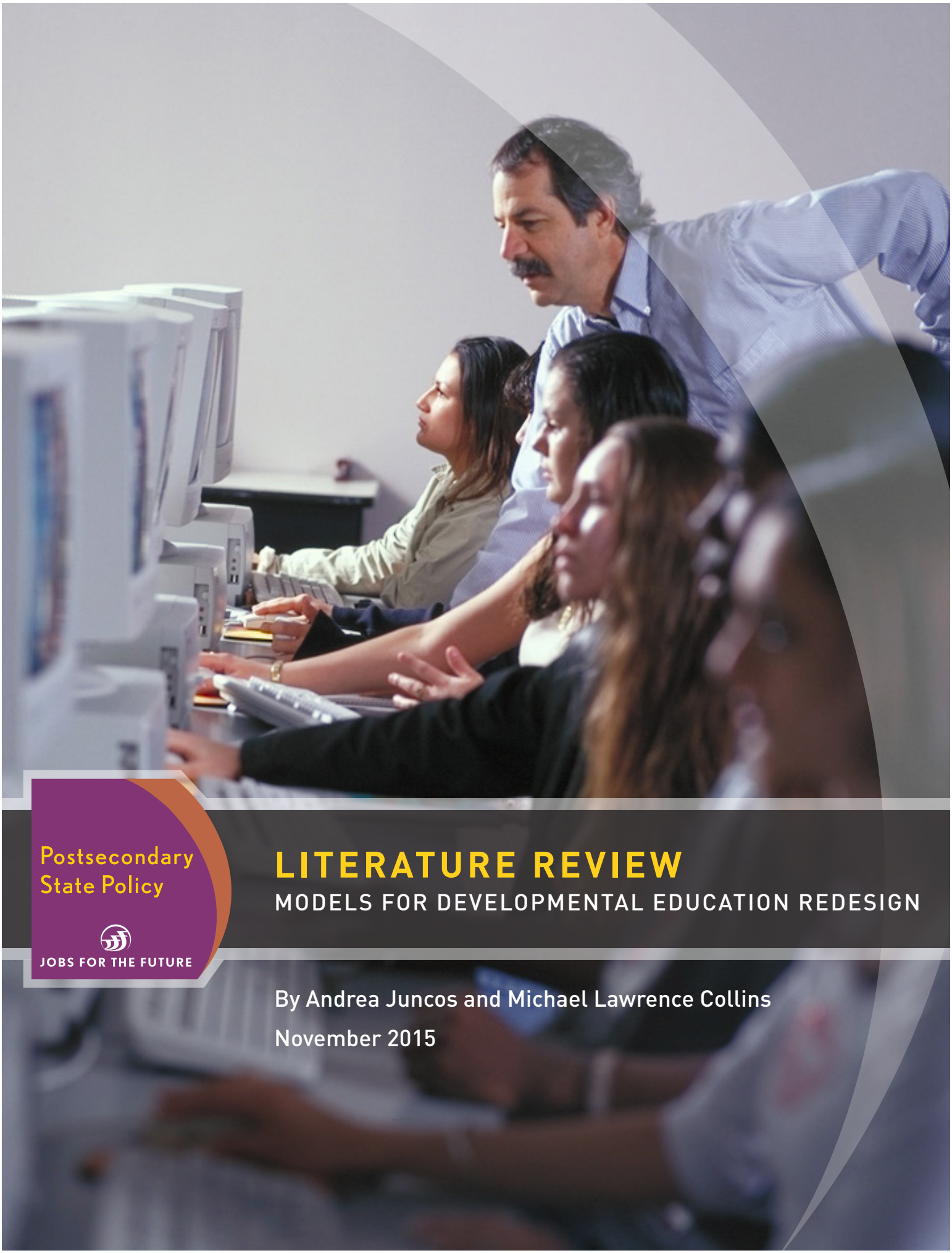

Postsecondary State Policy

JOBS FOR THE FUTURE

LITERATURE REVIEW

MODELS FOR DEVELOPMENTAL EDUCATION REDESIGN

By Andrea Juncos and Michael Lawrence Collins

November 2015

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INTRODUCTION

Florida's colleges are on the leading edge of developmental education reform. In 2013, the Florida Legislature passed Senate Bill 1720, requiring colleges to offer developmental education through one of four accelerated models—compressed, contextualized, co-requisite, and modular. The newly mandated models are designed to accelerate the time in which students who need remediation attempt gateway courses—a critical first step to entering a program of study, building academic momentum, and getting on a pathway to completion.

Jobs for the Future is partnering with the Division of Florida Colleges to assist with effective implementation of SB 1720, and support the dissemination of information about the innovative approaches Florida's colleges are taking. This literature review is designed to provide information about the four mandated, accelerated models to provide examples in each category, as well as an example of an integrated approach, and to help colleges consider the best available evidence about each approach.

In addition to this literature review, other supportive materials include:

- In spring 2015, Jobs for the Future delivered a webinar series designed to give Florida colleges access to national experts on developmental education redesign. Recordings of those webinars can be accessed at: http://www.jff.org/initiatives/postsecondary-state-policy/developmental-education-redesign-florida.
- In fall 2015, Jobs for the Future will release a series of case studies designed to document examples of how colleges have implemented SB 1720 and related reforms.

The overarching goal is to inform the decision points for Florida's colleges when implementing developmental education reform at scale. As colleges and states around the nation are watching the implementation of SB 1720 with great interest, these materials will be useful to a wider audience as well.

ABOUT THIS LITERATURE REVIEW

This literature review is organized by the four accelerated models as defined by the Florida senate—compressed, contextualized, co-requisite, and modular. It provides examples of each model and ends with an example of an integrated approach. The organization is driven by the categories identified by the legislature, but the models don't always fit neatly into those categories. Some of the models featured fall under multiple categories.

