents and materials.

» Common documents to structure the planning process.

Tools & Resources

» *Conversational Capacity: The Secret to Building Successful Teams That Perform When the Pressure Is On,* by Craig Weber, https://www.weberconsultinggroup.net/conversational-capacity/

» *Meeting Wise: Making the Most of Collaborative Time for Educators*, by Kathryn Parker Boudett & Elizabeth A. City, https://www.hepg.org/hep-home/books/meeting-wise

2.3.3 Timeline mapping

Purpose

Clarify the work of the partnership team, understand the calendars and important deadlines for each organization, and anticipate potential problems; create a timeline that guides the attention of the partnership team, facilitating the planning and implementation of an equity-focused dual enrollment course.

Who Is Involved

The partnership team, ideally during a partnership launch meeting.

Steps

1. **Compile essential information.** For mapping to go smoothly, as much relevant information as possible should be compiled ahead of time. The following information is especially helpful:
    a. Any memoranda of understanding (MOUs).
    b. Academic calendars.
    c. Instructor approval/orientation timelines.
    d. Course material deadlines.
    e. Any outstanding course approval requirements.
    f. Enrollment timelines.
    g. Student recruitment opportunities/events.
2. **Begin mapping.** The partnership team should collectively map each of the following:
    a. Instructional calendars. When will classes meet?
    b. Administrative calendars and deadlines.
        i. High school advising windows
        ii. High school master schedule
        iii. Adjunct instructor applications (if a high school math teacher meets minimum qualifications)
        iv. College course registration
        v. Drop/withdrawal deadline
        vi. Any additional high school or community college course approval deadlines
    c. Recruitment opportunities. What are the existing structures or opportunities to recruit focal students into the course, and when do these occur?
    d. Team meetings. Given this timeline, when should the partnership team meetings take place? (Ideally the partnership team will meet every two to four weeks, especially in the winter and spring before implementation.)
3. **Compile, revise, and share complete timeline.** At the conclusion of the mapping process, one person should be responsible for compiling, revising, and sharing a complete timeline with the partnership team. If parts of the timeline were unfinished, these should also be completed.

4. **Revisit the timeline at every partnership team meeting.** Use the timeline to help build the agenda for partnership team meetings. Note upcoming deadlines and reserve meeting time to review plans for upcoming work or to debrief recently completed tasks or events. Update the timeline as necessary.

Common Breakdowns

» **Missing or inaccurate information.** If key participants do not attend, if the necessary information is not easily at hand, or if erroneous information makes its way into the timeline, the resulting map risks leading the partnership team astray.

Supporting Factors

» A skilled facilitator with a clear vision for what needs to be accomplished and how to guide or nudge a group past potential roadblocks.

» A shared collaboration space where everyone can access documents and materials.

» Common documents to structure the mapping process.

Tools & Resources

» *Guide to Timeline Mapping,* a tool from FSG, https://www.fsg.org/tools-and-resources/guide-timeline-mapping

2.3.4 Data discussion protocol

Purpose

Provide a structured learning and improvement process that the partnership team can use, as the work unfolds, for making sense of new information on progress toward recruitment, enrollment, and course completion goals; for identifying important questions or next steps; and for updating and revising plans in light of new understandings.

Who Is Involved

The partnership team, during regular team meetings.

Steps

1. **Pre-work.** Prepare the data. Prior to meeting, create a clear, well-labeled data display, adding any appropriate target or goal information.
2. **Clarify the purpose.** At the start of a data discussion, address its purpose: What does the team want to learn or accomplish through the data discussion?
3. **Understand.** Orient the team to the data and answer clarifying questions.
4. **Describe.** What does the team notice?
5. **Interpret.** What hypotheses or explanations do members have about what they see? Are there alternative hypotheses?
6. **Next steps.** What does the team need to learn or do next?

Common Breakdowns

- **Poorly displayed data.** If the data display is not easy to understand and digest, the conversation can get derailed with clarifying questions, or important patterns may be obscured.
- **Skipped steps.** If the discussion facilitator does not play an active role leading the team through the protocol, important steps might easily be skipped. If the team goes straight to interpretation or next steps, it is much more likely this conversation will be based on misunderstandings of what the data do or do not mean.
- **Requiring consensus.** At the end of the conversation, it is okay if team members have different, potentially competing ideas about what to do next. Ultimately the team member responsible for the work will need to decide what to do next. More important than consensus is taking a learning stance. Try something, and if it is unsuccessful, adapt or abandon the idea and try something else.

Supporting Factors

- Clear, accurate, and accessible data displays.
- Specific, measurable goals against which the data can be assessed.
- A learning stance.

Tools & Resources

- *Data Wise, Revised and Expanded Edition: A Step-by-Step Guide to Using Assessment Results to Improve Teaching and Learning,* by Kathryn Parker Boudett, Elizabeth A. City, & Richard J. Murnane (Editors), https://www.hepg.org/hep-home/books/data-wise,-revised-and-expanded-edition
- Ladder of Inference tool for facilitating productive problem-solving meetings, by Jonathan Levene, https://blog.dce.harvard.edu/professional-development/solving-problem-problem-solving-meetings

2.3.5 After-action review (AAR)

Purpose

Consolidate learning after a phase of partnership work concludes, especially at the end of recruitment and enrollment, the end of the first semester, and the end of the course. Participants seek to discover what happened, why it happened, and how to replicate strengths and improve on weaknesses.

Who Is Involved

A facilitator, the partnership team, and any other key participants in that phase of work.

Steps

1. **Pre-work: Prepare the data.** Prior to the review, create a clear, well-labeled data display, adding any appropriate target or goal information. Also summarize key information about the work that happened.
2. **Clarify the purpose.** The purpose of an AAR is to discover what happened, why it happened, and how to replicate strengths and improve on weaknesses.
3. **Understand.** Orient the team to the data and answer clarifying questions. What was the team trying to accomplish? What happened?
4. **Describe.** What does the team notice?
5. **Interpret.** What hypotheses or explanations do members have about what they see? Are there alternative hypotheses?
6. **Consolidate learning.** What should the team do to replicate strengths and improve on weaknesses?

Common Breakdowns

» Missing people or information. The most important participants in the AAR are those with first-hand knowledge of how the work unfolded.

» Blaming individuals. The partnership team is responsible for the overall success of the course. The conversation should focus on learning and future work, rather than assigning responsibility.

» Scheduling. AARs take time, which partnership team members may have little of. With proper preparation, an AAR often takes approximately 90 minutes.

Supporting Factors

» A facilitator who manages but does not participate in the discussion. This person should be familiar with the work being reviewed.

» A shared understanding of the outcome and work being reviewed.

» A learning stance focused on sustaining or improving future efforts rather than assigning blame.

Tools & Resources

» *Foundations of the After Action Review Process,* by John E. Morrison and Larry L. Meliza, https://apps.dtic.mil/dtic/tr/fulltext/u2/a368651.pdf

Chapter 3: Forming a Cohort

3.1 The Need for Equity-Focused Recruitment

The focus of this chapter is the work of the recruitment lead, who is a member of the partnership team described more fully in Chapter 2. The recruitment lead heads the team's efforts to recruit and enroll a cohort of historically underserved students for an equity-focused dual enrollment math course.

Dual enrollment has been offered in many schools as an alternative to Advanced Placement (AP) courses, which tend to serve students who are already likely to attend and complete college.[30] Where dual enrollment is offered, the same students who might take AP courses tend to be the ones who self-select for the dual enrollment course or who are steered toward the opportunity by counselors.

