



*Building a Foundation for  
Early College Success*

**A PRACTICE BRIEF**

**T**he [Massachusetts Early College Initiative](#) launched in 2017, eases the pathway to postsecondary education for thousands of high school students annually. Early college programs provide strategically-sequenced, real college classes with strong career orientations during students' regular high school day. When fully realized, they also provide enhanced academic and guidance support, ensuring high school students successfully complete rigorous college coursework, graduate with significant college credits, and progress toward a degree ([Song et al., 2021](#)). Students in early college programs also gain confidence, habits, and skills needed for sustained postsecondary and life success ([Edmunds et al., 2017](#)). As of spring 2024, there were more than 8,000 students in grade 9-12 participating in 53 early college partnerships, with 61 high schools and 28 higher education partners involved ([MA Early College Data Dashboard, 2024](#)).

While early college holds promise for all students, a key focus of the Massachusetts initiative is to increase opportunities for students traditionally underserved by higher education, including first-generation college students ([Parthenon-EY Education Practice, 2016](#)). Approval of state designated early college partnerships is grounded in a number of [guiding principles](#), which, along with strong academic pathways and connection to career, include equitable access and robust student support. As Massachusetts seeks to fulfill the promise of early college by expanding both the number of students served and the number of college credits earned before high school graduation, a key point of focus is ensuring all students are ready and able to participate.

Improving college readiness, of course, is not a challenge limited to early college programs. Every year, significant numbers of students arrive on two- and four-year college campuses lacking prerequisite skills and knowledge. However, early college does present a unique opportunity to support students in developing foundational skills needed to access college level coursework,

particularly in English language arts (ELA) and math. Early college programs are able to engage students early in middle or high school, map out academic pathways that facilitate entry into college, and offer time and opportunity to intervene when learning gaps create barriers to advancement. By recognizing the importance of addressing students' foundational skills in ELA and math and incorporating effective practices into core programming, early college partnerships can take significant steps toward fulfilling their promise of preparing all students for sustained postsecondary success.

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This brief aims to provide early college practitioners with guidance on how to support students' development of foundational skills in ELA and math with the goal of building strong on-ramps to college level coursework. It outlines how practitioners may prioritize their time to accelerate and augment student learning, plan and collaborate across partnerships, and, most importantly, move forward with the implementation

of evidence-based practices. Included are both proactive strategies to ensure students are college ready, and interventions designed to address and eliminate learning gaps for students already enrolled in college courses.

To produce this brief, the Rennie Center for Education Research & Policy conducted a literature review and identified programs, both in the state of Massachusetts and nationally, that successfully expand and accelerate students' development of foundational academic skills. Researchers then conducted interviews with eleven exemplary programs, documenting promising practices. Findings are organized by major areas of focus. First, the brief addresses building prerequisite skills across content areas by way of strong core instruction. Second, it describes specific, evidence-based interventions for students with gaps in ELA and math. Third, the brief concludes with strategies to support college-level students through corequisite instruction at the postsecondary level. Exemplar programs, including key resources and strategies, are highlighted and linked throughout the brief.

# Key Strategies for Building Foundational Academic Skills

READINESS GAP	STRATEGY	WHAT THIS MEANS	ASSOCIATED TOOLS AND TEMPLATES
<b>Building Prerequisite Skills</b>	Double instructional blocks	Additional instructional time to refine prerequisite skills in key content areas.	
	Curriculum alignment	High school and college curriculum alignment to ensure students receive instruction on prerequisite concepts before beginning the college course.	
	Subject-specific intensive instruction during school breaks	Targeted instructional programs focused on key concepts delivered over school breaks.	
	High-dosage tutoring	Individual or small-group tutoring delivered upwards of three times per week.	<a href="#">Design Principles for Accelerating Student Learning with High-Impact Tutoring</a> , EdResearch for Action (2021)
	Corequisite courses	Credit-bearing courses at the college level with enhanced support for students lacking prerequisite skills/knowledge.	<a href="#">Corequisite Works: Student Success Models at the University System of Georgia</a> , Complete College America (2021)  <a href="#">Designing a Corequisite for Calculus I</a> , Mount San Antonio College (2023)
	College success skills	College readiness skills, including time-management, self-advocacy, and class participation, taught during class time.	