A summary matrix (page 3) provides comparable, side-by-side information about each model. Deeper details, including citations, are found in the following chapter (page 10).

APPROACHES TO ACCELERATED DEVELOPMENTAL EDUCATION: **SUMMARY MATRIX**

In 2013 the Florida Legislature passed Senate Bill 1720, requiring colleges to offer developmental education through one of four accelerated models—co-requisite, compressed, modular, and contextualized. This matrix provides comparable, side-by-side information about approaches to each model, as well as an example of an integrated model.

NAME	MODEL DESCRIPTION	DESIGN PRINCIPLES	EVALUATION RIGOR	DESCRIPTION OF EVALUATION FINDINGS	COST ANALYSIS?	STATEWIDE OR COLLEGE IMPLEMENTATION?	YEAR INITIATED	REPLICATIONS
COMPRESSED								
Accelerated English, Chabot College	Provides students who place into developmental English with the option of taking a one-semester, four-credit accelerated course (English 102) that integrates reading and writing and prepares students to enter the college-level English composition course (English 1A) in their second semester.	Integrated reading and writing Curricular redesign Compresses two semesters of content into one semester	Quasi-experimental	Within one year, students in the accelerated English course were 24 percentage points more likely to complete the college-level English course than students in the traditional developmental English sequence.	N/A	College	Mid-1990s	Faculty from other California community colleges are learning from the Chabot model through the California Acceleration Project.
California Acceleration Project	Provides professional development for math and English faculty in the redesign of English and math pathways. Promotes curricular redesign as its model for acceleration. Design of accelerated pathways varies across colleges, but all participating colleges reduce the time students spend in remediation by at least one semester.	Curricular redesign, including "high-challenge, high-support" pedagogy Redesigns can vary across colleges Compresses courses to reduce time in remediation by at least one semester	Quasi-experimental	In English, students' odds of completing a transfer-level gatekeeper course were 1.5 times greater in the accelerated English pathways overall, and 2.3 times greater for high-acceleration models in particular. In math, students' odds for completing a transfer-level math course were 4.5 greater in the accelerated pathways than the odds for students in the traditional math sequence.	N/A	Statewide, with some state funding through 3CSN	2010-11	The California Acceleration Project supports the state's 112 community colleges.

NAME	MODEL DESCRIPTION	DESIGN PRINCIPLES	EVALUATION RIGOR	DESCRIPTION OF EVALUATION FINDINGS	COST ANALYSIS?	STATEWIDE OR COLLEGE IMPLEMENTATION?	YEAR INITIATED	REPLICATIONS
COMPRESSED								
CUNY Start, City University of New York	A pre-matriculation program designed to reduce the need for developmental education through intensive preparation in reading, writing, and math for students with significant remedial needs. Students delay enrolling in their programs of study and participate in a 15- to 18-week customized intensive instruction in reading, writing, and math delivered by instructional experts that have received special training to teach in the program.	Intensive, focused experience Emphasis on teaching techniques Tutoring College Success Seminar Delayed enrollment	Quasi-experimental	Overall, 31.3% of CUNY Start students completed the semester without needing further remediation versus 5.8% of the comparison group who finished their first semester in a college degree program without need for further remediation.	N/A	College	2009	Implemented at 8 CUNY community colleges
FastStart, Community College of Denver	Allows students to combine levels of developmental math, reading, and/or English courses into paired courses so they can complete multiple courses in one semester; also pairs developmental courses with college-level courses and groups participants into learning communities. Students meet with a case manager and are encouraged to enroll in a student success course; also offers tutoring, financial aid advising, and other wraparound services.	Paired courses Learning communities Case managers Wraparound supports	Quasi-experimental	FastStart students were 11 percentage points more likely to complete the college-level math course within three years than students in the traditional developmental math sequence.	N/A	College	2005 pilot, 2006 launch	N/A

NAME	MODEL DESCRIPTION	DESIGN PRINCIPLES	EVALUATION RIGOR	DESCRIPTION OF EVALUATION FINDINGS	COST ANALYSIS?	STATEWIDE OR COLLEGE IMPLEMENTATION?	YEAR INITIATED	REPLICATIONS
CONTEXTUALIZED								
Community College Pathways Program, Carnegie Foundation for the Advancement of Teaching	Made up of two models: Statway® and Quantway®. Statway® is a yearlong course that allows students to complete developmental math and college-level statistics. It replaces the traditional algebra sequence with an integrated developmental math and statistics course, allowing developmental math students to earn college credit for statistics in one academic year. Quantway® is a single semester quantitative reasoning course that meets students' requirements for the developmental education sequence and prepares them to be successful in college-level math. Students who pass Quantway 1 can enroll in Quantway 2, a college-level quantitative reasoning course, or another college-level course aligned with their program of study.	Ambitious learning goals Lessons and out-of-class materials Formative and summative assessments Productive persistence Language and literacy component Advancing quality teaching component Analytics to support continuous improvement	Both quasi-experimental and descriptive statistics	In the most recent year of implementation (academic year 2013–14) 47% of Statway® students completed the course, earning college credit in one year. In Quantway® 59% of students completed their developmental education sequence in a single semester.	A 2013 study by Johnstone found positive returns for revenue, decreased cost per completer, costs savings to students, and increased wage gains to students.	College	2011–12	Statway® and Quantway® were implemented in 33 institutions during 2013–14.