In contrast, an equity-focused dual enrollment initiative must recruit and enroll historically underserved students to achieve its equity goals. At its core, recruiting with an equity focus involves broadening access for underserved students, while ensuring that students selected for the course are likely to be successful.[31] An equity-focused recruitment process will ensure that focal students are aware of the dual enrollment opportunity, understand its relevance to their academic and career goals, and feel empowered to make an informed decision about whether to enroll in the course.

Rigid eligibility requirements, preconceptions about who is a good fit for dual enrollment coursework, and a lack of access to information about dual enrollment opportunities are significant contributors to gaps in dual enrollment participation for historically underserved students.[32] Table 3A describes common challenges that prevent a dual enrollment initiative from effectively reaching, engaging, and enrolling historically underserved students.

30 Xu et al., 2019
31 Mechur Karp et al., 2013
32 Moore, 2019

Table 3A: Common Challenges for Equity-Focused Recruitment

Challenge	Explanation
The bar for course eligibility is too high.	**Instead of expanding the range of students who have access to dual enrollment opportunities, a high bar for eligibility results in having students recruited for the course who are already on a path to succeed in college.**
Focal students either are unaware of the opportunity or don't see it as relevant to their interests and goals.	Students who have struggled with math in the past, do not currently envision themselves as college-bound, or do not have a clear sense of their trajectory to and through college may not seek out dual enrollment opportunities or may not understand how the course fits into their academic and career goals.
Students do not make an informed commitment to enroll in the course.	Students are enrolled in the course without actively opting in. They have not fully internalized why they are there, how they stand to benefit from passing the course, the ramifications of failing or dropping the course, and the level of responsibility and time commitment involved.
Students struggle to navigate complicated enrollment processes.	To matriculate at the partner college and enroll in a dual enrollment course, students need to complete multiple forms, obtain necessary signatures, and have the information they need to apply to the partner college and register for the course. Students often lack clarity or support around completing the steps in the enrollment process, leading to frustrating experiences or failure to successfully enroll.

This chapter considers a process for recruiting and enrolling historically underserved students that addresses these challenges, which is an area of focus that is the main concern of the recruitment lead but also involves the full partnership team as well as others in the high school and the college. Getting the process right requires a clear and sustained equity focus, strategic planning, careful monitoring, and frequent adaptation during recruitment windows in the first several years that math dual enrollment is offered. Over time, recruitment is likely to become easier as students, families, teachers, and counselors all come to better understand the course, and as enrollment processes become routine.

3.2 A Process for Equity-Focused Recruitment

An equity-focused recruitment effort requires substantial up-front planning, well before the recruitment process begins. Assuming a course with a fall start, those spearheading recruitment efforts would likely develop a plan for recruitment in early winter, recruit students through the spring, and formally enroll students into the course at the college in late spring or summer (depending on college timelines).

Recruitment planning should build directly on the partnership team's equity-focused needs assessment (see 2.3.1). Through this assessment, some student groups are identified as historically underserved by the high school's current math course offerings. A dual enrollment math course is then selected that could better serve at least some subset of these students. The cohort formation process begins with the goal of enrolling these students.

Table 3B outlines the process for recruiting and enrolling students over the winter and spring (and possibly summer). For each phase of work, one or more promising practices are identified that can support or sustain the desired focus on historically underserved students. Each promising practice is detailed in greater length in section 3.3.

Table 3B: Cohort Formation Process and Promising Practices

Responsibility	Year 0: Winter	Year 0: Spring/Summer
Recruitment and Counseling	**Plan Recruitment** (3.3.1) Focal student identification (3.3.2) Student engagement plan (3.3.3) Student opt-in process	**Recruit & Enroll Students** [Implement plans] (3.3.4) Enrollment support process (3.3.5) Orientation to college (3.3.6) Monitoring process (ongoing)

The partnership team member responsible for leading recruitment is referred to throughout this chapter as the "recruitment lead." A high school counselor, who is likely part of the partnership team and also works closely with focal students, may be best qualified to take on this role. The actual work of recruitment, however, will span roles and responsibilities across the high school and college partnership, and the recruitment lead should plan to engage additional support throughout the recruitment process. Table 3C provides an overview of some of these potential support roles.

Table 3C: Support Roles for Recruitment

Position	Role
High school math teachers	Help identify students who are a potential fit for the course Draw on their relationships with students to spread awareness about the opportunity
High school leadership (e.g., principal, assistant principal)	Signal institutional support of the initiative's goals and equity objectives Help work through any administrative roadblocks to the recruitment and enrollment processes (for example, adjusting the master schedule or signing off on permission forms)
Dual enrollment coordinator or member of the college counseling team	Serve as a point person for questions regarding credit articulation and the enrollment process Provide a line of communication between the high school and college Arrange an orientation for enrolled students
Administrative support from the high school and the college	Keep track of whether students have submitted necessary paperwork to successfully enroll in the course Track down forms or additional information from students Monitor the progress of online enrollment or matriculation processes

The recruitment lead should start by **identifying a pool of "focal students"** who meet the criteria for the course set by the partnership team. While eligibility requirements for the course are ultimately set by the college, identifying a pool of focal students can help focus recruitment planning and inform the design of outreach efforts geared toward historically underserved students. The pool should be significantly larger than the number of students needed to fill the class, as not every potential student is likely to enroll. And it should focus on students who have not been well served by traditional math sequences, such as students who have repeated, failed, or are at risk of failing Algebra II, or students who have completed their high school math coursework requirements but have elected to not sign up for an additional year of math. It can also be helpful to solicit the input of math teachers or other high school staff who have insights into individual students' strengths, struggles, and work styles. Promising practice 3.1.1 has more detail on identifying focal students.

Once focal students have been identified, the recruitment lead should develop a **student engagement plan** that not only will build student awareness of the dual enrollment course but will help students connect the course to future academic, college, and career opportunities. This strategy should articulate the benefits and relevance of the course to target students and identify avenues to communicate this relevance and build student interest. Promising practice 3.3.2 suggests several approaches for engaging students.

Although a central goal of the outreach and engagement strategy is to expand historically underserved students' access to college-level math, it is also important that students make an informed choice of whether to enroll in the dual enrollment course. Even the best-taught college math courses can be challenging for students, especially if they have struggled with math in the past or have not developed strong academic habits. If the outreach strategy described here has been successful, all potential students will understand the relevance of the course to their academic and career goals, as well as the demands and expectations of the course.

With this information, students should be empowered to make their own decision to commit (or not) to participating in the course. A **student opt-in protocol** can structure a clear, consistent process for ensuring all enrolled students have made an informed commitment to take the course. This promising practice, described in 3.3.3, can also provide an early, reliable indicator of expected enrollment. As more students opt in, the recruitment lead, along with the larger partnership team, can monitor the cohort formation process.

Applying, matriculating into the college, and enrolling into a college course can be a confusing process for high school students and counselors alike, with multiple steps that are easy to miss. Well before the college enrollment deadline, the recruitment lead should have a plan in place to **help students navigate the college application and enrollment process**, described in promising practice 3.3.4.

Finally, the recruitment process can provide a valuable early opportunity to help students begin to see themselves as *college* students, while providing an introduction to the new college systems they'll be expected to navigate. A **college orientation,** described in promising practice 3.3.5, can provide an introduction to academic resources, counseling supports, college facilities, and grading procedures. Equally important is the opportunity to signal to students that they are starting their college journey, and that the experience ahead will be a departure from the high school courses they are accustomed to.

As the cohort recruitment efforts unfold, the recruitment lead (with support from the partnership team) should monitor their progress recruiting and enrolling students. The goal of a **progress monitoring process**, described in promising practice 3.3.6, is to see problems early so the student engagement plan can be adapted or supplemented and the enrollment target is met.

