EXPANDING ACCESS

INCREASING SUCCESS

NEXT—
GENERATION
CBE

BUILDING ON A STRONG FOUNDATION
LINKING CBE WITH INNOVATIONS IN DEVELOPMENTAL EDUCATION REDESIGN
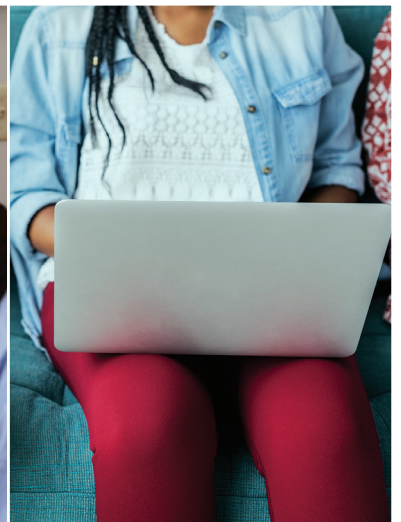
JOBS FOR THE FUTURE

BY NATE ANDERSON

ACKNOWLEDGEMENTS

JOBS FOR THE FUTURE

Jobs for the Future (JFF) is a national nonprofit that builds educational and economic opportunity for underserved populations in the United States. JFF develops innovative programs and public policies that increase college readiness and career success and build a more highly skilled, competitive workforce. With over 30 years of experience, JFF is a recognized national leader in bridging education and work to increase economic mobility and strengthen our economy. www.jff.org

ABOUT THE SERIES

JFF is leading an effort to explore how CBE can be adapted to meet the needs of underprepared adult learners, in order to help members of this large and economically vulnerable group earn college credentials and advance in the U.S. workforce. With support from the ECMC Foundation, JFF is reaching out to national experts, policymakers, and practitioners to help identify key issues that can frame a national conversation about expanding and strengthening CBE for students who have been historically underrepresented in higher education. This series of papers, *Next-Generation CBE: Designing Competency-based Education for Underprepared College Learners*, zeros in on a practical, but complex, question: What specific design elements and policy changes are needed to realize the potential of CBE for the nation's underprepared college students?

ABOUT THE AUTHOR

NATE ANDERSON, a senior director at JFF, focuses on how improvement to career pathway design, implementation, and policy can drive stronger outcomes for low-income and low-skilled adults and lead to family-supporting careers. Mr. Anderson manages several bodies of work concentrating on credentialing, labor market information technologies, competency-based education, and the future of work. In addition, he has extensive experience providing technical assistance to community colleges, state postsecondary systems, adult education providers, and workforce organizations. Prior work at JFF includes building postsecondary on-ramps for low-skilled students and connecting education and training programs with federal programs for low-income people. Mr. Anderson has taught English in Japan to middle school, high school, and adult students as part of the Japanese Exchange and Teaching program. He holds a bachelor's degree from Bowdoin College, a master's degree in Japanese history and Asian Pacific studies from the University of Toronto, and a master's degree in education from the Harvard Graduate School of Education.
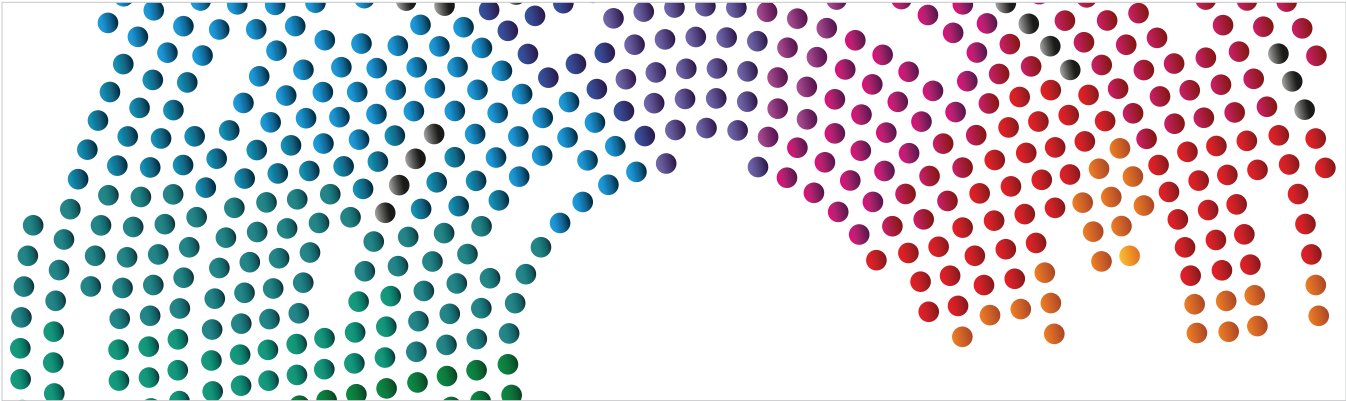
INTRODUCTION

As open-access institutions of higher learning, community colleges are committed to finding effective ways to serve underprepared learners and help them earn a postsecondary credential that leads to a good job.