NAME	MODEL DESCRIPTION	DESIGN PRINCIPLES	EVALUATION RIGOR	DESCRIPTION OF EVALUATION FINDINGS	COST ANALYSIS?	STATEWIDE OR COLLEGE IMPLEMENTATION?	YEAR INITIATED	REPLICATIONS
CONTEXTUALIZED								
Integrated Basic Education and Skills Training (I-BEST)	A structured program that integrates basic skills and college-level occupational content so that they are delivered at the same time instead of in a linear approach where basic skills courses are a prerequisite to the occupational content. The model, developed by the Washington State Board for Community and Technical Colleges, uses a team teaching approach that pairs basic skills instructors with professional-technical instructors. Basic skills are contextualized to the occupational areas in which students are pursuing credentials (e.g., nursing and allied health, computer technology, and automotive technology).	Integrates basic skills and college-level occupational content Team teaching Contextualizes basic skills Improved access to financial aid	Quasi-experimental	I-BEST students are more likely to earn college credit, earn CTE college credit, persist year to year, earn an award, and achieve basic skills gains on the CASAS.	Researchers performed a cost-benefit analysis and concluded that the benefits of I-BEST programs approximately equaled the additional cost of the program given the appreciably higher completion rates.	Statewide	Piloted 2004-05; Expanded to all 34 community colleges in 2007-08	In 2007-08, I-BEST was expanded to all 34 community colleges in Washington State. They all continue to implement the model in one or more occupational areas, and the state has expanded the model to developmental education. A national initiative called Accelerating Opportunity, managed by JFF, has scaled the model to 40 colleges in other states.
New Mathways Project	Students with developmental need begin math pathways with a common one-semester developmental math course, Foundations of Mathematical Reasoning; colleges are also advised to pair this course with a college-level student success course that provides students with support. Once students successfully complete these courses, they move on to a college-level math course in one of the following three pathways, based on their career interests: Statistical Reasoning, Quantitative Reasoning, and STEM-Prep.	Grounded in four key principles: 1. Multiple pathways connected to specific fields of study, 2. Acceleration that allows students to complete a college-level math course within their first year, 3. Intentional use of strategies to help students develop skills as learners, 4. Evidence-based curricular design and pedagogy Redesigns both developmental and gateway math Addresses student supports	Descriptive statistics	65% of students in NMP's Foundations of Mathematical Reasoning completed their developmental education requirements, and 30% completed a college-level math course in one year, compared to about 25% and 8% respectively for students in traditional developmental math at the same colleges.	N/A	Statewide	2012	In Texas, 48 of the 50 community college districts and 21 universities are engaged in implementing NMP principles. In addition, NMP is working in: Colorado, Georgia, Indiana, Missouri, Montana, New Mexico, Ohio, and Oklahoma.

NAME	MODEL DESCRIPTION	DESIGN PRINCIPLES	EVALUATION RIGOR	DESCRIPTION OF EVALUATION FINDINGS	COST ANALYSIS?	STATEWIDE OR COLLEGE IMPLEMENTATION?	YEAR INITIATED	REPLICATIONS
CO-REQUISITE								
Accelerated Learning Program, Community College of Baltimore County	Mainstreams academically underprepared students into introductory college-level writing (English 101) with college-level writers. Each cohort of up to 12 ALP students also enrolls in a companion class that meets directly after their English 101 class and is taught by the same professor.	Combines developmental students with college-ready Just-in-time delivery of skills support Additional supports Addresses non-cognitive factors	Quasi-experimental	ALP students have better outcomes regarding completion of English 101 and 102, persisting to the next year, and earning more credits.	A 2010 CCRC study found that ALP is "substantially more cost-effective" than the traditional developmental English sequence.	College	2007	More than 150 institutions across the U.S. in at least 35 different states
MODULAR								
Developmental Math Modules, Virginia Community College System	As part of a systemwide reform of developmental education, VCCS restructured developmental math content from a sequence of full-semester courses into nine different modules each delivered as a one-credit (typically four-week) course. Students only take the modules they need as determined by their results on a new diagnostic math placement test launched in fall 2011, as well as the requirements associated with their intended programs of study.	Modularization seeks to redesign time and structure of traditional developmental education Modules needed align to program of study New diagnostic placement test English redesign integrates reading and writing	Descriptive statistics	More students placed into and enrolled in college-level math; more students earning college-level math credits.	N/A	Statewide	2012	VCCS is also in the process of redesigning English developmental education across all 23 colleges, and the North Carolina Community College System replicated many elements of the Virginia approach.

NAME	MODEL DESCRIPTION	DESIGN PRINCIPLES	EVALUATION RIGOR	DESCRIPTION OF EVALUATION FINDINGS	COST ANALYSIS?	STATEWIDE OR COLLEGE IMPLEMENTATION?	YEAR INITIATED	REPLICATIONS
MODULAR								
SMART Math, Jackson State Community College	Replaces 3 traditional developmental math courses with 12 modules delivered through technology-driven instruction. Focuses on mastery of content aligned to students' program of study; students progress through needed modules at their own pace. Students meet with instructors and tutors in the SMART Math Center, and receive immediate feedback and on-demand individualized assistance.	Mastery of concept enables advancement to next module Modules needed align to program of study Self-paced Immediate feedback On-demand individualized assistance Technology-driven instruction Faculty and tutor support	Descriptive statistics	SMART Math students increased their average post-test scores in all courses by 15 points. The percentage of students passing developmental math increased by 45%; retention in developmental math increased by 12%.	The internal evaluation found that SMART Math reduces the cost per student by 20%.	College	2008: pilots I and II; 2009: pilot III/full implementation	N/A
INTEGRATED								
Accelerated Study in Associate Programs (ASAP), City University of New York	Comprehensive program designed to help developmental students earn an Associate's degree within three years. The program requires students to attend college full time and pursue approved majors. It provides them with a range of financial, academic, and personal supports–including required and personalized advising–designed to address multiple barriers to student success.	Full-time required Required advising Comprehensive wraparound supports, including financial aid, free textbooks, and transportation Student Success Seminars Block scheduling	Experimental	Graduation rates for ASAP students after three years were almost double those of the control group. ASAP students also earned more credits and completed their developmental education requirements at higher rates.	Two cost analyses have found ASAP cost-effective; cost per degree is lower for ASAP students than for the control group.	College	2007	ASAP has expanded to 9 CUNY colleges; MDRC is leading a replication at 3 Ohio colleges.