When it works as intended, the progress-monitoring routine serves as a feedback loop for testing and refining recruitment strategies and processes. For example, if information is shared at a general community information session, the number of participants can be tracked. Did 20 people show up, or was it 100? When numbers fall below the expected target, the recruitment lead, with support from the larger partnership team, can strategize about whether the plan needs to be adapted or supplemented.

3.3 Promising Equity-Focused Recruitment Practices

This section provides more detailed information on the six promising practices for equity-focused recruitment: identifying a pool of focal students, developing an engagement plan to reach focal students, having an active opt-in process, supporting students through enrollment, orienting students to the college experience, and developing a progress-monitoring routine.

3.3.1 Focal student identification

Purpose

Narrow recruitment efforts up front to ensure that recruitment reaches the right students and that students who are likely to be successful in another course offering will not take up space in or be inappropriately placed into the dual enrollment course.

Who Is Involved

Recruitment lead, with support from the larger partnership team, high school counselors, and math instructors.

Steps

1. **Develop a shared understanding of course goals and focal students**. The partnership team should ensure that staff involved in recruitment efforts have been oriented to what the team has identified as the equity goals and the criteria for who the focal students are.
2. **Identify a broad pool of students who meet recruitment criteria**. To start, the recruitment team might use academic records to identify a broad pool of students who meet target criteria. For example, the team might identify all rising juniors and seniors who have repeated, failed, or are at risk of failing Algebra II, or students who have not signed up for another math course the following year.
3. **Solicit math teacher input to refine the pool of focal students**. Math teachers often have insights into individual students' struggles, goals, and work styles. The recruitment team might consider sending an Excel list of the initial pool of focal students to math teachers who can then add to the list any students who might have been missed, or flag students who might not be the best fit even though they meet the focal criteria (for example, perhaps a student struggled in the past but is now back on track to progress through the traditional high school math pathway, or has frequently fallen behind on assignments and may struggle with the self-directed nature of college coursework).
4. **Consider broadening or narrowing criteria to align with enrollment targets**. Not all students identified will be a strong fit for the course, and not all recruited students will choose to enroll. If this early pool of students is too small, the recruitment team should consider broadening criteria to include more students. Conversely, if the early pool of students is significantly larger than enrollment targets, the recruitment team might consider additional criteria to narrow its focus.

Common Breakdowns

- **Recruitment criteria don't align to equity goals**. If the recruitment criteria allow students whose math experience or academic achievement is too high, recruitment efforts are likely to attract students who are already on the trajectory toward a college degree and likely have other opportunities (whether in a more traditional dual enrollment course, an Advanced Placement course, or the traditional high school math sequence). And without a clear sense of the lower boundary — the minimum level of math experience needed — recruitment efforts risk attracting students who do not have the background necessary to succeed in the course. Making both the "ceiling" and the "floor" explicit will help the recruitment team home in on the students who stand to benefit the most from the course.
- **Lack of clarity around course goals and focal students**. Counselors can be reluctant to place students who have struggled with math into a challenging course without a clear understanding of how

the course is intended to serve them, the high school and college credit they can earn, and the support they'll receive in the course.

» **No refinement of focal criteria based on new information**. The initial pool of focal students is just a starting point. As the recruitment lead follows up with students, parents, and high school staff, additional information should lead to refinement of this list, if needed. The recruitment team may also need to adapt recruitment criteria as the process unfolds, to help ensure enrollment targets are met.

Supporting Factors

» Clear equity-focused objectives and focal student criteria communicated from the partnership team.

» Input from math teachers, counselors, and other staff who can identify students who are a promising fit for the course.

3.3.2 Student engagement plan

Purpose

Articulate an action-oriented strategy for recruiting students, with particular attention to focal students (identified in promising practice 3.3.1); ensure that focal students not only are aware of the opportunity but also understand the course's relevance to their goals, interests, and potential college and career pathways.

Who Is Involved

Recruitment lead, with the support and input of other staff involved in reaching out to students.

Steps

1. **Build a case for the course's relevance**. Before recruitment begins, the recruitment team should have a strategy to articulate the following information to students:
    a. The type of college credit available through the course.
    b. How the course and associated credit are relevant to college academic and career pathways.
    c. The financial value of completing the course.
    d. How this learning experience will differ from what students have experienced in the past (such as opportunities students will have for collaborative group work, project-based learning, or applying mathematical concepts to real-world scenarios).
2. **Identify and plan to leverage existing relationships**. Who are the people who know the focal students best and are in a position to advise them?
    a. Math teachers can leverage their frequent interactions and close relationships with students to encourage them to consider the course, and to talk through any concerns students may have.
    b. Peers can share their experience, driving home to target students that if others have taken on the challenges of such a course, they can too. The recruitment team might also be able to arrange for current college students to visit the high school to share their experiences with the course.
    c. Parents and guardians can be invited to attend parent information sessions or receive individual letters or phone calls describing the opportunity.
3. **Consider avenues available for building student awareness about the opportunity**.
    a. Broad-based dissemination efforts: Such efforts might take advantage of school or district websites, informational flyers posted around the school and the community, and/or visits to student math classes to raise awareness.
    b. Efforts specifically aimed toward focal students who might be missed by other efforts to publicize the course: For example, students might receive personal invitations to an information session, or the recruitment lead might enlist a teacher, coach, or parent to talk with a student about the opportunity.

Common Breakdowns

» **Assuming students will seek out the opportunity on their own**. Relying solely on traditional channels to publicize the course (e.g., district websites, flyers) or assuming that focal students will seek out the dual enrollment opportunity independently risks missing the focal students the course is designed to serve.

- **Focusing on the what, not the why.** For many students, the early outreach efforts might be their first chance to seriously consider their path toward a college degree, and the recruitment team should work to situate the course within the larger college major and career pathways that the course applies toward. Telling students that completing the course constitutes, for example, "three units of UC/CSU transferable credit" or "the completion of transfer-level math" may feel abstract to them. The recruitment team should look for opportunities to contextualize the benefits of taking and passing the course.
- **Not planning to track student engagement and follow up**. Outreach efforts are likely to miss some students who are a strong fit for the course. They may not attend information sessions, may have parents/guardians who are reluctant about the opportunity, or may need more hands-on advising to understand the course's relevance. Recruitment teams should plan to follow up with students who are a strong fit for the course but haven't expressed interest to learn why.

Supporting Factors

- A clear sense of who the focal students are (see promising practice 3.3.1).
- Starting early. Without sufficient time, even the best-laid plans are likely to fall short.
- A supportive high school math department. If high school math teachers know students and understand the new course, they are a great conduit for students.
- A well-informed advising team.

Tools & Resources

- *A Guide to Launching and Expanding Dual Enrollment Programs for Historically Underserved Students in California,* by Rogéair Purnell (section 2b of the Purnell guide highlights strategies for targeted recruitment and outreach to students), https://rpgroup.org/Portals/0/Documents/Archive/Dual-Enrollment-Toolkit-Updated-Dec2015.pdf
- *Fremont Union High School student FAQs,* provided in Appendix A (answers to commonly asked questions from students considering a dual enrollment math course; many of the students have struggled with math in the past)

3.3.3 Student opt-in process

Purpose

Ensure that students have made an active decision to enroll, understand the stakes involved, and are committed to the effort required for success.

Who Is Involved

The recruitment lead and high school counseling team.