<b>Algebra Skills to Unlock Higher-Level Math Content</b>	Positive math identity	Strategies to improve students' beliefs about themselves as math learners.	<a href="#">The Calculus Project PRIDE curriculum (sample lesson)</a>
	Accelerated math pathway	Math acceleration through additional instructional time.	<a href="#">Secondary Mathematics Course Progression Map</a>
	Just-in-time remediation	Incorporating relevant concepts from previous grades to address learning gaps within the context of grade-appropriate instruction.	<a href="#">Accelerate, Don't Remediate</a> , TNTP (2021)
	Pre-teaching	Providing students with an introduction to key Algebra I concepts in advance of learning those concepts in class.	<a href="#">The Calculus Project Summer Academy</a>
	Intensified Algebra I course	Intensive algebra support paired with social-emotional learning for students two to three years below grade level.	<a href="#">Agile Mind Intensified Algebra I program</a>
	Algebra corequisite courses	Credit-bearing courses with enhanced support for college students missing prerequisite math skills.	
<b>Reading Comprehension and Use of Academic Language</b>	Standalone reading classes in addition to traditional ELA	Intensive reading instruction delivered to students with similar needs paired with heterogeneous ELA classes.	
	Mandated tutoring or support blocks in 9th /10th	Additional small group instruction for students below grade level delivered several times per week.	
	Reading corequisite courses	Credit-bearing courses with enhanced support for college students missing prerequisite reading and writing skills.	
<b>Reading Comprehension and Use of Academic Language for English Language Learners (ELL)</b>	Integrated ELL courses that fulfill MassTransfer requirements	English language learning courses that blend academic content and English language skills while fulfilling transfer requirements.	<a href="#">Bunker Hill Community College English Language Learning Department</a>
	ELL-focused corequisite courses	Reading and writing skill integration for students through paired English language learner courses and discipline courses.	<a href="#">Integrated ELL courses at Bunker Hill Community College</a>
	Communication in students' native languages	Content mastery and academic language development through multilingual support.	
	Sense of belonging in the school/classroom	Strategies to build community and provide wraparound support within college courses.	<a href="#">Irvine Valley College ESL and Mainstream Concurrent Support for College Composition</a>



## Building Foundational Skills

From middle school to the beginning of high school, students are expected to gain content knowledge and skills in ELA and math essential to engaging with more advanced coursework. Students who struggle to grasp core concepts, such as basic algebra and reading and writing fluency, are unlikely to succeed in college level courses. In fact, research shows that an inability to pass introductory college English and math classes is a primary driver of student attrition in college ([Community College Research Center, 2020](#)). All early college programs should include a specific focus on assessing and building foundational academic skills to ensure all students are college ready. The good news is there are a number of well-established strategies that may be used to identify and address learning gaps and academic needs. While many of these strategies may simply be thought of as sound instructional practices to be used throughout middle and high school, connecting them to early college programs will help ensure a smooth transition into more rigorous coursework.

## STRENGTHEN CORE INSTRUCTION

Mastery of grade-appropriate content may be supported through strong core instruction. This includes the use of high quality-instructional materials in the classroom, just-in-time remediation to mitigate gaps in prior learning, and curriculum alignment, specifically between high school and college in early college partnerships. The implementation of some of these strategies fall under the purview of a single educational institution, while others, like curriculum alignment, require action by multiple stakeholders. Regardless of the scope of an intervention, all members of an early college partnership should be active in identifying, designing, and supporting strategies for addressing readiness gaps in postsecondary preparation.

KEY PRACTICE	DESCRIPTION
<p><b>Use high quality instructional materials</b></p>	<p>The use of high-quality instructional materials (HQIMs) helps ensure course time is focused on the highest-leverage content and skills. HQIMs enhance not only instructional quality, but a more structured and effective approach to the overall learning process. For example, the Massachusetts Department of Elementary &amp; Secondary Education's (DESE) <a href="#">CURATE initiative</a> supports educators in identifying and reviewing curricular materials aligned with state standards. Utilizing such resources helps ensure students are gaining essential academic skills and competencies in classrooms.</p>
<p><b>Provide just-in-time remediation</b></p>	<p>Too often, students arrive in class behind grade-level, or with knowledge and skills gaps that undermine their ability to engage with new material. Just-in-time remediation in math and reading comprehension offers a targeted and efficient way to address specific barriers to learning within the context of grade-level instruction (<a href="#">TNTP, 2021</a>). Rather than taking extra time to reteach past content, teachers pinpoint and address individual student needs within the current curriculum. This approach not only maximizes classroom time but also allows for immediate and personalized intervention, fostering a deeper understanding of the material.</p> <p>As just-in-time remediation can be time-consuming, using HQIMs (see above) with built-in supports is a best practice, and can save teachers the time of having to create their own just-in-time remediation plans. For example, <a href="#">Agile Mind's Intensified Algebra I</a> is a comprehensive program for an extended-time Algebra I class that supports students who are significantly behind in their algebra content knowledge. The course is designed to address gaps in prior learning while transforming beliefs and behaviors.</p>
<p><b>Align high school and college curriculum</b></p>	<p>Before students begin an early college course, it is critical that high school and college instructors review material to ensure students have been introduced to all prerequisite content. By aligning high school and college curriculum, instructors and leaders can ensure students do not begin courses with gaps in prior learning.</p> <p>While comprehensive curriculum alignment requires widespread buy-in and significant time, it is an effective strategy that can prepare students for advanced coursework. In order to align curriculum, high school and college partners can assemble a team working in the same discipline to implement a backwards design process. This process includes:</p> <ul style="list-style-type: none"> <li>• Identifying the most important content for students to gain at the high school level before beginning the college course.</li> <li>• Reviewing current high school and college curriculum to identify content gaps.</li> <li>• Adjusting the high school scope and sequence to address gaps.</li> </ul> <p>Specific adjustments may include augmenting foundational coursework or adding a short-term, intensive program, like a summer bridge program, to teach content before students begin college coursework.</p>