APPROACHES TO ACCELERATED DEVELOPMENTAL EDUCATION: **WHAT DO WE KNOW?**

APPROACHES TO ACCELERATED DEVELOPMENTAL EDUCATION: **COMPRESSED**

ACCELERATED ENGLISH, CHABOT COLLEGE

Brief Description

Chabot College's accelerated reading and writing model provides students who place into developmental English with the option of taking a one-semester, four-credit accelerated course (English 102) that prepares students to enter the college-level English composition course (English 1A) in their second semester. Developmental English students also have the option of taking the college's standard two-semester, non-accelerated sequence comprised of English 101A and English 101B, each offered for four credits. Students in both the one- and two-semester sequences work on the same assignments they

would receive in the college-level English course and receive tailored feedback and instruction to support them in successfully completing these assignments. The accelerated course is open to all developmental English students and currently serves the majority of these students at the college (Jaggars et al. 2014; Jaggars et al. 2015).

Rigor of Evaluation

Quasi-experimental: A 2015 study by the Community College Research Center at Teachers College, Columbia University (CCRC) used a quasi-experimental design to analyze one- and three-year outcomes for a sample of students enrolled in Chabot's accelerated reading and writing course and students enrolled in the traditional developmental English sequence. Their analyses spanned across two different timeframes: 1) students who enrolled in developmental English in fall 2009 or earlier, who were followed for one year; and 2) a subset of the larger sample comprised of students enrolled in developmental English in fall 2007 or earlier, who were followed for three years. The study used linear regression for the credit accrual outcome and logistic regression for gatekeeper English completion, enrollment, and pass rates. It also used propensity score matching to estimate the impact of the program on the type of student who is likely to choose the accelerated option (Jaggars et al. 2015).

Brief Description of Evaluation Findings

Within one year, students in the accelerated English course were 24 percentage points more likely to complete the college-level English course than students in the traditional developmental English sequence. Accelerated students were also more likely to complete gatekeeper English at the three-year point, but with a percentage point difference of 17. These boosts in gatekeeper completion were driven mainly by higher enrollment rates in gatekeeper English among accelerated students—more so within the first year. Accelerated students were 29 percentage points more likely to enroll in gatekeeper English than non-accelerated students within one year, and 21 percentage points more likely to enroll in gatekeeper English within three years. Accelerated students and non-accelerated students who enrolled in the gatekeeper course passed at similar rates. Students in the accelerated sequence also earned more college-level credits than their non-accelerated peers, with a difference of 3.4 more credits after one year, and 4.2 more credits after three years. Follow-up analyses on students who had earned lower scores on English placement exams found that the estimated impact of acceleration was slightly smaller for lower-scoring students than among the high- or mixed-scoring students, but overall, the differences between these groups were not significant (Jaggars et al. 2014; Jaggars et al. 2015).

Populations Covered by Evaluation

In its 2015 study, CCRC reported that Chabot's accelerated reading/writing program serves the majority of the college's developmental English population. Among the sample studied, 54 percent of accelerated students were female, 17 percent were African American, 33 percent were Asian, 29 percent were Hispanic, 13 percent were white, and 38 percent were Pell recipients. There were very few differences between the accelerated and non-accelerated groups along these characteristics, although accelerated students were less likely to be white than their non-accelerated peers (Jaggars et al. 2015).

Populations Served, As Described by Program Leaders

According to the course description for English 102 found on Chabot College's website, the accelerated course is "designed for those requiring minimal preparation for entering English 1A," the gatekeeper English composition course. The college's summer/fall 2015 course catalog says that accelerated English is "recommended for students who are able to write clear, effective sentences, are prepared to take on challenging reading and writing tasks sooner, and believe they will be ready for college-level English with only one semester of preparation" (Chabot College 2015, p. 11).

Cost Analysis Completed?

Not found

Where Implemented

Original: Chabot College, Hayward, CA

Replications: The success of Chabot's accelerated English model inspired many other faculty in California community colleges to learn about and implement acceleration courses through the California Acceleration Project. In the 2015-16 academic year, 59 of California's 112 community colleges will offer accelerated math and English pathways with CAP (Hern 2015).

Originally, Statewide or College Implementation?

College

Year Initiated

Chabot began offering two developmental English courses combined into one semester in the mid-1990s. Early on, the college offered the accelerated course (English 102) as part of a learning community, but more recently, accelerated courses have been offered as standalone courses (Jaggars et al. 2015). In 1997, the accelerated English course was first offered to all developmental English students at Chabot (Edgecombe et al. 2014).