Steps

1. **Develop clear procedures for student enrollment**. Provide students with a clear path forward, while ensuring they have the information they need and are engaging in a deliberate and independent decision-making process. This procedure might include:
    a. Requiring students to attend an information session, or one-on-one counselor meeting, to receive dual enrollment forms and learn about the opportunity.
    b. Scheduling one-on-one conversations with students who need additional advising support to make a decision about the course. For example, these might be students who have a heavy senior course load, have had attendance issues in the past, or are on the cusp of academic preparedness for the course. More high-touch guidance might also be important for students who are a strong fit for the course but haven't attended information sessions or returned necessary paperwork.
    c. Scheduling an "enrollment meeting" for students to return forms, apply to the college, and enroll in the course. This meeting might also include time set aside for taking any placement exams required by the college.
    d. Signing a course "compact." As a supplement to the formal dual enrollment paperwork, a compact can formalize a student's commitment to the course and reiterate course responsibilities and expectations.
2. **Across all recruitment touchpoints, help students understand the stakes and what is required to be successful**. The recruitment lead should consider what students need to know ahead of time to fully commit to the course, and should use these points to anchor information and advising sessions. Key points include:
    a. The importance of attendance.
    b. The significance of college transcripts, and implications of a non-passing grade.
    c. Extra study time expected to be successful.
    d. Balancing the course with other commitments.
3. **Work with students to come up with a plan for identifying and addressing potential challenges**. Elements of a plan might include time management strategies to balance overall course load and extracurricular activities, study habits, internet access, child care, and so on. Attention to these kinds of challenges is especially important for students who need to balance the course with other high school classes required for graduation.

Common Breakdowns

» **Students are placed into the course without their knowledge**, or are placed into it after expressing initial interest but are not actively opting in.

- **Students are pressured into taking the course**. Recruitment efforts should emphasize the benefits of the course, build students' confidence in their ability to succeed, and support students through the enrollment process, and should provide reminders and an extra "push" where needed. Nonetheless, the decision to enroll should ultimately lie with the student. The recruitment lead should be especially mindful of this dynamic when engaging parents/guardians to build student interest in the course.

Supporting Factors

- An effective student engagement plan (see promising practice 3.3.2) that clearly communicates course relevance, expectations, and steps required to enroll in the course.

3.3.4 Enrollment support process

Purpose

Provide students with the guidance they need to navigate the college application and enrollment processes.

Who Is Involved

Recruitment lead, with support from high school counselors, college counselors, and dual enrollment coordinator.

Steps

1. **Identify what information and paperwork students need for application and enrollment**, and work with students to gather this information in advance. For example, students typically need a dual enrollment form with signatures from the student, guardian, and principal. To apply to the college, students often need a working email address and their Social Security number.
2. **Arrange for a counselor to visit the high school to walk students through the college application and course registration processes**. The recruitment team can book a room with computers during a time when selected students are available (for example, during a common study block). Alternatively, the college counselor and high school staff can be available in a designated place throughout the day to help students on a drop-in basis.
3. **Have a plan for missing or incomplete paperwork**. Designate support staff at the college and the high school to monitor enrollment paperwork and follow up with students.
4. **For courses that span multiple semesters, arrange for students to complete one round of paperwork**. If the course spans multiple semesters, students often need to enroll and submit parental consent forms twice. If possible, work with the college counseling team to allow students to complete as much paperwork as possible for both semesters in one go.
5. **Confirm student enrollment status**. Before the course begins, and prior to the end of the enrollment window, the recruitment lead should confirm with the college that all students who intend to take the course have successfully enrolled. Leave enough time to follow up with any students who have missed steps.

Common Breakdowns

» **No follow-up.** Follow up to ensure each student has completed all paperwork and steps.

Supporting Factors

» Strong communication routines between high school counselors and college staff who manage enrollment.

» A dedicated counselor or staff member at the college who handles enrollment for the course.

» Administrative support at the college and the high school to monitor paperwork and enrollment status, and for following up with students as needed.

Tools & Resources

» *Career Ladders Project Dual Enrollment Toolkit FAQs* (includes strategies and approaches for registration, enrollment, and scheduling), http://www.careerladdersproject.org/wp-content/uploads/2015/12/FAQ-DETOOLS-1.23.2017.pdf

» *Bay Region Dual Enrollment Administrator Guidebook* (includes a number of examples of strategies and tools used by partnerships to create smoother enrollment processes and reduce the administrative burden of paperwork), https://docs.google.com/document/d/1dGQ7fUqrRlLf9OOL-IUXshBbtFpXGUev3AFTgHqK498/edit

3.3.5 Orientation to college

Purpose

Provide students with an opportunity to build a sense of belonging and connection to the college community, while orienting them to college expectations, procedures, and resources.

Who Is Involved

Recruitment lead and college counseling representative, with support from college staff.

Steps

1. **Plan a day/time to bring students to the college campus,** if possible.
2. **Consider the key resources, services, and policy information that students need for understanding and navigating the college environment**. The orientation might cover the following:
    a. Student support services. What opportunities do students have for tutoring or social-emotional support? How can they access those opportunities?
    b. Grading and academic policies. How are grades determined? How can students access grades and navigate online portals? What does it mean to drop or withdraw from the course, and when are the deadlines? What are college policies on academic dishonesty? What are dual enrollment students' rights under FERPA?
    c. College credit. Review the credit that students can receive through the course and its relevance to major and career pathways — both at the college and as it applies toward degrees for transfer.
    d. Introductory information about key college functions. Provide information about admission and records, for example, to give students a sense of "how college works."
3. **Involve key college staff**. Key staff might include the instructional counterpart from the college (if the course is taught by a high school teacher), a college counselor, the department chair, and representatives from student support or academic services.
4. **Identify opportunities for building students' connection to their college community**. Opportunities might include a "coffee chat" with current students, time or channels for asking questions of faculty, a campus tour, an official college ID badge, and college game or event tickets.

Common Breakdowns

» **Orientation takes place online or at the high school.** While not all dual enrollment programs will be able to arrange for an on-campus orientation, the opportunity to visit the college campus can serve as a powerful experience to help students better envision themselves as college-going students.

Supporting Factors

» Buy-in and engagement from college partners.

» Orientation held on the college campus, if possible.

» A parent/guardian orientation, which can help parents and guardians understand college resources, expectations, and how to best support their students. An orientation can be especially impactful for the parents of first-generation college-going students.

Tools & Resources

» *Bay Region Dual Enrollment Administrator Guidebook* (recommendations for holding student orientations, along with approaches and resources from dual enrollment partnerships), https://docs.google.com/document/d/1dGQ7fUqrRlLf9OOL-IUXshBbtFpXGUev3AFTgHqK498/edit

3.3.6 Monitoring process

Purpose

Help the recruitment team understand if it needs to adapt its strategy to reach focal students and meet enrollment targets.

Who Is involved

The partnership team, especially the recruitment lead.

Steps

1. **Have a recruitment goal**. Begin the recruitment process with a clear sense of who focal students are and how many seats the course should fill.
2. **Identify key progress indicators**. Indicators should signal whether recruitment efforts are on track to meet the recruitment goal.
3. **Make predictions**. Predictions can provide the recruitment team with benchmarks for understanding the impact of outreach efforts. For example, if recruitment efforts are working as planned, how many students will attend information sessions? How many students will visit counselors for follow-up conversations? How many will be recommended by math teachers?
4. **Develop a method for tracking student engagement and interest**. The recruitment team should have a plan for tracking key indicators.
5. **Take stock and adapt the recruitment strategy as needed**. As the recruitment team tracks student engagement against predictions, the team might consider:
    a. Expanding or narrowing the initial pool of focal students.
    b. Following up with individual students who are a strong fit for the course but have not engaged in recruitment efforts or returned paperwork.
    c. Taking stock of emerging student or parent/guardian questions and concerns, and coming up with a plan to address those concerns.
6. **Plan for periodic check-ins with the partnership team**. Check-ins might be at the start of recruitment to strategize around the recruitment plan, and at a midway point to revisit how the strategy is working.