## PROVIDE TARGETED SUPPORT

Providing students with additional learning time, targeted instruction, and individualized tutoring can positively impact academic performance. These strategies can be applied to all subject areas, but are particularly effective when focused on content critical to preparing for advanced coursework, such as Algebra I. When targeted support is provided in key transitional years, such as between middle and high school, it can have a high-impact on college readiness ([Savitz-Romer et al., 2009](#)).

KEY PRACTICE	DESCRIPTION
<p><b>Adjust school schedules to increase instructional time in key subjects</b></p>	<p>For students who display gaps in ELA and math during middle school and at the beginning of high school, implementing double instructional blocks is an effective means to accelerate learning (<a href="#">Martinez et al., 2016</a>). For example, <a href="#">Springfield International Charter School</a> in Springfield, Massachusetts, has adopted a block schedule that provides for extended learning time in core subjects that often serve as gatekeepers to college coursework. Notably, the schedule mirrors several college schedules, offering shorter class periods on alternate days when students participate in mixed-age electives. This approach ensures additional instructional time in foundational academic skills does push out other important learning activities.</p>
<p><b>Offer intensive, subject-specific instruction during school breaks</b></p>	<p>Acceleration academies, or small-group, targeted instructional programs delivered over school vacation breaks by trained teachers, can positively impact student achievement. For example, underperforming students who participated in week-long ELA and math acceleration academies in Lawrence Public Schools saw gains in their test scores and overall proficiency (<a href="#">Schueler et al., 2017</a>). They received approximately 25 hours of subject-specific instruction, which added up to more hours of instruction in a core subject than received in a full month of school.</p> <p>While Acceleration Academies are typically implemented in grades K-12, they can be offered to students on a college schedule during the summer months or college winter breaks. Since acceleration academies have higher student-teacher ratios than many other forms of academic intervention, such as tutoring, they are a more scalable approach to addressing student readiness gaps.</p>
<p><b>Provide high-dosage tutoring</b></p>	<p>Though it represents a resource-intensive strategy, research shows that when implemented well, high-dosage tutoring can have a profound impact on student learning (<a href="#">Robinson et al., 2021</a>). Tutoring at all grade levels is most likely to be effective when delivered by a qualified instructor, in high doses (three or more sessions per week for at least 30 minutes), and in small groups, with one-on-one tutoring being most optimal. This enables tutors to customize teaching to students' specific content gaps and the prerequisite skills they need to practice. Evidence for the effectiveness of this intervention is strongest for math-focused tutoring in older grades conducted during the school day (<a href="#">Robinson et al., 2021</a>). As this model can be expensive, schools should target tutoring to the highest impact subjects, such as Algebra I, and to the students who most stand to benefit. Framing tutoring in a way that avoids negative stigma is critical.</p>

## PROGRAM SPOTLIGHT

### *Kingsborough Early Secondary School, New York City Public Schools, NY*

**Kingsborough Early College Secondary School** incorporates high-dosage tutoring as a core strategy in the school's goal of providing every student with the opportunity to earn an associate degree by graduation. This school-based intervention demonstrates positive effects on math achievement (including improved grades) and is mandated for students who are working below grade level or have previously failed a math course, including Algebra I. Tutoring is built into students' schedules, and instead of taking a typical elective, students have embedded tutoring led by a teacher or guidance counselor, meeting four times per week for one hour. Notably, Kingsborough Early College Secondary School students earn 52 college credits on average, with 70% of students earning an associate degree by the time they graduate high school. These success rates are inextricably linked to the high degree of direct-to-student support available at the school, including embedded tutoring, small class sizes, and individualized instruction. See sample schedule [here](#).

## ADDRESS COLLEGE SUCCESS SKILLS

Success in college requires more than academic content mastery. Key readiness skills, such as class participation, time-management, and self-advocacy, are integral to navigating college and attaining academic success. By becoming more connected to course content and the broader college landscape, students may forge a stronger sense of belonging that can help them persist in school, especially in moments of struggle. Middle and high schools play an important role in students' development of college success skills, but direct engagement with college campuses is often necessary for students to explore and fully understand the college-going experience.