Implementation Challenges

- **Inability to meet student demand:** According to a 2014 study by CCRC, administrators at Chabot report that student demand for developmental English sections is higher than what the college is able to accommodate; limited funding restricts their ability to offer more sections (Edgecombe et al. 2014). However, the program serves the majority of the college's developmental English students (Jaggars et al. 2015).
- **Pedagogical challenges of "open-access" model:** Some faculty members believe the "open-access" model—which allows all students placed in developmental English to choose whether to enroll in the accelerated or standard sequence option—is more difficult to teach in than courses with homogenous grouping (Edgecombe et al. 2014).
- **Buy-in:** The integration of reading and writing "raised fears among faculty about having to teach a new subject. Some reading faculty had to pursue additional graduate course training to be credentialed to teach English composition" (Edgecombe et al. 2014). Also, the program was designed to "transform classroom practice—and required changes in dispositions and behaviors" among faculty and students (Edgecombe et al. 2014).

Sources

Chabot College. 2015. Summer & Fall 2015 Class Schedule. Available at http://www.chabotcollege.edu/academics/schedule/pdfs/2015SumFallClassSched.pdf

Edgecombe, N., Jaggars, S.S., Xu, D., & Barragan, M. 2014. *Accelerating the Integrated Instruction of Developmental Reading and Writing at Chabot College*. New York, NY: Community College Research Center, Teachers College,Columbia University.

Hern, K. 2015. "The California Acceleration Project: Redesigning Developmental Education to Increase Completion and Equity." Webinar presentation for the Division of Florida Colleges, produced by Jobs for the Future in collaboration with the Division of Florida Colleges, May 1, 2015.

Jaggars, S.S., Hodara, M., Cho, S.W., & Xu, D. 2015. "Three Accelerated Developmental Education Programs: Features, Student Outcomes, and Implications." *Community College Review*. Vol. 43.

Jaggars, S.S., Edgecombe, N., & Stacey, G.W. 2014. *What We Know About Accelerated Developmental Education*. New York, NY: Community College Research Center, Teachers College, Columbia University.

CALIFORNIA ACCELERATION PROJECT

Brief Description

The California Acceleration Project is an initiative of the California Community Colleges' Success Network (3CSN) that was developed to address the high rates of attrition among students classified as underprepared for college. CAP provides professional development for math and English faculty in the redesign of English and math pathways in order to 1) substantially increase the proportion of students who complete college-level courses and to 2) close equity gaps between student groups. The project promotes curricular redesign as its model for acceleration, and although the design of accelerated pathways varies across colleges, all participating colleges reduce the time students spend in remediation by at least one semester. Many colleges offer a single precollege-level math or English course in place of two or more levels of the traditional developmental sequence. Participating colleges do not redesign their gateway college-level courses, only their developmental courses. They also align remediation with the college-level requirements for students' intended programs of study, including a redesigned pathway for students who wish to take statistics. CAP also trains colleges in the instructional design principles of accelerated coursework, which include a focus on "high-challenge, high-support" pedagogy (Hern 2015; Hayward & Willett 2014).

Rigor of Evaluation

Quasi-experimental: A 2014 evaluation by the Research and Planning Group for California Community Colleges (RP Group) used a quasi-experimental design to analyze outcomes of students from 16 community colleges that piloted CAP in the 2011–12 academic year. The study compares students in accelerated developmental math and English with students enrolled in the traditional developmental math and English sequences, following them for two to three semesters after the intervention (depending on student cohort) through spring 2013. It used multivariate logistic regression to investigate whether participation in accelerated pathways increased the odds of students completing a transfer-level gatekeeper course, and controlled for a range of pre-existing differences among students (Hern 2015; Hayward & Willett 2014).

Brief Description of Evaluation Findings

In English, students' odds of completing a transfer-level gatekeeper course were 1.5 times greater in the accelerated English pathways overall, and 2.3 times greater for high-acceleration models in particular, than for students in the traditional English remediation sequence. The accelerated math pathways showed an even larger positive effect; students' odds for completing a transfer-level math course were 4.5 times greater in the accelerated pathways than the odds for students in the traditional math sequence. In the high-acceleration models, students from all subgroups experienced significant gains in completing transfer-level math and English courses, including students from all ethnic groups, low-income students, students who had not graduated from high school, and students with low GPAs. In addition, students at all placement levels of the remedial sequence saw significant gatekeeper completion gains (Hern 2015; Hayward & Willett 2014).

Populations Covered by Evaluation

There were 2,489 students in the accelerated cohort (1,836 English, 653 math) from 16 CAP colleges. The study authors report, "recruitment patterns for accelerated courses indicate an emphasis on underprepared students and those most at risk for failure, particularly for math" (Hayward & Willett 2014, p. 23). In the accelerated English group, 52 percent were female; 15 percent were African American, 10 percent were Asian, 55 percent were Hispanic, 11 percent were white; 63 percent were Pell grant recipients; 91 percent placed two or more levels below college-level; and 11 percent had any disability. In the accelerated math group, 61 percent were female; 13 percent were African American, 4 percent were Asian, 35 percent were Hispanic, 36 percent were white; 54 percent

were Pell grant recipients; 87 percent placed two or more levels below college-level; and 18 percent had any disability. The study found that accelerated students from all subgroups experienced significant completion gains, as did students at all placement levels of the remedial sequence (Hayward & Willett 2014).

Populations Served, As Described by Program Leaders

CAP was developed to address the high rates of attrition among students classified as underprepared for college.

Cost Analysis Completed?

Not found

Where Implemented

CAP was piloted at 16 community colleges in California in the 2011–12 academic year as an initiative of the California Community Colleges' Success Network (3CSN). The project has since expanded; in the 2015–16 academic year, 59 of California's 112 community colleges will offer accelerated math and English pathways with CAP (Hern 2015).

Originally, Statewide or College Implementation?

Statewide, with some state funding through 3CSN

Year Initiated

CAP was founded by Katie Hern (Chabot College) and Myra Snell (Los Medanos) in 2010; it was launched at the first 16 California community colleges in 2011.