Common Breakdowns

» **Review of recruitment data takes place too late in the process.** Examining recruitment process data too should take place while there is still enough time to adapt strategies.

» **Insufficient partnership team meeting frequency** or time to identify and respond to emerging challenges.

Supporting Factors

» A shared system for tracking student engagement that is used by all staff who are leading recruitment efforts.

» Partnership meetings scheduled in advance to respond to emerging challenges.

Chapter 4: Supporting Historically Underserved Students

4.1 The Need for Supports

A central premise of this guide is that most high school seniors are fully capable of succeeding in a college-level math course. But their success cannot be taken for granted. The leadership of equity-focused dual enrollment efforts must organize math courses for their success.

In the context of having a partnership team that selects the right course, establishes strong coordination and communication routines, and monitors implementation (see Chapter 2), and having a recruitment process focused on ensuring that historically underserved students understand how and why the course serves their goals and ensuring that they are enrolling by choice (see Chapter 3), this chapter addresses common barriers to student learning and the kinds of support instructors and counselors can provide to help all students succeed.

An equity-focused dual enrollment math course is likely to embody an approach that is often known as reform-based mathematics, which typically requires more ambitious teaching by instructors to produce more ambitious learning on the part of students than typically occurs in what may be considered more traditional math courses. The National Council of Teachers of Mathematics (NCTM) has identified eight effective mathematics teaching practices that help characterize this more ambitious kind of instruction:

- Establish mathematics goals to focus learning
- Implement tasks that promote reasoning and problem-solving
- Use and connect mathematical representations
- Facilitate meaningful mathematical discourse
- Pose purposeful questions
- Build procedural fluency from conceptual understanding
- Support productive struggle in learning mathematics
- Elicit and use evidence of student thinking[33]

33 National Council of Teachers of Mathematics, 2014

These evidence-based practices may be more familiar to high school math teachers, as these practices are well-aligned with Common Core State Standards (CCSS) learning outcomes for students. But community colleges are increasingly also recognizing them as effective practices for quality college-level math instruction.[34]

This chapter makes three assumptions about the structure of the dual enrollment course, which may not hold true for every partnership. One assumption is that the course is offered onsite at the high school to facilitate easy access for historically underserved students. But if the community college is nearby and students can easily move between the high school and college campuses, that may be preferable. Another assumption is that the course is taught during a standard high school bell schedule. However, if the high school offers full block scheduling, the longer class periods could ease many of the planning challenges inherent in adapting longer college lessons to shorter high school bell periods. A final assumption is that the instructional lead is teaching the course alone. That said, if time, resources, and instructional dispositions allow, it is worth considering a co-teaching model whereby a college instructor teaches alongside a high school math teacher.

Regardless of whether or not these assumptions hold true, many of the challenges summarized in Table 4A are likely to arise for historically underserved students, especially those who have struggled with math in the past.

Table 4A: Common Challenges to Supporting Students

Challenge	Explanation
Course pacing is designed for college schedules and calendars, not a high school setting.	High school math courses often meet every day, whereas college courses often meet 2–3 days per week for longer class periods. This structural difference means more time lost in class transitions in high school. It also means that lessons designed for longer bell periods may need to be redesigned for a high school setting. Finally, high school classes are more frequently interrupted for assemblies, testing, and other student supports, such as working on college applications.
Students have difficulty accessing course content.	Course textbooks often rely on text-heavy word problems and descriptions of mathematical content, especially reform-based math curricula that offer more richly contextualized examples and problems. As a result, differences in student literacy levels can lead to differences in student engagement and learning of mathematical content.

34 American Mathematical Association of Two-Year Colleges, 2018

Challenge	Explanation
Students have difficulty working and learning in groups.	Effective math instruction often involves group work around specific cases, projects, or problem sets. This group work may be unfamiliar to some students, and it can be made more difficult in a high school context where students are younger and, in many cases, are likely to know one another and have well-established social relationships. Less productive group work means a less productive learning experience.
When students get academically off-track, they are not identified early and provided with timely support.	Students may slip by without intervention, and students themselves are often unclear about their current standing in the course and how their grades are calculated.
The course does not effectively scaffold students' transitions into successful, independent college-going adults.	The transition from high school to college is not just a shift in place; it is also a shift in mindset and identity. When a dual enrollment course is offered on a high school campus, which means during a regular high school bell schedule and with familiar classmates, it can feel like any other high school course — especially if the instructor is also a high school teacher. But a dual enrollment course is a college course, and it comes with college-level expectations and demands on students.

This chapter offers ideas for addressing these challenges through a collaborative support process. The primary focus is on supports provided during regular instructional time, because this is when all students can benefit from these learning opportunities. However, some of the promising practices detailed in section 4.3 also recommend supplemental supports for students that may occur outside this time.

4.2 A Process for Supporting Students

Given these challenges, effectively supporting historically underserved students requires a student-centered approach to instruction. This work begins with designing the scope and sequence in the winter and spring before class begins. And it continues throughout the academic year, monitoring student progress, developing and testing supports, and staying in regular communication with counselors and the larger partnership team.

This process is driven by the dual enrollment instructor, or instructional lead, with support from the partnership team. Table 4B outlines a general process and several promising practices for effectively supporting students.

Table 4B: Instructional Support Process and Promising Practices

Responsibility	Year 0: Winter/Spring	Year 1: Fall/Winter/Spring
Instruction	Prepare (4.3.1) Instructional planning	Teach, Monitor, & Support (4.3.2) College success supports (4.3.3) Literacy supports (4.3.4) Group work routines (4.3.5) Instructor-counselor communication routines

In the winter or spring before the course begins, the instructional lead should focus on understanding the course learning objectives, curriculum, and associated pedagogy. It is particularly important to understand constraints and adaptations that may need to be made to offer the course on a high school schedule.

Scope and sequence planning is one way to ensure that the course objectives are met within the constraints of the high school calendar and bell schedule. Accommodations may need to be made for school assemblies, testing, or other planned events that are uncommon on college campuses. Equally important, this planning process is an opportunity to clarify course objectives and standards, along with associated assessment practices and expectations. In some cases, difficult decisions may need to be made about the depth of content coverage. Once the course begins, the instructor should continue to track the class's content coverage against this plan, identifying places where course adjustments or adaptations may need to be made. Promising practice 4.3.1 describes this promising practice in more detail.

During this planning process, the instructional lead should also consider when and where **college success supports** could be integrated into the course. In some cases, a second dual enrollment course that is focused on preparing students for college can be offered, creating a dedicated space outside of the dual enrollment math course. Regardless, some supports should still be integrated directly into the math course, and section 4.3.2 recommends several promising practices for supporting college success.

As students get deeper into the course content, they may find some of the language or contexts used to set up math problems unfamiliar. To address this barrier, the instructor may need to design literacy supports that enable all students to access course content. One promising practice for supporting engagement is a **scaffolded reading assignment**. Promising practice 4.3.3 describes this practice in greater detail.

Reform-based mathematics instruction also involves regularly engaging students in group work as a way to promote productive struggle with math content.[35] When used effectively, group work allows students to actively

35 Richland et al., 2012

support one another in the learning process, explore different potential solutions, and grapple with conflicting answers or approaches. However, engaging in this kind of learning process may be new to some students, especially in mathematics. Promising practice 4.3.4 recommends a **collaborative group work routine** that can help students learn with and from one another.