KEY PRACTICE	DESCRIPTION
<b>Connect content to lived experiences</b>	<p>Research shows that students become disengaged when they do not see value in what they are learning, and this can lead to a decrease in motivation and achievement (<a href="#">Egbert &amp; Roe, 2014</a>). Correspondingly, students learn more and develop stronger identities as learners, when they view learning experiences as purposeful and connected to their daily lives and future aspirations (<a href="#">Mebert et al., 2020</a>).</p> <p>The <a href="#">English Language Learning (ELL) Department</a> at Bunker Hill Community College (BHCC) in Boston, Massachusetts places a deliberate focus on making personal connections between the curriculum, student learning, and student lives. For example, in <i>Voices of Chelsea</i> (ELL-112) students read and listen to the words of community members. Instructors report that many students relate to the perspectives expressed, such as immigrant experiences, and are able to contextualize course content in English (which is new) with familiar topics and areas of interest.</p>
<b>Build a sense of belonging</b>	<p>ELL students in the <a href="#">Chelsea High School Early College Program</a> at BHCC have the opportunity to attend a "week 0 orientation" prior to the start of classes. This day-long event helps set students up for success before they settle into the busy schedules and routines of the school year. Faculty and staff are invited to attend, including campus leadership, as well as members from the IT department, the pantry service, and the Director of Immigrant Support Services. The orientation serves to show students that they belong to a community of support.</p>



<b>Emphasize student-faculty connections</b>	<p>Studies demonstrate that supportive and responsive student-faculty interactions within and outside the classroom can reduce gaps in college retention and graduation, especially for students from historically underrepresented backgrounds (<a href="#">Guzzardo et al., 2021</a>). Strategies for centering care and integrity in student-faculty relationships, include:</p> <ul style="list-style-type: none"> <li>• Create open channels of communication and opportunities for bi-directional feedback.</li> <li>• Ensure that the intent behind pedagogical practices and decisions is clear.</li> <li>• Be flexible while maintaining academic rigor, understanding that each student is a unique individual.</li> <li>• Perceive students' characteristics, experiences, and backgrounds as strengths rather than impediments.</li> </ul>
<b>Engage family members</b>	<p>Family partnership practices also contribute to student engagement and self-efficacy, as families can model lifelong learning, support their children's development, and encourage their achievement identity (<a href="#">Mapp, 2014</a>). <a href="#">The Calculus Project</a> prioritizes family engagement by inviting families to celebrate their students' accomplishments at the end of Summer Academy. <a href="#">Kingsborough Early College Secondary School</a> also does so by including families in school-wide celebrations, holding family informationals, and emphasizing open communication.</p>

## PROGRAM SPOTLIGHT

### *Directions for Student Potential, UMass Boston, Boston, MA*

**Directions for Student Potential** is a summer bridge program at UMass Boston that prepares incoming freshmen for success by providing reading, writing, and math support. A central focus of the pre-admission experience is learning how to adapt to college-level expectations. Successful completion of the six week-long program guarantees students' admission to most majors at the university. Participating students are offered:

- In-person and remote core content and elective courses.
- Small class sizes and individualized tutoring.
- Culturally-relevant curricula that elevates students' cultural capital.
- Community building and networking opportunities.
- Access to student Support Services and financial aid resources.

### *Foundation Year, Northeastern University, Boston, MA*

**Foundation Year**, an innovative first-year pathway program at Northeastern University, which supports students in completing their first year of college while emphasizing the importance of honing nonacademic skills that are not usually formally taught. Foundation Year supports City of Boston students with academics and college readiness prior to matriculating into the university. During Foundation Year, students earn up to 32 college credits while taking standard courses and electives. Foundation Year students build their skills in:

- Strengthening critical thinking.
- Using technology to facilitate their studies.
- Self-advocating through office hours and on-campus resources.
- Accessing work study and other paid opportunities.
- Committing to active participation in class.

Students also receive wraparound support, such as ongoing advising and tutors for writing and math.



## Providing Targeted Math Interventions

Preparing students for college level math is key to ensuring their overall college readiness as well as their likelihood of sustained success ([Launch Years Initiative, 2020](#)). According to interviewed college faculty, students who master Algebra I are generally prepared for college coursework. In contrast, students who struggle to pass introductory college math classes face significant barriers to accessing preferred courses and areas of study ([Launch Years Initiative, 2020](#)). Early college programs are uniquely positioned to prepare students for college math before they graduate from high school by focusing on and pre-teaching core concepts, offering intensified academic supports, and promoting positive math identities in familiar and well structured environments.