Implementation Challenges

Implementation variations: Implementation of acceleration varied considerably across colleges, particularly in English. This poses a potential challenge to ensuring that the model is streamlined and effective. For example, some participating colleges created low-acceleration pathways in order to test the success of the model. However, the low-acceleration classes tended to show little to no effect on gatekeeper completion and may have decreased interest at some colleges in continuing with the acceleration paradigm (Hayward & Willett 2014).

Sources

Hayward, C. & Willett, T. 2014. *Curricular Redesign and Gatekeeper Completion: A Multi-College Evaluation of the California Acceleration Project*. Berkeley, CA: The Research and Planning Group for California Community Colleges.

Hern, K. 2012. "Acceleration Across California: Shorter Pathways in Developmental English and Math." *Change: The Magazine of Higher Learning*. Vol. 44, No. 3.

Hern, K. 2015. "The California Acceleration Project: Redesigning Developmental Education to Increase Completion and Equity." Webinar presentation for the Division of Florida Colleges, produced by Jobs for the Future in collaboration with the Division of Florida Colleges, May 1.

Hern, K. 2013. "42 Colleges Now a Part of CAP Community of Practice." *California Acceleration Project*. Available at: http://cap.3csn.org/2013/08/20/42-colleges-now-part-of-cap-community-of-practice

LearningWorks. 2014. *New Study of the California Acceleration Project: Large and Robust Gains in Student Completion of College English and Math*. Oakland, CA.

CUNY START, CITY UNIVERSITY OF NEW YORK

Brief Description

CUNY Start is a pre-matriculation program designed to reduce the need for developmental education through intensive preparation in reading, writing, math, and "college success" for students with significant remedial needs, as indicated by the CUNY Assessment Tests. Students who enroll in the CUNY Start program delay enrolling in their programs of study and participate in a 15- to

18-week customized intensive program in reading, writing, and math delivered by instructional experts that have received special training to teach in the program. The full-time program includes 25 hours of instruction per week, and the part-time program is 12 hours. Students who participate in CUNY Start also receive tutoring and participate in a college success seminar (Allen & Horenstein 2013). Participating students reserve their financial aid for credit-bearing courses and are required to pay only $75 per term for CUNY Start (www.cuny.edu/cunystart).

Rigor of Evaluation

Quasi-experimental: CUNY's Office of Institutional Research and Assessment conducted the CUNY Start evaluation. It used a propensity score matching methodology using data from the CUNY Start database. In addition, researchers used regression analysis and a set of falsification tests to minimize bias in the findings (Allen & Horenstein 2013).

The model will undergo a random assignment evaluation through a U.S. Department of Education Institute of Education Sciences grant to MDRC, CUNY, and CCRC (MDRC 2014).

Brief Description of Evaluation Findings

In analyzing remedial outcomes, researchers found that after one semester, CUNY Start students were more likely to achieve proficiency in math, reading, and writing when compared to a group of similar students who did not participate in the program:

- Of all students testing into remedial math, 53% of CUNY Start students achieved proficiency, versus 10.2% of the comparison group.
- Of all students testing into remedial reading, 57.3% of CUNY Start students achieved proficiency, versus 33.1% of the comparison group.
- Of all students testing into remedial writing, 61.9% of CUNY Start students achieved proficiency, versus to 26.1% of the comparison group.

Overall, 31.3 percent of CUNY Start students completed the semester without needing further remediation, compared to 5.8 percent of students in the comparison group.

Researchers used an ordinary least squares (OLS) regression to control for factors that might not have been assessed in the propensity matching and found that the proficiency gains for CUNY Start students held across race and gender groups.

CUNY Start students attempted and earned more postsecondary credits and had higher grade point averages after one semester than students in the comparison group (Allen & Horenstein 2013).

Populations Covered by Evaluation

Incidence of remediation need among CUNY Start students:

- Writing: 84%
- Math 1: 64%; Math 2: 91%
- Reading: 58%
- All three areas (math, reading, and writing): 48%

CUNY Start Student Demographics:

- 45% Hispanic
- 32% black
- 11% Asian
- 11% white
- 49% born outside of the United States
- 56% female, 46% male

Populations Served, As Described by Program Leaders

According to the CUNY Start website, the program is designed for students who have demonstrated need for skills development in reading/writing and/or in math. It enrolls prospective students "who have been accepted to college because they have a high school or high school equivalency diploma, but are not ready for college-level work based on their scores on the CUNY Assessment Tests" (www.cuny.edu/cunystart).

Cost Analysis Completed?

Researchers did not complete a cost analysis. The forthcoming random assignment evaluation via the Institute of Education Sciences grant (*see CUNY Start Rigor of Evaluation*) will include an analysis of the cost of CUNY Start.

Where Implemented

CUNY Start is being implemented at LaGuardia Community College, Kingsborough Community College, Borough of Manhattan Community College, Hostos Community College, College of Staten Island, Bronx Community College, Queensborough Community College, and Medgar Evers Community College in New York City, NY.

Originally, Statewide or College Implementation?

College

Year Initiated

CUNY Start began in 2009 at LaGuardia and Kingsborough and was expanded in 2011.

Implementation Challenges

The CUNY Start model requires commitment to a full semester of upfront training and ongoing professional development of teachers and advisors to ensure fidelity to a specific instructional approach and established curricula. The model also requires longer hours of daily instruction, thereby creating greater classroom space demands than traditional remedial courses offerings. Finally, the model requires a high level of organizational coordination across and within partner colleges, upfront financial commitment to support program costs, and strong buy-in from college/university leadership to insure successful implementation (Linderman 2015).