Many colleges attempt to fulfill this mission through developmental education, which aims to build reading, writing, and math skills in order to prepare students for college-level coursework, but too often delays or derails them en route to college completion. Major efforts to redesign developmental education over the past decade have produced compelling evidence about which strategies work best. But further research and experimentation are necessary to enable many more students to earn a high-value credential in a reasonable amount of time. The spirit of innovation that has propelled redesign efforts so far can continue driving developmental education reform to benefit a greater number of students. Embracing this spirit, Jobs for the Future (JFF) proposes merging the best practices of developmental education redesign with competency-based education (CBE), a promising though largely untested approach, to increase success for underprepared learners.

CBE models are flexibly paced programs that measure progress by what students demonstrate they know and are able to do (as spelled out in specific competencies), rather than by earning a passing grade at the end of a traditional time-bound course. CBE has seen a recent boom in popularity, with more than 600 colleges offering or in the process of designing CBE programs.[1] Advocates laud CBE for its emphasis on mastery, flexibility, customization, and transparency (see "Benefits of CBE" on page 3). Early data are limited, but show promise. For example, a recent study by the American Institutes for Research compared CBE programs at six institutions to traditional college programs and found that CBE models had higher retention and completion rates.[2]

However, most postsecondary CBE programs developed in recent years have focused on serving learners who are already considered college ready. If designed for a broader range of learners, specifically those who need to boost their reading, writing, or math skills in order to succeed at college coursework, CBE could be an important piece of the national movement to increase postsecondary access, equity, and credential attainment.

[*CBE designs may help more initially underprepared learners earn college credentials.* **]**

With support from the ECMC Foundation, JFF is leading an effort to explore how CBE might be applied in a developmental education context, to build on the success of previous redesign efforts and improve outcomes for a greater number of students. This paper is part of a series recommending specific features likely to help more students master college-ready skills, persist in their postsecondary studies, and complete credentials. Our goal is to encourage colleges to begin experimenting with CBE as a potential means to better serve students who qualify for enrollment in developmental education courses (see "Why Link CBE with Developmental Education Redesign").

This brief focuses on establishing which developmental education redesign model makes the most sense to use to pilot CBE strategies. The rest of the series will address intake and placement, curriculum, assessment, instruction, and support services.

Why Link CBE with Developmental Education Redesign?

CBE offers great potential to serve academically underprepared college learners, but the existing approaches are as yet unproven. One strategy for beginning to build a research base is to align CBE with evaluated models and strategies that work. Developmental education redesign has a well-established and growing body of research about the barriers facing underprepared students and proven solutions. Ultimately, leading experts agree, remediation must be integrated into a student's entry into "guided pathways"—structured academic and career paths designed to provide clear routes to degree completion and entry into the workforce.[3] Therefore, we suggest that CBE be integrated into evidence-based practices to improve outcomes for developmental education students and be considered a tool for furthering innovations that provide on-ramps into guided pathways.

BENEFITS OF CBE

BARRIERS FOR UNDERPREPARED LEARNERS

	FLEXIBILITY	**CUSTOMIZATION**	**MASTERY**	**TRANSPARENCY**
POOR PLACEMENT	The process for determining remediation needs and course placement can offer students a variety of paths to the goal of becoming college ready and earning a postsecondary credential.	Multiple forms of assessment highlight individual abilities and needs, including academic and psychosocial factors that predict the best placement.	Students can concentrate only on the specific competencies they need to master, instead of being required to take semester-long courses that include material they already know.	Learners understand exactly why they need any given developmental competency, and how each competency builds toward their ultimate educational goals.
WEAK ENGAGEMENT	A variety of assessments give learners multiple ways to demonstrate mastery.	Curriculum content and instruction can be designed to meet the interests and goals of the individual learner.	Mastery is the new minimum: learners must demonstrate a firm grasp of material, but can make multiple attempts rather than take a single high-stakes evaluation.	
LIFE CHALLENGES	Students can learn at a variable pace, depending on their individual work, family, and other needs. Students can access online coursework and support at times and locations most convenient to them, whether at 12 noon or 12 midnight.	Student supports, both academic and psychosocial, are tailored to individual needs and circumstances.	Students can advance at any time they are able to demonstrate a competency, rather than only at the end of a term.	With clear expectations about which competencies must be mastered, students have the potential to progress more efficiently toward a credential.