### PRE-TEACH KEY CONCEPTS

Preparing early college students to take and succeed in college level math should begin as early as middle school, or when students are first introduced to foundational algebraic concepts. By pre-teaching upcoming concepts in summer programs, intervention blocks, or small group tutoring, early college programs can help students who may have previously struggled in math prepare for more rigorous work. Importantly, pre-teaching is not remediation. Rather, it deliberately exposes students to advanced concepts before they enroll in class. As a result, students can focus their class time on deepening their understanding of algebra and other math, rather than grappling with newly introduced terminology and concepts. Pre-teaching to bolster students' math preparedness and proficiency should continue throughout high school, including as a precursor to early college courses, to help students navigate structural barriers and accelerate completion of transfer-level math courses.

[The Calculus Project](#), a Boston-based non-profit organization, employs pre-teaching as part of its [Summer Academy](#), aimed at increasing the number of low-income students of color in advanced math courses from eighth through twelfth grade. Disrupting the notion of summer school as a place for remediation and catch-up, students enrolled in the Academy engage with core concepts they will learn in the upcoming school year. Incoming eighth and ninth grade students focus on algebra readiness and MCAS and PSAT preparation, with students following a schedule similar to [this one](#). Rising seniors are introduced to core AP calculus concepts and

SAT preparation. All students benefit from making connections across math courses that set them up for success at the college level. More details on the sequence of the math courses and activities can be found [here](#).

The Rhode Island Department of Education Algebra I Readiness Summer Camps, which will launch in July 2024 with the support of federal ESSER and Rethink K-12 Education Models Grant funding, represent a state approach to ensuring the success of students on the cusp of Algebra I readiness. The Camps are designed to help rising 9th graders of all backgrounds and academic proficiency levels boost their interest and confidence in math and make progress in mastering the key concepts and skills needed to be Algebra I ready. Topics the Camps will focus on, include: understanding the connection between proportional relationships, lines and linear equations, and analyzing and solving linear equations and pairs of simultaneous linear equations. Camp programs also feature project-based learning and actionable assessments using a digital platform to help build students' engagement, self-efficacy and interest in algebra. For instance, students in one high school will work with the local police department to study intersections with known congestion and recommend changes to improve traffic flow. Students in another school will be invited to join the "Tiny House Challenge" where they will work in teams to design a small, efficient and accessible home that prioritizes functional use of space over physical size. More information on the key components and scope of the Algebra Readiness Camps can be found in [this application guide](#).

## PROVIDE INTENSIFIED ALGEBRA I COURSES

Students generally take Algebra I in either eighth or ninth grade. For ninth grade students who require more substantial support than is offered in a typical classroom, such as those who may be two to three years behind grade level, an intensified Algebra I course may be an effective intervention. For example, [Agile Mind's Intensified Algebra I program](#) integrates social-emotional learning with foundational math content, which is carried out through 70-90 instructional minutes daily featuring targeted interventions and hands-on exploration (see [program overview](#) and [scope and sequence](#)). More specifically, the program enables students to review and repair foundational math skills, while introducing new concepts through a variety of social, affective, and cognitive learning strategies. Students are engaged through visualizations and multiple representations of mathematical ideas, participate in formative assessments to produce real-time data that informs instruction, and benefit from ongoing interventions designed to strengthen belief in their own math abilities. Through extended time, rigorous coursework, and targeted supports, Agile Mind aims to catch students up to their peers in one academic year.

## ADDRESSING GAPS IN READING COMPREHENSION

*Strong reading and writing skills are also essential to postsecondary success. They are critical tools that students use to access, understand, analyze, and apply information across all academic subjects, not only English language arts. However, at the college level strong reading and writing skills, and especially reading comprehension, are taken as a given—a precursor to doing college level work. Students without refined literacy skills may find learning gaps widening in college courses as they struggle to keep up. Early college programs can intervene in the middle school and high school years to accelerate reading comprehension and writing skills by offering standalone reading classes, small group tutoring, and other supports as part of core programming.*

[Kingsborough Early College Secondary School](#) offers standalone reading classes, for example, in which all middle school students are grouped by level based on their needs, in addition to traditional English Language Arts classes, which are heterogeneous. In these standalone classes, students may receive support with comprehension, fluency, or decoding, as well as access more advanced materials. Most students begin their studies at the grades 6-12 school reading below grade level. Focusing on standalone and targeted reading instruction has shown to improve students' fluency and comprehension skills. It has also translated to supporting math skills, as reading comprehension is necessary for math content comprehension.

*While Kingsborough provides reading support to all middle school students, it is worth noting that this approach can also be targeted at select populations, such as students reading below grade level standards. In fact, at the ninth and tenth grade levels, students reading below grade level are required to participate in mandated ELA tutoring and support blocks. Teachers and guidance counselors lead this built-in tutoring, and students meet four times per week for one hour to build their skills. The school sees this strategy as essential to ensuring students graduate ready to engage with and comprehend college level coursework.*

## INCREASE ACCESS TO ACCELERATED PATHWAYS

Accelerated math pathways provide students with the opportunity to progress through math course sequences more quickly, allowing them to gain more advanced math skills earlier in high school. Accelerated pathways are achieved by offering additional courses or modules during the academic year through additional instructional time, such as in double instructional blocks or during the summer. An example of summer bridge courses as a mechanism of acceleration can be found in this [Secondary Mathematics Course Progression map](#) from the Glendale Unified School District in California. For example, a student may take a summer bridge course that covers pre-calculus standards to move directly from integrated math in tenth grade to AP calculus in eleventh grade. This approach helps ensure that students do not become “trapped” in instructional tracks and that all students can participate in advanced math.