Source

Allen, D. & Horenstein, A. 2013. *CUNY Start: Analysis of Student Outcomes*. New York, NY: City University of New York. Available at: http://www.cuny.edu/academics/evaluation/reports/CUNYStartStudyFall13.pdf

Linderman, Donna. 2015. University Dean for Student Success Initiatives, Office of Academic Affairs, City University of New York. Personal communication. October.

MDRC. 2014. "MDRC, CUNY, and CCRC Receive Grant from IES to Evaluate the CUNY Start Program." Available at: http://www.mdrc.org/news/announcement/mdrc-cuny-and-ccrc-receive-grant-ies-evaluate-cuny-start-program

FASTSTART, COMMUNITY COLLEGE OF DENVER

Brief Description

FastStart is a compressed model that allows students to combine different levels of developmental math, reading, and/or English courses into paired courses so they can complete multiple courses in one semester. For example, instead of taking the entire developmental math sequence as three separate semester-long courses—Math 30, 60, and 90—students can take two paired courses, Math 30/60 and Math 60/90, for the same number of credit hours. The program also pairs developmental courses with college-level courses and groups participants into learning communities, in which students participate in academic, career, and social learning activities as a cohort. Courses are taught in extended time blocks that allow faculty to employ a range of instructional activities. Participating students meet with a case manager and are encouraged to enroll in a student success course focused on college and career preparation. The program also offers tutoring, financial aid advising, and other wraparound services to ensure that students are successful (Jaggars et al. 2014; Edgecombe et al. 2013; Jaggars et al. 2015).

Rigor of Evaluation

Quasi-experimental: A 2015 CCRC study used a quasi-experimental design to analyze one- and three-year outcomes for a sample of FastStart students and students in the traditional developmental math sequence. It used linear regression for the credit accrual outcome and logistic regression for gatekeeper math completion, enrollment, and pass rates. It also used propensity

score matching to estimate the impact of the program on the type of student who is likely to choose the FastStart program (Jaggars et al. 2015).

Brief Description of Evaluation Findings

Students in the FastStart program were 11 percentage points more likely to complete the college-level math course within three years than students in the traditional developmental math sequence. This boost in completion was driven mainly by higher enrollment rates in gatekeeper math among FastStart students, who were 14 percentage points more likely to enroll than non-accelerated students. FastStart students and traditional developmental math students who enrolled in the gatekeeper math course passed at similar rates. FastStart students did not earn more college-level credits over the three-year period. (Jaggars et al. 2014; Jaggars et al. 2015).

Populations Covered by Evaluation

In its 2013 study, CCRC reported that FastStart serves students requiring multiple levels of developmental education through its compressed model, and serves higher-scoring developmental education students through its learning community approach. CCRC's 2013 and 2015 studies analyzed FastStart's math program. In the 2015 study, 86 percent of the sample started out in the lowest level of developmental math. Sixty-six percent of FastStart students were female; 14 percent were African American, 47 percent were Hispanic, and 27 percent were white (Jaggars et al. 2015).

Populations Served, As Described by Program Leaders

According to the 2013-14 CCD course catalog, FastStart is designed for "students who require developmental courses in reading, English and/or math" (CCD 2013).

Cost Analysis Completed?

Not found

Where Implemented

Community College of Denver, Denver, CO

Originally, Statewide or College Implementation?

College

Year Initiated

FastStart was piloted in 2005 and launched in 2006.

Implementation Challenges

- **Enrollment:** According to the 2013 CCRC study, FastStart enrolls less than half of students who place into multiple levels of developmental education, and the program leadership reports a lack of student demand for FastStart sections (Edgecombe et al. 2013).
- **Scheduling/registration:** Some students have trouble fitting the extended instructional blocks into their schedules (Edgecombe et al. 2013).

Sources

Community College of Denver. 2013. "Community College of Denver 2013-2014 Catalog." Available at: https://www.ccd.edu/files/2013-14ccdcatalog.pdf

Edgecombe, N., Jaggars, S.S., Baker, E.D., & Bailey, T. 2013. *Acceleration through a Holistic Support Model: An Implementation and Outcomes Analysis of FastStart@CCD*. New York, NY: Community College Research Center, Teachers College, Columbia University.

Jaggars, S.S., Edgecombe, N., & Stacey, G.W. 2014. *What We Know About Accelerated Developmental Education*. New York, NY: Community College Research Center, Teachers College, Columbia University.

Jaggars, S.S., Hodara, M., Cho, S.W., & Xu, D. 2015. "Three Accelerated Developmental Education Programs: Features, Student Outcomes, and Implications." *Community College Review*. Vol. 43.

APPROACHES TO ACCELERATED DEVELOPMENTAL EDUCATION: **CONTEXTUALIZED**

COMMUNITY COLLEGE PATHWAYS PROGRAM, CARNEGIE FOUNDATION FOR THE ADVANCEMENT OF TEACHING

Brief Description

The Community College Pathways Program is made up of two models: Statway® and Quantway®. Both models accelerate students' progress through developmental education and a college-level math course that counts towards a degree.

Statway® is a yearlong course that allows students to complete developmental math and college-level statistics. It replaces the traditional algebra sequence with an integrated developmental math and statistics course, which allows developmental math students to earn college credit for statistics in a single academic year.

Quantway® is a single semester quantitative reasoning course that meets students' requirements for the developmental education sequence. It prepares students to be successful in college-level math. Students who pass Quantway 1 can enroll in Quantway 2, which is a college-level quantitative reasoning course. Alternatively, students who are successful in Quantway 1 may enroll in another college-level course that is aligned with their program of study.