ACCELERATING DEVELOPMENTAL EDUCATION

Community colleges serve more than half of all college students in the country—approximately 10 million people. It is well known that roughly two-thirds of all students entering community college are deemed not ready for college-level courses and in need of developmental education.

These students must take instruction in reading, writing, and/or math until they are considered prepared for college-level work. This amounts to paying college tuition to repeat high school classes, consuming valuable time and financial aid, while accruing credits that do not count toward a college degree. Many people grow discouraged and drop out. At least half of students in developmental education never complete their required remedial courses or start college-level coursework. In fact, the longer a student spends in developmental education, the less likely the student is to complete the required developmental education sequence. Seventy percent of students initially assigned to developmental courses never complete college.[4]

Accelerated models of developmental education have received significant attention as a promising way to speed entry into college-level courses. Several of these accelerated models have evidence that they can decrease the time a student spends in remedial education, improve placement into college-level courses, and improve completion rates of gateway academic courses. In planning a CBE model for underprepared learners, we chose to consider the following three approaches to accelerated developmental education, selected because they have both evidence of impact and design components that could integrate well with CBE.

1. **Modularization**
   The division of semester-long developmental education course content into smaller units of content tailored to individual needs so that students only focus on units of material they do not know. This enables students to avoid spending time on previously mastered content.

2. **Compression**
   Aligning the content of developmental courses and sequences with later academic course requirements and employer needs.
   The backwards design process results in a reduction in redundancy and an increase in relevancy of remedial course content, ultimately allowing for more targeted courses and the ability to combine two sequential developmental education courses into one.

3. **Corequisite**
   Students enroll directly in college-level math and English courses, despite low scores on placement tests, and are required to take supplemental instruction designed to support the college-level coursework. This model differs from traditional developmental education in that it is not a prerequisite to college-level courses, the curriculum is tailored to a student's need to build specific skills, it does not necessarily take the form of a course, and it provides support services.

Modularization

Of these three approaches, modularization is the most similar to CBE, built around the concept of aligning course content with students' demonstrated mastery, and reducing unnecessary and repetitive work. However, it is not a standalone college course. Modularization is a technology-based approach; students work in labs or at their own computers at their own pace. The format has advantages. However, modularization has a mixed evidence base. A recent report by the Community College Research Center (CCRC) found that while the approach did allow some students to skip sections of the curriculum, the majority of students did not progress to college-level math within a year.[5] Challenges include conflicts between self-directed pacing and acceleration, the need for additional support for faculty taking on new roles, and mismatches between student need and program design. Lessons learned from modularization efforts may have much to teach us about future CBE and developmental education efforts. However, because of the relatively weak outcomes reported to date, the heavy focus on online teacher-less formats, and the limited body of research, we have elected not to build our CBE model around this approach.

Compression

The compressed approach has stronger outcomes. JFF reviewed quasi-experimental studies of four compressed developmental education models serving more than 8,000 students.[6] Although the models differed in design and implementation, all four were found to have positive effects on students when compared to traditional developmental education. Outcomes included higher developmental education proficiency rates, lower rates of additional remediation, higher levels of credit accrual, and higher enrollment in and passing rates for college gatekeeper courses. Eventually, competency-based pathways could be constructed to follow tiered sets of competencies, beginning with foundational skills and moving to more advanced topics. This would allow for a natural alignment with the backwards-mapped design process used in compressed models, driving reduced redundancy and greater relevancy of course content.

This model is often also referred to as a "paired" developmental education redesign model.[7] The paired approach splits the developmental content into two developmental course sections and requires students to enroll in both sections. For example, there might be an English 098 / English 099 pair where 098 is critical reading and 099 is college writing. Both sections of the pair are noncredit bearing and they must be taken concurrently.

Despite the potential strength of the compressed approach, we chose not to use it as the basis for CBE for underprepared learners. Because compressed models still require time spent on remediation before proceeding to college-level coursework, they may slow progression and increase time to completion.