Finally, sometimes students have difficulty learning math because of challenges they encounter outside of class. The math instructor may notice something is wrong based on a student's absence, affect, or grades, but may not have the information or expertise to intervene. Under these circumstances, a strong working relationship between the instructor and the counseling teams at both the high school and the college can help ensure students receive timely and effective support. Promising practice 4.3.5 describes **regular communication routines** that instructors and counselors can use as an early warning system, helping students before they get off-track.

4.3 Promising Practices for Supporting Students

This section provides more detailed information on five promising practices for supporting dual enrollment students: instructional planning, college success supports, literacy supports, group work routines, and instructor-counselor communication routines.

4.3.1 Instructional planning

Purpose

Allow instructors to cover essential course content at the same level of rigor as a traditional college course, while adapting to a high school schedule and student learning needs.

Who Is Involved

Course instructor, with support from partnership team and a partner instructor at the college.

Steps

Before the course:

1. **Identify the critical content students must know to pass the course**. This step likely involves backwards mapping from assessments. If the instructor has not taught the course previously, then, if possible, the instructor should work with a partner who has taught the course at the college before.
2. **Identify the depth at which students need to understand this content**. Some topics necessitate a high level of mastery or are foundational to subsequent content. Others might require a more surface-level understanding. Identifying the nature of topics in advance will signal where instructors may need to allocate more time, as for foundational topics, or may need to revisit content throughout the semester.
3. **Map out general instructional time available for the course at the high school**. Account for different start and end dates than the college, different holidays and breaks, and scheduling considerations that are specific to the high school, such as assemblies and state testing.
4. **Develop a course sequence to cover course content at an appropriate level of depth**. With a grasp of the critical content students need to know to pass the course, and of the instructional time available to cover this content, the instructor can plan a course sequence, including planning what to cover in depth and building in time for review and reteaching.
5. **Anticipate when flexibility and adaptation might be necessary**. For example, consider where students may struggle and need to revisit content, or where it may take longer for students to grasp essential concepts before progressing to new content.

During the course:

6. **Monitor pacing of instruction weekly**.
7. **Identify when additional adjustments to instruction are needed**. Adjustments might include condensing lessons by assigning fewer problems for a particular concept, or extending lessons to allow for necessary reteaching.
8. **Hold regular check-ins with instructor counterparts at the college** to ensure pacing is on track and to troubleshoot when needed.

Common Breakdowns

» **Overestimating the amount of instructional time available for courses taught at the high school.** Compared to colleges, high schools often have class periods that meet more frequently for shorter periods of time. While the total amount of instructional time may be similar at the college and the high school, instructors teaching a dual enrollment course in a high school setting need to account for time lost to transitions and potential disjointedness due to shorter instructional periods.

- **Giving equal time and attention to all content (or blindly following the textbook).** Instructors will need to be deliberate about which topics they spend time on to ensure students are prepared for assessments, which may mean skipping or combining chapters or revisiting content in greater depth as the course progresses.
- **Waiting for mastery across all students before moving forward.** A class can quickly fall off pace, meaning students will be less prepared for assessments (the content and rigor of which are typically non-negotiable). To stay on pace while supporting all students, instructors should plan to revisit and reteach material, embed review into their lesson plans, and help students access tutoring supports.

Supporting Factors

- Guidance from an experienced college course instructor. If the instructor is new to teaching the course, it is helpful for the college math department to identify an experienced instructor who can assist with the course planning process. In addition to providing support for planning scope and sequence, this relationship can help ensure the alignment of expectations and learning objectives across sections offered at the high school and the college.
- Guidance from an experienced high school instructor (for instructors who are new to teaching at the high school level). It can be helpful for the principal to identify an experienced high school math teacher who can assist with the course planning process, especially integration into a high school bell schedule and academic calendar.

Tools & Resources

- *Career Ladders Project Dual Enrollment Toolkit FAQs* (includes information on topics that are outside the scope of this guide but nonetheless important, such as orienting college-based instructors to high school processes and providing them with pedagogical and classroom management approaches to support students who are younger than the students they are used to; likewise, the FAQs have information for supporting instructors based at the high school to adapt their instruction and expectations to create an authentic college environment), http://www.careerladdersproject.org/wp-content/uploads/2015/12/FAQ-DETOOLS-1.23.2017.pdf

4.3.2 College success supports

Purpose

Help students develop the academic and social-emotional skills they need to be successful in college-level coursework.

Who Is Involved

Course instructor, with support from partnership team and a partner instructor at the college.

Steps

During course planning:

1. **Identify the skills, behaviors, and mindsets students need in order to be successful in the course**. For example, these might include time management, strategic studying, note-taking skills, self-awareness around performance, and analysis and problem-solving skills.
2. **To help students develop these skills, plan for scaffolded supports that gradually lessen over time**. Consider:
    a. How and when will these skills be introduced and made explicit to students?
    b. What strategies will the course use to help students further develop these skills?
    c. How will the instructor know these strategies are working?
    d. Where are opportunities for the instructor to step back and let students enact these skills with more independence?
3. **Consider providing a short "bridge" course or concurrent "college success" course** that helps students develop the mindsets and academic habits needed for college success.

At the start of the course (to set up students for success):

4. **Orient students** to the class syllabus, expectations, and grading policies.
5. **Remind students about their opportunities for receiving additional support**, building on the information shared during their college orientation. Stress that college students are expected to be proactive about seeking help.

During the course (to reinforce college skills, behaviors, and mindsets):

6. **As students build their college success skills, gradually provide students with more substantial opportunities to exercise those skills.** For example, allow students to develop their own strategy to tackle a problem in a group (rather than providing prompts or steps), gradually have students transition to taking their own notes rather than using a template, and/or have students identify and correct their own mistakes after an assessment.
7. **Provide students with frequent opportunities to understand their progress**. High school students may not be accustomed to tracking their own progress, and instructors should help students develop skills for monitoring their performance.
8. **Develop students' agency to understand and improve their own performance**. Work with students who are struggling to develop an "action plan" to notice the challenges they're encountering, and develop habits and behaviors that will help them get back on track.

9. **Keep course value a central focus**. Students will likely feel overwhelmed and challenged at points throughout the course. Work to focus students on why they are there, the lifelong skills they are in the process of developing, and the opportunities the course will open to them. Anchor content, assignments, and course policies in these opportunities.

Common Breakdowns

» **Providing too much — or too little — support.** Supports should be scaffolded and intentionally planned to help students develop college success skills, habits, and mindsets.

Supporting Factors

» A dedicated counselor at both the high school and the college, who can work with the instructor to integrate college supports into the course and can provide guidance regarding outside resources to support students (e.g., college tutoring services).

Tools & Resources

» *Rethinking College Readiness,* by David T. Conley (a short article on four facets of college readiness: cognitive strategies, content knowledge, academic behaviors, and contextual skills and knowledge), https://files.eric.ed.gov/fulltext/EJ794245.pdf

» *Promoting Student Learning and Productive Persistence in Developmental Mathematics: Research Frameworks Informing the Carnegie Pathways,* by Ann R. Edwards and Rachel L. Beattie (a paper on two research-based frameworks for instruction in accelerated, developmental mathematics pathways), https://files.eric.ed.gov/fulltext/EJ1097458.pdf

» *A Guide to Launching and Expanding Dual Enrollment Programs for Historically Underserved Students in California,* by Rogéair Purnell (provides an overview of different types of support services to help students succeed academically and socially), https://rpgroup.org/Portals/0/Documents/Archive/Dual-Enrollment-Toolkit-Updated-Dec2015.pdf

» *Different Approaches to Dual Enrollment: Understanding Program Features and Their Implications,* by Linsey Edwards, Katherine L. Hughes, & Alan Weisberg (details approaches for offering "college success" classes and integrated supports for dual enrollment students), http://ccrc.tc.columbia.edu/media/k2/attachments/dual-enrollment-program-features-implications.pdf

» *Career Ladders Project Dual Enrollment Toolkit FAQs* (see page 17 of the FAQs for an overview of practices, approaches, and strategies to support dual enrollment students at both the high school and the college), http://www.careerladdersproject.org/wp-content/uploads/2015/12/FAQ-DETOOLS-1.23.2017.pdf

4.3.3 Literacy supports

Purpose

Provide a scaffolded set of reading prompts to support student understanding of vocabulary and key concepts in an assigned text.