## CULTIVATE POSITIVE MATH IDENTITIES

Research shows a strong relationship between students’ academic identities and their academic achievement ([Allen & Schnell, 2016](#)). Fixed mindsets about math ability are common, with many students exhibiting negative self-concepts related to perceived intelligence and math anxiety. It is critical that educators support students in developing positive math mindsets as they form their math identities to combat the narrative that math is not for everyone. The Calculus Project’s PRIDE Curriculum provides students with the opportunity to build positive math identities while learning about the accomplishments of STEM professionals of color ([see sample lesson here](#)). This culturally responsive approach strengthens students’ self-efficacy and sense of belonging and fosters peer relationships across grade levels where classmates support each other in developing confidence in their math skills.

### PROGRAM SPOTLIGHT

#### *Dearborn STEM Academy, Boston Public Schools, Boston, MA*

The Dearborn STEM Academy’s **DECK program** provides accelerated learning during the summer and school year with the goal of ensuring students are prepared to take college-level math and English courses by eleventh grade. Beginning in middle school and progressing through high school, DECK students engage in rigorous math and English coursework complemented by social-emotional supports and learning experiences designed to build college-going identities. (See a program progression map [here](#)). Students in grades 8-10 participate in a year-long class (one semester of math and one semester of ELA matched with a college and career readiness curriculum) which ultimately gives students an additional 1.5 years of ELA and math prior to entering their 11th grade full-time college program. During the summer, students in acceleration academies spend approximately three hours daily on core academic content and another hour exploring college and career opportunities. Students also receive a weekly stipend to ensure the need to work does not create a barrier to participation. Using this acceleration model, the Dearborn STEM Academy and its college partners aim to provide students with the opportunity to earn an associate degree by the time they graduate from high school.



## Building Skills and Increasing Access through Corequisite Instruction

Ensuring students are college ready, especially those students in under-resourced communities, is not a new challenge. Community colleges have long grappled with how to best serve students who enroll in college but lack the foundational content and/or skills to successfully complete coursework. While many colleges previously required placement tests which landed students with lower scores in developmental (non-credit-bearing) courses, an increasing number of colleges have shifted to a model of enhanced support in credit-bearing courses called *corequisites*. Providing students with credit for time spent learning in college while simultaneously addressing academic gaps has proven more effective than focusing solely on remediation where students incur debt and exhaust their time, but do not progress toward a degree ([Complete College America, 2021](#)).

### **LINKED VS. ENHANCED COURSE MODELS**

Several states have promoted large-scale implementations of corequisite models through research-backed policy or legislative changes that limit remedial education. The California Community Colleges, the largest system of higher education in the nation, has made significant strides in expanding student access to credit-bearing college coursework through corequisite instruction ([Mejia et al., 2020](#)). [The California Acceleration Project](#), a faculty-led network that supports community colleges to transform English and math programs to achieve equitable student outcomes, recognizes two primary corequisite models: linked courses and enhanced courses (see table below). Similar models are offered in community colleges nationwide.

COREQUISITE MODEL	DESCRIPTION
<b>Linked course model</b>	In the linked course model of corequisite instruction, students enroll in linked sections of two separate courses: a standard, credit-bearing course and a support course. For example, a student may enroll in a traditional college algebra course, while enrolling in a separate support course for students in college algebra. The support course generally meets for the same number of hours per week as the standard college algebra course. Credits for the linked support course may or may not be transferable. The mainstream course and the support course are typically taught by the same instructor.
<b>Enhanced course model</b>	<p>In the enhanced course model, students enroll in a single, higher-credit version of the standard college-level course. At many institutions, students are placed in enhanced support courses based on their high school grade point average and performance in their most recent high school course within the discipline. For example, a college student with a GPA below 2.6 might be placed into a 5-unit corequisite course, while a student with a higher GPA might be placed in the standard 3-unit version of the course.</p> <p><i>Examples</i></p> <ul style="list-style-type: none"> <li>• Corequisite <a href="#">English design principles</a> at <a href="#">Charles A. Dana Center</a>, University of Texas at Austin</li> <li>• <a href="#">Designing a corequisite for Calculus I webinar</a> from the California Acceleration Project</li> </ul>

Numerous faculty interviewed reported that enhanced corequisite models are preferable, because they provide a more seamless instructional experience for students. Generally, enhanced models that meet best practices feature the following design elements:

- One primary instructor who leads all course components.
- Extended learning time to complete assignments and address learning gaps.
- Smaller class/cohort sizes with a focus on peer relationships and support.
- Guidance on non-academic skills, like growth mindset, as part of course content.
- Professional development for faculty to support instructional approaches.