Corequisite

The term "corequisite" traditionally refers to a formal course of study that is taken simultaneously with another. As noted earlier, in the case of developmental education, the corequisite model refers to placing students in entry-level college math and/or English courses while they also take supplemental education aligned with their college-level math/English course. This is in contrast to the typical prerequisite approach where students are required to take developmental courses before enrolling in college-level courses. Corequisite students are also provided embedded academic and nonacademic student support services. Corequisite models have three areas of strength to consider.

Strong evidence base

Early data show promising results for students enrolled in corequisite models. CCRC has conducted two quasi-experimental evaluations, covering one-year and three-year time spans respectively, of the Community College of Baltimore's corequisite model, called the Accelerated Learning Program. CCRC found that ALP students completed English 101 at a 36 percent higher rate and English 102 at a 21 percent greater rate than comparison non-ALP students.[8] ALP students also had higher rates of semester-to-semester persistence, higher numbers of courses completed, and greater numbers of credits

earned. In Tennessee, where the state is working to scale corequisite models, pilot colleges were able to improve the completion of college-level math from 12 to 51 percent and college-level writing from 31 to 59 percent for developmental students enrolled in corequisite courses compared to prerequisite models.[9]

Broad implementation

Findings of strong initial outcomes appear to be driving growth in corequisite approaches. More than 150 institutions in 35 states now offer programs based on the ALP model.[10] Five states have adopted the approach statewide, implementing it at every college in their community college systems. An additional three states are close to statewide adoption, and 13 more are committed to implementing the corequisite model at scale.[11] This level of growth suggests that the model is both highly adaptable to the local realities colleges face, and impactful enough to drive interest in new states and new colleges looking to improve outcomes for their developmental students. Having a broad array of faculty, administrators, and policymakers already familiar with implementing corequisite models will make it easier to find institutions with the right pre-conditions or prior CBE experience to explore building out CBE for underprepared learners.

Immediate access to college courses

Unlike compressed developmental education redesign models, corequisite courses allow students to enroll in college-level classes even as they are working on remedial skills. This prevents students from exclusively taking developmental education courses, which has been shown to decrease the likelihood of timely graduation by over 70 percent.[12] The corequisite model also allows students to earn college credit that counts toward a degree faster than if they were in developmental-only sequences. Earning full-time credit in the first year has a protective effect on completion rates. The National Center for Education Statistics found that students who earned at least 24 credits in their first year more than doubled their

likelihood of completion within four years, regardless of their level of preparation.[13] Timely completion is critical given the evidence that graduation rates quickly decline after five years spent in postsecondary education.[14]

Corequisite models also help enrollees identify as college students from the first semester, even if they need remediation. Students report that traditional developmental education courses often feel like repeating high school, harming their academic self-concept.[15] Multiple studies have shown that a high academic self-concept predicts success in postsecondary coursework.[16] Taking credit-bearing courses with other college students fosters greater confidence to help developmental education students succeed.

For these three reasons—its strong evidence base, broad implementation, and immediate access to college courses—JFF proposes that a CBE model for underprepared learners be designed using the corequisite developmental education model.

WHAT ARE WE PROPOSING?

JFF believes that infusing corequisite developmental education with CBE elements and additional student support services has the potential to improve student outcomes. However, because CBE has little evidence of impact, we are proposing the development of a research-driven pilot project to test this potential.

There are two types of colleges that are well positioned to do this work:

1. Colleges that already offer CBE that can engage in a backwards design process to create competency-based corequisite developmental education models that align with their college-level CBE courses.