Who Is Involved

The course instructor, possibly with input from the high school counselor and other high school teachers to help the instructor better understand student literacy levels and how to support students.

Steps

1. **Identify reading assignments where scaffolded reading supports will be helpful**. This should be part of an instructor's unit and lesson planning routines. This might include sections of the textbook that embed mathematical concepts in real-world scenarios or case studies, or word problems that require contextual knowledge and specific vocabulary to understand.
2. **Plan for the assignment**. Identify core ideas, vocabulary needed to understand the text and mathematical concepts being introduced, connections from prior learning, and potential student misperceptions.
3. **Design a scaffolded reading assignment template** for students to use as they preview and read the text. The template might include:
    a. A customized engagement question to help students make a real-world connection to the concept.
    b. A question asking students to identify the "big ideas" from the selection.
    c. A place for students to ask clarifying questions about the content.
    d. A place for students to identify and define any new vocabulary.
    e. A place for students to make connections to previous content.
4. **Preview the scaffolded reading assignment with students.**
5. **Review student work.** Identify student misperceptions and areas of struggle, and adapt instruction to address these.

Common Breakdowns

- **Textbook reading level.** Math texts are often written at a reading level that is higher than students' current reading level.
- **Time needed to interpret and re-read texts.** This can take away from time for learning math content.

Supporting Factors

- Planning time for instructor to preview math assignments for possible reading barriers.
- Instructor understanding and appreciation of the role reading literacy plays in navigating math texts.
- Instructor collaboration with a literacy instructor at the high school to anticipate and identify literacy barriers for students (especially for college instructors who don't have experience in this area).

Tools & Resources

» *Supporting English-Language Learners — Strategies for Instructors* (a one-page overview of strategies to engage students who are English language learners, a ng with relevant research and background reading; from Career Ladders Project), https://www.careerladdersproject.org/wp-content/uploads/2019/08/Supporting-English-Language-Learners_Final1.pdf

4.3.4 Group work routines

Purpose

Provide students with a structure and guidance for effective group work.

Who Is Involved

Course instructor.

Steps

1. **Establish group roles and responsibilities**. For example, roles might include:
    a. *Facilitator:* The facilitator leads the team discussion and keeps the group on task by summarizing the work that the team is trying to accomplish, reminding everyone of their roles and making sure everyone has the opportunity to contribute.
    b. *Recorder:* The recorder takes notes for the group, summarizing group agreements around process, decisions, and reasoning. The recorder makes sure everyone is in agreement with what is recorded for the group, and shares the group notes with team members who are absent.
    c. *Contributor(s):* Contributor(s) contribute to the group discussion by providing their ideas and reasoning.
    d. *Timekeeper:* The timekeeper monitors the time and keeps the team aware of the time given for each task and how much time is remaining. The timekeeper also acts as a contributor.
2. **Identify clear success criteria for effective group work, and indicators for meeting these criteria**. Communicate these criteria to students.
3. **Monitor group effectiveness**. Use success criteria in observing student group work. It can be helpful to choose one or two criteria for each class to provide focus for observations and feedback conversations with students. Let students know when you are monitoring the groups and what you are looking for.
4. **Provide opportunities for students to reflect on group effectiveness**. Communicate to students when or how they're working especially well, and when or how they need to make changes to meet the success criteria. Provide students with an opportunity to self-assess their group's performance.

Common Breakdowns

» **Social dynamics get in the way of effective group work.** Unlike their counterparts at the college, students taking the course at the high school likely know their groupmates quite well. Consider calling out this difference for students, and encourage them to be cognizant of how their familiarity with each other influences group functioning. Also, consider deliberately assigning groups or shuffling group composition.

» **Students always assume the same role**. Remind students that they need to change roles, and give them the opportunity to do it on their own. If a student is reluctant, speak with the student privately to understand why. Some strategies to encourage students to take on multiple roles include:

- Shuffle role cards and pass them out.
- Assign initial roles by alphabetical order and rotate each day.
- Assign numbers to team members and randomly draw numbers for roles.

Supporting Factors

- Practice roles and responsibilities. The first few times an instructor assigns group work, they might give all of the groups a common task to work on. Doing so allows the instructor to have a limited number of content questions to answer, while supporting students in navigating their roles. As students become more familiar with their roles, the instructor can begin to assign different tasks to groups.
- Set clear expectations for participation and behavior.
- Make connections between group work and skills for college and career readiness.
- Assign specific, meaningful tasks for students to complete, and resist vague directions such as "Correct your homework."
- On particularly good or challenging days, have students self-assess their group work to reflect on what they can replicate or improve on.

Tools & Resources

The following tools were developed and piloted through the Higher Aims partnerships:

Group role cards: Role descriptions, along with prompts for each role, suggesting ways to contribute to group discussion (see Appendix B).

Group work rating scale and rubric: Example success criteria and "look fors," and a group work rating rubric (see Appendix D).

Group self-reflection template: A template for students to reflect on the functioning of their own groups (see Appendix E).

4.3.5 Instructor-counselor communication routines

Purpose

Enable the instructor and the counselor to work together to provide students with the support they need in a timely manner; ensure that students who may need to drop the course are identified well ahead of the drop deadlines, are provided with an action plan to get back on track, and, if needed, are guided to drop the course before the deadline.

Who Is Involved

The instructor and the high school guidance counselor (or other staff members who are responsible for supporting student success).

Steps

1. **Develop communication structures for sharing information**.
    a. Before the course begins, the instructor and high school counseling staff should establish a relationship and share relevant contact information.
    b. The partnership team should also consider what information the high school counseling staff will need for monitoring student progress (for example, putting permissions in place for counselors to access the online grading platform for the course).
2. **Identify times when instructor-counselor communication is critical, and plan check-ins in advance**. Such times might include:
    a. *Throughout the first several weeks of classes:* Are students attending class, engaged, turning in assignments, and establishing the work habits they'll need to be successful? Early intervention is critical.
    b. *After assessments (especially the first exam):* Are some students struggling and in need of additional support?
    c. *Several weeks (or more) before the college's course drop deadline:* Which students are at risk of not passing the course? Who needs support to get back on track? Who should consider dropping the course before the deadline?
    d. *The doldrums:* Pay attention to the ebbs in the year when student motivation can slip (for example, in the middle of the semester before spring break, or toward the end of the year for graduating seniors).
3. **Establish clear protocols for when students need additional support, and agree on who is responsible for leading these protocols**. Doing so might include:
    a. Working with students to develop "action plans" — specific, documented strategies and goals to help students get back on track.
    b. Directing students to additional resources at the college or the high school.
    c. Communicating with guardians, coaches, or others who can support the student.
    d. Guiding students through the drop process and paperwork, if needed.