Overall, students in enhanced corequisite courses complete the same course content and are held to the same grading criteria and expected learning outcomes as students in “standard” courses, while receiving about double the hours of instruction.

## PROGRAM SPOTLIGHT

### *Diablo Valley College, CA*

**Diablo Valley College** launched a corequisite math program during the 2019-2020 academic year for all entry-level math courses using multiple measures to determine student placement. Students who require additional support in algebra can enroll in a six-unit course titled **Math 135-L: College Algebra with Support**, which corresponds to four units of college algebra and two units of support. While some higher education institutions accept all six units when students transfer, others only accept the four college algebra units. Students experience the class as a single integrated course taught by a single instructor, meeting for eight hours per week. Course content for the support portion of the class includes interval notation, graphing lines and quadratics, and an introduction to complex numbers. Students also learn about growth mindset, time management, managing test anxiety, and metacognitive tools for learning. Tutoring is incorporated into the teaching model, and oftentimes student tutors visit during class time to support students.

## APPLYING COREQUISITES TO EARLY COLLEGE PROGRAMS

Despite their success and wide application in traditional college settings, corequisite courses are rarely offered to early college students. Perhaps this is due to the unique nature of early college partnerships, which begin in high school or earlier and often view building students' foundational academic skills as a distinct activity that precedes taking college level courses. Regardless, offering corequisites opens up early college to a wider range of students, including those who may not yet see themselves as college-going, or those who are prepared for some college level work but still face specific learning gaps and barriers. For example, a corequisite course may provide extended learning time for students struggling with college-level English standards. Course time may be devoted to actively processing readings that students may not have understood when reading independently, or providing time to write in class and receive real-time feedback from the course instructor and peers. Such an approach may be particularly helpful in enabling ELLs to participate in early college courses. (See the program spotlight on page 17 for a more specific example).

To integrate corequisite courses into early college programs, consider the following:

DESIGN ELEMENTS	CONSIDERATIONS
<b>Course model</b>	Will the program offer a linked or enhanced model? While many faculty report enhanced models are more effective, some schools find linked courses are easier to implement when first launching corequisites, especially if they are coordinating services across multiple sites.
<b>Scheduling</b>	<p>Corequisite courses require more instructional time. Scheduling corequisites in advance of other courses and program requirements can help ensure students have the time and flexibility to participate. For early college programs operating in high schools, particular attention should be given to how a corequisite may replace other English and math courses within the school's core program of study.</p> <p>There are two primary scheduling options for corequisites in the early college setting:</p> <ul style="list-style-type: none"> <li>• Courses can take place over one semester with double the instructional time.</li> <li>• Courses can be stretched over the full school year with less instructional time per semester.</li> </ul> <p><i>Example</i> A <a href="#">repository of corequisite course schedules</a> curated by the University of Texas at Austin, including college algebra and corequisite support <a href="#">class schedules</a> from the College of Coastal Georgia</p>
<b>Placement</b>	In Massachusetts, early college programs are required to use multiple measures to determine a student's readiness to participate. Just as programs use multiple measures to determine who can participate in early college, it's important to use multiple measures to determine which students would benefit from corequisite courses versus mainstream courses. Moving away from singular exams to more holistic approaches to assess course readiness is essential to furthering equitable outcomes for early college students. This may include high school grade point average and performance in prior courses within the discipline.
<b>Instructor roles</b>	High school and college partners should jointly determine instructor roles. In an enhanced model, the same college faculty member leads all components of the course. However, high school faculty may serve in a co-teaching role to provide more individualized student support. In a linked model, programs may elect to have high school faculty play a larger role during the support component of the course.

## PROGRAM SPOTLIGHT

### *Skyline College, CA*

**Skyline College's English Composition with Support** is a corequisite course for ELL students or those with a high school grade point average below 2.6. International students may also enroll. (See program review [here](#)). While a three-unit version of College Composition is offered to all Skyline students, the five-unit support version provides more class time and opportunities for collaboration. For example, specific course activities include actively processing reading as a class, setting aside time for writing in class, reviewing samples of student work, and engaging in "speed dating" with peers to go through questions and feedback on completed assignments. The course also includes embedded tutoring.

## SUPPORTING ENGLISH LANGUAGE LEARNERS VIA COREQUISITES

Corequisite courses may be an effective way for students who are still learning English to access postsecondary learning opportunities and build foundational reading and writing skills. The table below describes specific strategies for supporting ELLs in participating in early college, including the use of corequisite courses.