2. Colleges that already offer corequisite developmental education models that can work to convert them to competency-based models while keeping them aligned with their gateway academic courses.
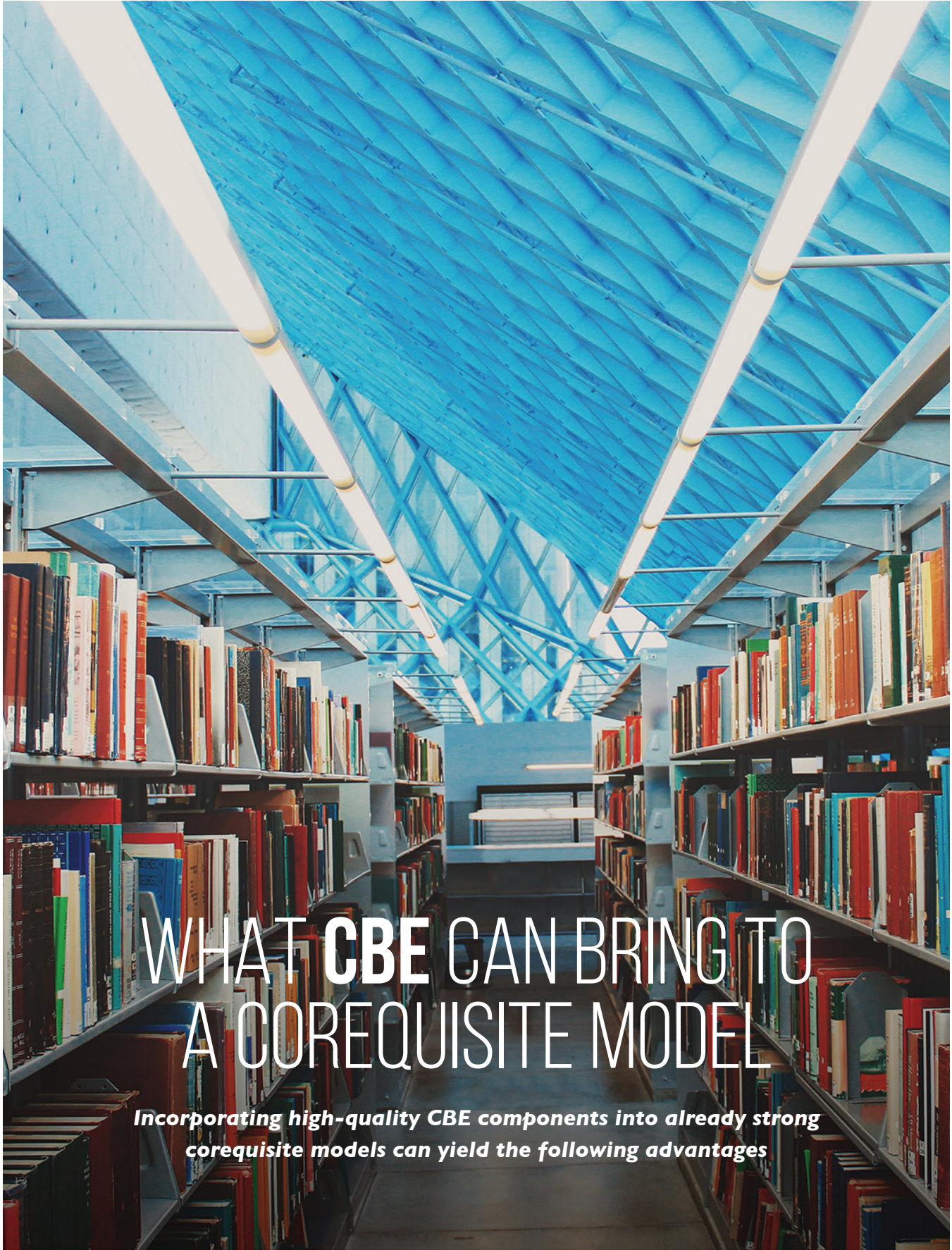
Fusing CBE with corequisite developmental education allows students to learn at the pace that is right for them.

In both cases, there are a number of additional implementation issues that colleges will need to consider, including:

▶ Should instruction be delivered in person or through a blended approach that combines online and in-person lessons?

▶ How should intake and orientation be structured?

▶ What type of student-success coaching should be in place?

▶ What kinds of technological platforms (especially those that offer interoperability with other college systems) or other software programs—such as student alert systems, adaptive skills development programs, or supportive services programs—need to be in place?

These questions will be addressed in greater detail in future papers.

WHAT **CBE** CAN BRING TO A COREQUISITE MODEL

Incorporating high-quality CBE components into already strong corequisite models can yield the following advantages

1. FLEXIBILITY

▸ Increased flexibility in pacing in a corequisite model can help facilitate learning for students placed into college-level work, who may need to slow down or speed up in the remediation component while still participating in the college-level coursework in the companion class.

▸ Increased flexibility in access can mean students are able to complete remediation in multiple locations, both on site (e.g., in a class or campus tutoring center) and remotely (e.g., at home or any location with a computer and Internet service). This ability to access learning resources virtually anytime, anywhere, allows students multiple opportunities for practice at their convenience, such as early in the morning, late at night, or on weekends and holidays. While flexible access is becoming common in a variety of educational approaches, it is potentially even more effective when combined with flexible pacing.