Common Breakdowns

- **Access to student grades.** High school counselors need access to student grades to track student performance in the course. Students should be oriented to the college online grading platform so they can track their own progress.
- **Supports are provided too late.** Students in need of additional support should be identified in time for support to be effective.
- **Students do not know how to identify and navigate supports that are available from the college**. Students should be oriented to these supports so they know how to access and take advantage of them.

Supporting Factors

- Strong relationships and communication routines among the instructor, high school counselors, and college counselors.
- A dedicated counselor or dual enrollment coordinator at the college who can direct students to needed supports at the college and can counsel students through the drop process, if needed.

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Appendix: Tools to Support Promising Practices

A. 3.3.2 Student engagement plan: Student FAQs[36]

I-Heng McComb, a dual enrollment course instructor at Fremont Union High School who is also heavily involved in recruiting students for the course, has identified a set of frequently asked questions from students who have struggled with math in the past. Counselors should be prepared to discuss these questions, and might consider covering these points in an information session for students (including the course instructor if possible), or using these points to jumpstart an individual advising conversation for students.

- **Q: How similar or different is this course than Algebra 2 or another high school course?** Students often think in terms of what they know, and are often curious whether the course will be easier or harder than the most recent class that they attempted, or how the course compares with other typical HS math classes. One way that you can be transparent about workload is to create a "typical week in the course" description, including class work, homework, etc. At recruitment events, it is very helpful to have diverse students, who have taken the course in the past, be there to answer questions about their experience.
- **Q: How much homework will we have to do?** Sometimes students are surprised by how much homework is required of them in a dual enrollment course. This causes some students to drop the course. Sharing sample homework assignments before they enroll can help students to begin the class prepared.
- **Q: Is everyone in the class really good at math?** Share who is actually in the class — emphasize varying levels of student achievement, and that not everyone in the class is a straight-A student. Share some success stories of students who have passed the course, but didn't enter at very high levels of performance. If this is the first time the course has been offered as a dual enrollment course, counselors may need examples from the course offering in the college setting.
- **Q: I have already completed all of my math requirements for graduation. Should I still take the course?** Emphasize that students could benefit from taking the course by receiving college credit, but stress that if they are struggling in other courses required for graduation, they need to consider that this course will require extra effort. Students should feel confident that the commitment will not jeopardize success in other classes.

36 This set of FAQs is drawn from reflections by I-Heng McComb, a dual enrollment couse instructor at Fremont Union High School who worked with Higher Aims partnership instructors.

B. 4.3.4 Group work routines: Group role cards[37]

Facilitator

The facilitator leads the team discussion and keeps the group on task by summarizing the work that the team is trying to accomplish, reminding everyone of their roles, and making sure everyone has the opportunity to contribute.

Things you might say:

- What is this problem asking us to do?
- What is the most important information we have been given?
- Who has a solution they would like to share?
- Has everyone had a chance to share their thinking?

Recorder

The recorder takes notes for the group, summarizing group agreements around process, decisions, and reasoning. They make sure that everyone is in agreement with what they are recording for the group, and are responsible for sharing the group notes with team members who are absent.

Things you might say:

- Do we all agree that we are going to start with ___?
- Let me clarify, we chose this strategy because...
- Does everyone agree with this solution?

Contributor(s)

The contributor(s) contribute to the group discussion by providing their ideas and reasoning.

Things you might say:

- I think this is correct because...
- I think this is incorrect because...
- This makes sense to me because...
- I think that it might be a good idea to...

Timekeeper

The timekeeper monitors the time and keeps the team aware of the time that they have been given for a task and the time that is remaining. The timekeeper also acts as a contributor.

Things you might say:

- We have been given __ minutes to...
- We are halfway through our time, so we may want to...
- Should we ask for more time or do you think we are going to finish?
-

37 The following group work routine tools were developed by I-Heng McComb, Michelle Brock, and Alicia Bowman to support instructors working with the Higher Aims partnerships.

C. 4.3.4 Group work routines: Group work noticing tool

Example success criteria and "look fors":

Success Criteria	Look for...
Listening actively and attentively to each other	Conversation is respectful. Everyone has the opportunity to share and questions are asked if clarification is needed.
Asking questions and supporting arguments	Everyone is contributing to the conversation; if they have nothing additional to share, they are letting the group know what they agree with from their peers' contributions, and why.
Monitoring time and pacing	The timekeeper monitors the time and keeps the team aware of the time that they have been given for a task and the time that is remaining.
Everyone in the group participating; equity of voice	The facilitator leads the team discussion and keeps the group on task, making sure everyone has the opportunity to contribute.
Taking clear notes	The recorder takes notes for the group, summarizing group agreements around process, decisions, and reasoning. They make sure that everyone is in agreement with what they are recording for the group.
Completing the assigned task	The assigned task is completed during the time given or reasonable progress has been shown, demonstrating that time was used effectively.

D. 4.3.4 Group work routines: Group work rating scale and rubric

Number	Rating	Description
N/A	Not Applicable	This success criterion is not being monitored today.
1	Off Task	The group is off task for this criterion. More than half of the students are not participating. Behavior is impacting task completion or is distracting to other groups.
2	Some of the Time	At least half of the students are participating. Group participation is inconsistent. Behavior may be impacting task completion or group dynamic negatively.
3	Most of the Time	Almost all of the students are participating consistently.
4	On Task Together	All students are fully on task.

Success Criteria	Group 1	Group 2	Group 3	Group 4	Group 5	Group 6	Group 7	Group 8
1. Listening actively and attentively to each other	N/A 1 2 3 4	N/A 1 2 3 4	N/A 1 2 3 4	N/A 1 2 3 4	N/A 1 2 3 4	N/A 1 2 3 4	N/A 1 2 3 4	N/A 1 2 3 4
2. Asking questions and supporting arguments	N/A 1 2 3 4	N/A 1 2 3 4	N/A 1 2 3 4	N/A 1 2 3 4	N/A 1 2 3 4	N/A 1 2 3 4	N/A 1 2 3 4	N/A 1 2 3 4
3. Monitoring time and pacing	N/A 1 2 3 4	N/A 1 2 3 4	N/A 1 2 3 4	N/A 1 2 3 4	N/A 1 2 3 4	N/A 1 2 3 4	N/A 1 2 3 4	N/A 1 2 3 4
4. Everyone in the group participating; equity of voice	N/A 1 2 3 4	N/A 1 2 3 4	N/A 1 2 3 4	N/A 1 2 3 4	N/A 1 2 3 4	N/A 1 2 3 4	N/A 1 2 3 4	N/A 1 2 3 4
5. Taking clear notes	N/A 1 2 3 4	N/A 1 2 3 4	N/A 1 2 3 4	N/A 1 2 3 4	N/A 1 2 3 4	N/A 1 2 3 4	N/A 1 2 3 4	N/A 1 2 3 4
6. Completing the assigned task	Yes Almost No	Yes Almost No	Yes Almost No	Yes Almost No	Yes Almost No	Yes Almost No	Yes Almost No	Yes Almost No

E. 4.3.4 Group work routines: Group self-reflection template

Date:

Group Members:

Role	Names
Facilitator	
Recorder	
Contributor(s)	
Timekeeper	

Our Team Members...	1	2	3
1. Listened actively and attentively to each other	Off task	Some of the time	Most of the time
2. Asked questions and supported arguments	Off task	Some of the time	Most of the time
3. Adhered to time	Off task	Some of the time	Most of the time
4. Made sure everyone had a chance to speak	Off task	Some of the time	Most of the time
5. Took clear notes	Off task	Some of the time	Most of the time
6. Were prepared to share with the class	Off task	Some of the time	Most of the time