The problems associated with developmental education are well known. Educators, researchers, policymakers, and philanthropists now recognize too few underprepared students succeed in college. Developmental mathematics education as traditionally practiced is ineffective and rarely lives up to its ideal conceptualization as “the integration of academic courses and student support services guided by the principles of adult development and learning” (Boylan, 2012).

Over the last decade, innovation in developmental education has been intensive, abundant, and creative. Driven by local needs and assets, these innovation efforts have generated important lessons, the best of which now need to be refined via a new iteration of strategies that can be implemented at scale to accelerate, contextualize, and support student readiness for college and ultimately for success in completing a certificate, license, or degree with labor market value.

This next wave of innovation will benefit from the development of a shared, more nuanced understanding of why, how, and for whom particular innovations are designed to work.

This brief defines one popular innovation, the co-requisite model, and takes a look at this model’s evolving features. This brief then details the New Mathways Project’s intensified co-requisite model.
If the goal of college readiness is for students to succeed in college-level courses, students need access to—and experience in—college-level courses.

The field needs to develop a shared, more nuanced understanding of why, how, and for whom the co-requisite model is designed to work.

Resetting Assumptions About Remediation

If the goal of college readiness is for students to succeed in college-level courses, students need access to—and experience in—college-level courses.

We strongly believe that early college mathematics, whether it is developmental or college-level, should focus on preparing students for their programs of study, not on reteaching a full high school curriculum.

In terms of curriculum design, such a focus means that students should engage immediately with applications and contexts that historically have been delayed until a college-level course. In our new model, these applications and contexts are supported with instruction on developmental skills aligned to students’ majors and careers.

When it comes to preparing students for success in college, stakeholders broadly agree that faster is better and, as an extension, that students should be referred to the highest level course that can be responsibly defended (Bailey, Hughes, & Jaggars, 2012; Complete College America, 2011).

For many students, the emphasis on acceleration means they go directly into college-level courses that are bolstered with mandatory supports. An increasingly popular approach to achieving the goals of accelerating student progress and moving students to and through college-level courses as soon as possible is the co-requisite model of developmental education (Commander, Stratton, Callahan, & Smith, 1996; Boylan, 1999; Edgecombe, 2011; Complete College America, 2011).

Evaluations of such models indicate that co-requisite approaches are associated with higher grades and higher completion rates in introductory college-level courses, increased fall-to-fall persistence in
When it comes to preparing developmental students for success in college, faster is better and students should be referred to the highest level course that can be responsibly defended.

enrollment and higher total credit accumulation (Wilcox, et al., 1997; Jenkins et al., 2010; Tennessee Board of Regents, 2009).

Defining the co-requisite model is complicated by the model’s evolution over time and by its various forms of implementation. Initially, co-requisite referred to any two paired, simultaneous courses. Over time practitioners have adapted and refined the co-requisite model for use in supporting early college success in mathematics. Co-requisite course experiences are known variously as learning communities, linked courses, adjunct courses, and paired courses, to name a few.

Co-requisite Model 1.0

In the context of developmental education, the first generation of co-requisite models often paired a college-level mathematics or science course with a complementary developmental mathematics course for students at the highest level of developmental coursework (Edgecombe, 2011; Tinto, 1998). Another popular model for students with more significant developmental needs paired developmental reading and developmental mathematics courses (Tinto, 1998). The defining feature of these first-generation models is that transition points between courses—where students are likely to drop out—are eliminated. Students receive credits for both courses in one semester.

Co-requisite courses usually have two instructors who—ideally—each integrate their instruction with that of the other instructor, though this

(continued)
The Charles A. Dana Center at The University of Texas at Austin: June 2012

The New Mathways Project (NMP) is the Dana Center’s vision for a systemic approach to improving student success and completion through implementation of processes, strategies, and structures built around three mathematics pathways and a supporting student success course.

The NMP will offer mathematics courses better aligned with the skills needed for students’ programs of study, future jobs, and lives as informed citizens and consumers. The project’s aligned, accelerated approach offers students three options with different mathematical content: a statistics pathway, a quantitative literacy pathway, and a STEM pathway. The NMP is structured so that students can move from developmental math to and through a college-credit course in an accelerated timeline.

Integration does not always happen in practice. First-generation co-requisite courses also tend to be organized for a consistent cohort of students who attend both classes to support shared learning and student engagement (Edgecombe, 2011; Tinto, 1998).

The first-generation models vary in how content is sequenced and structured. Some versions redesign both classes so the content of the developmental class directly supports the content of the college course (Commander et al., 1996; Visher, Schneider, Wathington, & Collado, 2010). Ideally co-requisite courses foster a single, coherent educational experience that promotes deeper, contextualized learning (Tinto, 1998).

In other versions, students take the college-level and developmental courses simultaneously, and the instructor of each course does not make significant changes to integrate the curriculum or instruction between courses. This lack of coordination can lead to a mismatch between the courses (Visher et al., 2010).

Co-requisite 2.0

A second generation of the co-requisite model has emerged that experiments with using one instructor or peer tutors, pairing courses differently, and mixing developmental and college-ready students in classes. Instead of pairing a college-level course with the highest level of developmental course, second-generation co-requisite models may pair a college-level course with a student success course, a specialized lab, or other support options such as mandatory tutoring or supplemental instruction. The defining features of these second-generation models are that they target students referred to the highest level developmental course, students begin earning college credit right away, and transition points between courses are eliminated.

One popular approach, the Accelerated Learning Program (ALP), pairs college-level English courses with a supplemental support course. ALP is structured so that one instructor teaches both courses; that instructor is specifically tasked with “just-in-time” identification of the knowledge and skills needed for supplemental instruction in the support course. ALP also mixes college-level and developmental students in the college-level course to take advantage of positive peer effects of learning with more advanced students (Jenkins, et al., 2010).

The intensified co-requisite structure of the New Mathways Project (see sidebar), a Dana Center initiative, is a second-generation co-requisite model designed for students who are
close to college level but need support to succeed.

In the New Mathways Project co-requisite model, these entering college students will begin their college careers going directly into a one-semester, college-level transferable course in statistics or quantitative literacy along with a mandatory co-requisite student success course. We believe many students who are currently placed into college-level courses would also benefit from the co-requisite model of student support.

**A key feature of the Dana Center’s model is that the college-level mathematics course and the student success course are intentionally integrated to support student learning and success.**

The co-requisite student success course will include just-in-time support for the foundational math skills needed in the college-level course and will provide further support for students to develop the skills that they need to carry them through to completion of their programs of study.

The mathematics course will be structured to reinforce the learning skills introduced in the student success course, thus increasing the likelihood that those skills become habits of mind that students transfer to new situations (Boylan, 2002; Adams & Huneycutt, 2001).

**Conclusion**

As educators have innovated to improve developmental education, the field has refined its use of term co-requisite and begun to define some of the most effective forms of the co-requisite model.

This brief defines the co-requisite model and its evolving features as well as describes the co-requisite model of the Dana Center’s New Mathways Project, known as the intensified co-requisite model.

The second issue brief in this series will take a look at which students the co-requisite developmental mathematics approaches are designed to serve well. Just as critics have argued about traditional developmental education sequences, the co-requisite approach is not a one-size-fits-all solution.

**Citations**


Complete College America. (2011, September). Transform remediation: The co-requisite course model. CCA. Handout from the Complete...
The co-requisite approach is not a one-size-fits-all approach.