2. CUSTOMIZATION

▸ Courses in the corequisite model can be organized and clustered around linked content, similar to strategies used to develop meta-majors.[17] For example, a student in a health field would need to focus more heavily on statistics than algebra, and could have content that is contextualized through dosage calculations or other activities common in health care.

▸ CBE can facilitate the creation of course "building blocks" (competencies) that can be assembled in configurations depending on the student's academic area of interest. Course content can be further customized to ensure that students are able to both learn concepts and demonstrate understanding in multiple formats.

3. MASTERY

▸ Mastery is particularly important for corequisite developmental education, as enrollment in a supplemental course means that students are asked to maintain pace in two classes simultaneously. While the flexibility in pacing and the customization of content are important levers for access and persistence in a program of study, learning for mastery is the ultimate goal as students progress and build upon their foundational knowledge.

▸ CBE designs can allow for the detailed breakdown of skills and competencies so it is possible to see particular "sticking points" or gaps in a student's knowledge, and allow instructional staff and students the opportunities to target those gaps as they progress. This ultimately can lead to a stronger, more robust knowledge base going forward.

4. TRANSPARENCY

▸ The corequisite course content can be designed backwards from academic or career goals, including advanced skills and credentials, and communicated to the student as transparently as possibly. The intent is for the student to have a strong understanding of what competencies are necessary to be successful and how what they are learning now links to later curriculum, eliminating confusion many students have about why they need to know a given skill.

ALIGNING CBE TO CORE PRINCIPLES
FOR TRANSFORMING REMEDIAL EDUCATION

In 2015, JFF and five higher education organizations developed a set of core principles for transforming remedial education within the context of a comprehensive student success strategy.[18] The principles call for remediation to begin moving learners along "guided pathways"—structured academic and career paths designed to provide them with clear routes to completion of a degree or credential and entry into the workforce. These principles have a proven track record.[19] JFF and our partners are dedicated to leading developmental education and the community college experience in this direction in order to improve student success. In the table below, we show how integrating CBE into corequisite developmental education models can align with these principles.

CORE PRINCIPLES	POTENTIAL APPROACHES FOR ALIGNING CBE
▶ Every student's postsecondary education begins with an intake process to choose an academic direction and identify the support needed to pass relevant credit-bearing gateway courses in the first year.	▶ Design intake with a guided pathway or similarly structured approach, focusing on creating supports that facilitate student goal setting and successful entry into a program of study. Too much choice can result in slowing the path to completion.
▶ Enrollment in college-level math and English courses or course sequences aligned with the student's program of study is the default placement for the vast majority of students.	▶ Build on student participation in college-level coursework through a corequisite design for remediation.
▶ Academic and nonacademic support is provided in conjunction with gateway courses in the student's academic or career area of interest through corequisite or other models with evidence of success in which supports are embedded in curricula and instructional strategies.	▶ Build on a corequisite design for remediation with explicit emphasis on identifying student academic and nonacademic needs and designing augmented student supports and instructional approaches that promote success.
▶ Students for whom the default college-level course placement is not appropriate, even with additional mandatory support, are enrolled in rigorous, streamlined remediation options that align with the knowledge and skills required for success in gateway courses in their academic or career area of interest.	▶ Explore linkages to college programming that feature more intensive remediation, and include leveraging college Adult Basic Education instructors, basic skills instructional support, co-enrollment models, and alternative instructional pacing that allows for more targeted foundational skill development.
▶ Every student is engaged with the content of required gateway courses that is aligned with his or her academic program of study—especially in math.	▶ Build on the meta-major approach and, in so doing, encourage the organization of introductory gateway course content (particularly in primary subjects like math and writing, as well as program-specific foundational content) into clearly delineated core competencies that match what students need in specified programs of study.
▶ Every student is supported to stay on track to a college credential, from intake forward, through the institution's use of effective mechanisms to generate, share, and act on academic performance and progression data.	▶ Explore and build on emerging, effective institutional practices that track student progress, coherently organize student experiences, and leverage multiple college departments to structure and support student progress from intake to completion.

CHALLENGES TO CONSIDER

Continuing experimentation to improve college and career outcomes for underprepared students is a critical endeavor, but it poses many challenges. This is equally true for an approach that attempts to integrate CBE into a corequisite developmental education model. There are a number of key issues that will need to be addressed as part of any attempt to explore this topic. Some of these will be explored in upcoming papers in this series, which will focus on how to design student support services, curriculum, assessments, and course pacing to promote success for underprepared learners. However, other challenges exist beyond the scope of this series, and these will require careful consideration by innovative faculty, college administrators, and policymakers attempting to implement new CBE programs.