KEY PRACTICE	DESCRIPTION
<b>Offer ELL courses to meet MassTransfer requirements</b>	Colleges in Massachusetts may offer English language learning courses to fulfill transfer requirements as part of the <a href="#">Gen Ed Foundation</a> . For example, the BHCC <a href="#">English Language Learning (ELL) Department</a> offers eight year-long classes that fulfill the Humanities and Fine Arts requirements, all of which are six credits. The first course that many ELL students in the program take is <a href="#">ELL-101</a> , or Integrated ELL Level 1. This course begins at an intermediate level of academic English and aims to develop students' integrated critical reading, writing, listening and speaking skills. BHCC's <a href="#">ELL program mission</a> undergirds the department's approach to academic learning, stating "non-native English speakers succeed in college when they are supported in applying their multilingual skills and cultural knowledge, and when academic content and English language skills are learned together."
<b>Develop ELL-focused corequisite courses</b>	BHCC also offers corequisite ELL courses, providing an effective way for students to learn foundational content and skills while progressing toward a degree. As a result of a recent <a href="#">program reform</a> , ELL cluster classes can now be paired with a class in a specific academic discipline. For example, ELL 103, which is six credits, can be linked with SOC-101, Principles of Sociology, which is three credits. This allows students to gain content knowledge while building their language skills. The nine total units of class time are co-taught and students benefit from close collaboration between their professors. Additional student support services, such as coaching and advising, peer mentorship, and access to the <a href="#">Language Lab</a> , further promote class success. The linked classes are typically taught back-to-back, and in some classes students complete the same assignments and receive shared feedback and grades from professors.



**Communicate in students' native languages**

Understanding and recognizing that ELLs come from a variety of cultural and educational backgrounds is critical, as is embracing their cultural capital. One way of doing so is by encouraging students to communicate in their native language. Having multilingual faculty is likewise an asset. It is also important to disrupt the belief that students can only learn English in English ([Reeves, 2006](#)).

The [DECK program](#), designed to prepare [Dearborn STEM Academy](#) students for early college, prioritizes communication in students' native languages. Several faculty members, including the College Coordinator at [Franklin Cummings Tech](#), speak with students in Cape Verdean Creole, a widely used language in the student population. More generally, when ELLs enroll in early college courses, the school uses near peer tutoring to support students' content mastery and development of academic language. Students who have successfully taken a course are paid to tutor students who speak the same home language. By providing support in the language that they share, near-peer tutors help ELLs grasp course content and develop a sense of belonging in the college program.



## Conclusion

Early college programs have a tremendous opportunity to support students to get an important head start on college, providing the knowledge and skills necessary to pass gatekeeper classes, and equipping them with college-going habits. Early college offers the thoughtful scaffolding and intentional support that bolster students' successful completion of challenging coursework and navigation of life as a college student.

In order to enable all students to be able to take full advantage of college level coursework in high school, school districts should start planning early, considering the skills and mindsets that students need to master and strategic ways to provide this strong foundation. In many middle and high schools, programs designed to catch students up (e.g., high-dosage tutoring) or accelerate learning (e.g., immersive summer programs) are a key part of this readiness and preparation strategy. Once students enroll in early college courses, the importance of providing robust academic and nonacademic supports—implementing corequisite courses, allowing extra time for instruction, building in companion courses/support blocks to students' schedules, and teaching college success strategies—is even more necessary. In addition, because early college is designed to increase access to higher education for traditionally underserved students, programs must also ensure they are delivering culturally competent instruction with content connected to students' lived experiences.

Early college programs in Massachusetts are making great strides to prepare students for rigorous college coursework and the college experience; students are earning transferable college credits and gaining the skills and confidence to help them persist and earn a college degree. Focusing on readiness and preparation will enable even greater numbers of students to participate in early college, an important first step in students' meeting their educational and life goals.

## **ABOUT THE RENNIE CENTER**

The Rennie Center’s mission is to improve public education through well-informed decision-making based on deep knowledge and evidence of effective policymaking and practice. As Massachusetts’ preeminent voice in public education reform, we create open spaces for educators and policymakers to consider evidence, discuss cutting-edge issues, and develop new approaches to advance student learning and achievement. Through our staunch commitment to independent, non-partisan research and constructive conversations, we work to promote an education system that provides every child with the opportunity to be successful in school and in life. For more information, please visit [www.renniecenter.org](http://www.renniecenter.org).

## **ABOUT MA4EC**

The Massachusetts Alliance for Early College (MA4EC) is a coalition of more than 100 community-based organizations, businesses, philanthropists, school districts, and higher education institutions supportive of a substantial increase in the number of students enrolled in high-quality Early College programs in order to improve college degree attainment, particularly for low-income, Black, and Latino students.

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