Credibility

Many educators have a healthy skepticism of postsecondary CBE's ability to deliver on promises of increased affordability, improved completion, and better student performance. Partly due to a scarcity of empirical evidence, CBE elicits a wide range of opinions. Some of these opinions are rooted in misconceptions, such as that faculty have no role in CBE models, that this is a process for bypassing traditional courses, that CBE faculty might not have the same credentials as those in traditional programs, or that all CBE programs are offered via distance education. These assumptions will have to be named and countered, when appropriate, in order to gain buy-in and cooperation from the broader institution.

Faculty roles

Teaching in a CBE model is typically quite different than teaching traditional college courses. This is true of both curriculum design and instruction, which relies on a team approach to learning. Many faculty who have worked in both settings report the importance of taking on the role of a success coach, working with students to monitor progress, motivating them to stay focused, and helping to address academic and non-academic barriers to success. Further, the consistent use of nontraditional assessments that focus on demonstrated mastery can change the learning environment. Colleges will need to provide the flexibility and professional development resources necessary to support developmental education and college gateway course faculty as they take on these new roles. It may also be necessary to promote quality assurance (through certification, for example) for faculty charged with developing assessments, defining competencies, or providing instruction.

Fitting CBE into the broader college structure

Far too often, CBE programs are isolated within a college organization and treated as experimental approaches. This hampers one of CBE's strengths— the transparency that allows students to connect current work to future aspirations. To address this problem, developers of CBE programs for underprepared learners will need to consider adjustments to policy and program design that help integrate CBE into the college as a whole. This will include considerations such as how to fit CBE courses into longer programs of study, whether or not to convert multiple sequential classes to CBE, how to support students moving from CBE to non-CBE courses, and how to represent CBE-based learning in transcripts and portfolios.

Determining the right model

CBE models typically follow one of two basic design principles. One is the term-based, credit-based model which mirrors traditional education structures in many ways. The other is an approach that attempts to decouple entirely from time-based measures of learning. Both have their advantages and drawbacks. The former model is easier to fit within the traditional educational system, while the latter allows for greater flexibility and adheres more strongly to the principles of CBE, but can be difficult to fund with state or federal financial aid. Colleges will need to decide for themselves what the best model is for their campus.

CONCLUSION

With the support of ECMC Foundation, we have dedicated this series of reports to recommending specific features likely to help more students— particularly those currently underprepared for postsecondary education—master college-ready skills, persist in their studies, and complete credentials. Our goal is to inform the creation of a pilot model focused on these learners. We believe that planning to incorporate CBE elements into the corequisite model, already a promising strategy in the ongoing quest to transform developmental education, is an important grounding step in this work. Organizations such as the CCRC have noted that the corequisite approach is not effective for all students, particularly in math.[20] CBE might offer a solution that would help these students succeed as well. We hope that this work spurs the creation of innovative approaches that contribute to the student success and completion agenda long underway in the United States.

ENDNOTES

1. Fain, Paul. "Quality and Competency," *Inside Higher Ed*, October 21, 2016, https://www.insidehighered.com/news/2016/10/21/group-releases-draft-quality-standards-competency-based-education.

2. Parsons, Kelle, Jessica Mason, and Matthew Soldner. On the Path to Success: *Early Evidence About the Efficacy of Postsecondary Competency-Based Education Programs.* Washington, DC: American Institutes for Research, 2016. http://www.air.org/sites/default/files/downloads/report/Path-to-Success-Postsecondary-Competency-Based-Education-Programs-Oct-2016.pdf

3. Achieving the Dream, American Association of Community Colleges, Charles A. Dana Center, Complete College America, Education Commission of the States, and Jobs for the Future. *Core Principles for Transforming Remediation within a Comprehensive Student Success Strategy: A Joint Statement.* N.p.: Authors, 2015. http://www.core-principles.org/uploads/2/6/4/5/26458024/core_principles_nov4.pdf

4. Community College Research Center. "Community College FAQs." N.d. http://ccrc.tc.columbia.edu/Community-College-FAQs.html.

5. Bickerstaff, Susan, Maggie Fay, and Madeline Joy Trimble. *Modularization in Developmental Mathematics in Two States: Implementation and Early Outcomes.* New York, NY: Community College Research Center, 2016. http://ccrc.tc.columbia.edu/publications/modularization-developmental-mathematics-two-states.html.

6. The programs are: Accelerated English, California Acceleration Project, CUNY Start, and FastStart. Juncos, Andrea, and Michael Collins. *Literature Review: Models for Developmental Education Redesign.* Boston, MA: Jobs for the Future, 2015. http://www.jff.org/sites/default/files/publications/materials/Literature-Review%20for%20website-110415.pdf.

7. Some literature refers to corequisite models as "paired" because a college-level class is accompanied by developmental education support. This paper uses the term "paired" in reference to compressed approaches.

8. Accelerated Learning Program. "What results has ALP produced?" N.d. http://alp-deved.org/what-results-has-alp-produced/.

9. Smith, Ashley. "Evidence of Remediation Success." *Inside Higher Ed*, April 5, 2016. https://www.insidehighered.com/news/2016/04/05/tennessee-sees-significant-improvements-after-first-semester-statewide-corequisite.

10. Juncos and Collins, *Literature Review*.

11. Complete College America. *Corequisite Remediation: Spanning the Completion Divide.* 2016. In June 2017, Texas adopted the largest-scale implementation of corequisite remediation in the country. By 2020, 75 percent of remedial students in the state will be required to enroll in this model. Smith, Ashley A. "Texas Requires Credit-Bearing Remediation," *Inside Higher Ed*, July 12, 2017. https://www.insidehighered.com/news/2017/07/12/texas-legislature-requires-colleges-use-popular-reform-approach-remedial-education?utm_source=Inside+Higher+Ed&utm_campaign=ea083d44ac-DNU20170712&utm_medium=email&utm_term=0_1fcbc04421-ea083d44ac-199387925&mc_cid=ea083d44ac&mc_eid=5c4ebc6186

12. Jaggars, Shanna Smith, and Georgia West Stacey. *What We Know About Developmental Education Outcomes.* New York, NY: Community College Research Center, 2014. https://ccrc.tc.columbia.edu/media/k2/attachments/what-we-know-about-developmental-education-outcomes.pdf.

13. Complete College America. *The Power of 15 Credits: Enrollment Intensity and Postsecondary Student Achievement.* Indianapolis, IN: Complete College America, 2013. http://www.completecollege.org/docs/CCA%20Intensity%20Brief-April3.pdf.

14. Higher Education Research Institute. *Completing College: Assessing Graduation Rates at Four-Year Institutions.* Los Angeles, CA: University of California, Los Angeles, 2011. https://heri.ucla.edu/DARCU/CCResearchBrief.pdf.

15. Nodine, Thad, Laura Jaeger, Andrea Venezia, and Kathy Reeves Bracco, with research support from Public Agenda. *Connection by Design: Students' Perceptions of Their Community College Experiences.* San Francisco, CA: WestEd, 2012. https://www.wested.org/wp-content/files_mf/1371593031resource1268.pdf.

16. Craft DeFreitas, Stacie, and Anne Rinn. "Academic Achievement in First Generation College Students: The Role of Academic Self-Concept." *Journal of the Scholarship of Teaching and Learning* 13 (2013): 57-67. http://josotl.indiana.edu/article/view/2161.

17. See more: Waugh, Alexandra. *Meta-Majors: An Essential First Step on the Path to College Completion.* Boston, MA: Jobs for the Future, 2016. www.jff.org/meta-majors.

18. Achieving the Dream et al., 2015. JFF's five partners are: Achieving the Dream, the American Association of Community Colleges, the Charles A. Dana Center, Complete College America, and the Education Commission of the States.

19. In 2012, JFF and our partners listed in this report released the *Core Principles for Transforming Remediation*, building on the promising practices developed in the field by administrators and practitioners. In 2015, the principles were updated to build on the progress that had been made in the field since the original release to provide a broader set of student success strategies. We reference this updated report.

20. Belfield, Clive, Davis Jenkins, and Hana Lahr. *Is Corequisite Remediation Cost-Effective? Early Findings from Tennessee—CCRC Research Brief Number 62.* New York, NY: Community College Research Center, Teachers College, Columbia University, 2016. https://ccrc.tc.columbia.edu/media/k2/attachments/corequisite-remediation-cost-effective-tennessee.pdf

Jobs for the Future
88 Broad St., 8th Floor, Boston, MA 02110
122 C St., NW, Suite 650, Washington, DC 20001
505 14th St., Suite 340, Oakland, CA 94612
Tel: 617-728-4446 **Web:** www.jff.org