The Community College Pathways Program emphasizes conceptual understanding and application of math skills in authentic contexts. Three research principles undergird the model:

- **Productive struggle:** Students learn by grappling with problems that are initially beyond their immediate comprehension, but are in reach of understanding with extended effort and support.
- **Explicit connections to concepts:** Students make direct connections among mathematical or statistical facts and ideas improves conceptual and procedural understanding.
- **Deliberate practice:** Classroom and homework are designed to deepen students' understanding of concepts, increase their ability to apply concepts, and address gaps in understanding. Instead of rote repetition, students are supported through a carefully constructed sequence of problems that help them understand core concepts (Yamada 2014).

The instructional system of both pathways includes:

- Ambitious learning goals
- Lessons and out-of-class materials
- Formative and summative assessments
- Productive persistence
- Language and literacy component
- Advancing quality teaching component
- Analytics to support continuous improvement

The Community College Pathways are implemented through a Networked Improvement Community that involves faculty, researchers, designers, and content experts (Bryk, Gomez, & Grunow 2011). NICs are scientific learning communities that are:

- focused on a clearly specified common goal;
- guided by a deep understanding of the problem and the system that produces it;
- disciplined by the rigor of improvement science;
- networked for rapid development, testing, and refinement of interventions and their integration into different educational contexts (Yamada 2014).

Rigor of Evaluation

The Community College Pathways Program has been evaluated using both non-rigorous and rigorous evaluation. In the report titled *Community*

College Pathways' Program Success: Assessing the First Two Years' of Effectiveness of Statway® by Yamada (2014), a multi-level statistical approach with propensity score matching is employed to eliminate selection bias and measure the impact of Statway®.

Outcomes from the Community College Pathways Program have also been described in a series of descriptive reports published by the Carnegie Foundation for the Advancement of Teaching:

- *Community College Pathways: 2011-2012 Descriptive Report* by Scott Strother, James Van Campen, and Alicia Grunow, March 2013
- *Community College Pathways: 2012-2013 Descriptive Report* by James Van Campen and Scott Strother, December 2013
- *Pathways Impact Report: Three Years of Results from the Community College Pathways* by Nicole Sowers and Hiroyuki Yamada, January 2015

Brief Description of Evaluation Findings

The Community College Pathways descriptive studies show positive results for Statway® and Quantway® over the course of their three-year implementation. In the most recent year of implementation (academic year 2013-14) 47 percent of Statway® students completed the course, earning college credit in one year. In Quantway®, 59 percent of students completed their developmental education sequence in a single semester.

The descriptive results for Statway® were confirmed by the more statistically rigorous propensity score matching study.

Populations Covered by Evaluation

- **Statway®**
  - 78% of Statway® students placed two or more levels below college-level math.
  - Almost 50% placed into developmental reading.
  - 60% were female.
  - 24% were African American; 29% Caucasian; and 33% Hispanic.
- **Quantway®**
  - 56% of Quantway® students placed two or more levels below college-level math.
  - 39% placed into developmental reading.
  - 60% were female.
  - 41% were African American; 42% Caucasian; and 11% Hispanic.

Populations Served, As Described by Program Leaders

Statway® and Quantway® are designed for students with all levels of developmental need in math.

Cost Analysis Completed?

The Carnegie Foundation for the Advancement of Teaching commissioned the National Center for Inquiry and Improvement to study the fiscal implications of Statway® and Quantway®. The results, published in a report titled *Fiscal Considerations of Statway® and Quantway®: We Should Be Doing This Anyway, But Here's How It May Help the Bottom Line* (Johnstone 2013), found positive returns for revenue, decreased cost per completer, cost savings to students, and increased wage gains to students. The study was performed on a subset of Statway® and Quantway® colleges.

Where Implemented

Statway® and Quantway® were implemented in 33 institutions during 2013-14. See *Pathways Impact Report* (Sowers & Yamada 2015, p.12) for a list of participating institutions.

Originally, Statewide or College Implementation?

College

Year Initiated

Statway® was initiated in the academic year of 2011-12. Quantway® was launched in spring 2012.

Implementation Challenges

Implementation variations: The growth of Statway® and Quantway® is impressive; however, there is considerable work yet to do to scale the models. Moreover, despite the promising results from both pathways, there is variability in outcomes across implementing colleges. Understanding the cause of this variability is the current focus of the Pathways program.

Sources

Bryk, A.S., Gomez, L.M., & Grunow, A. 2011. "Getting Ideas into Action: Building Networked Improvement Communities in Education." In M.T. Hallinan, ed. *Frontiers in Sociology of Education*. New York, NY: Springer.

Johnstone, R. 2013. *Fiscal Considerations of Statway® and Quantway®: We Should Be Doing This Anyway, But Here's How It May Help the Bottom Line*. San Mateo, CA: National Center for Inquiry & Improvement.

Sowers, N. & Yamada, H. 2015. *Pathways Impact Report: Three Years of Results from the Community College Pathways*. Stanford, CA: Carnegie Foundation for the Advancement of Teaching.

Strother, S., Van Campen, J., & Grunow, A. 2013. *Community College Pathways: 2011–2012 Descriptive Report*. Stanford, CA: Carnegie Foundation for the Advancement of Teaching.

Van Campen J., Sowers, N., & Strother, S. 2013. *Community College Pathways: 2012–2013 Descriptive Report*. Stanford, CA: Carnegie Foundation for the Advancement of Teaching.

Yamada, H. 2014. *Community College Pathways' Program Success: Assessing the First Two Years of Effectiveness of Statway®*. Stanford, CA: Carnegie Foundation for the Advancement of Teaching.

INTEGRATED BASIC EDUCATION AND SKILLS TRAINING

Brief Description

Integrated Basic Education and Skills Training (I-BEST) is a structured program that integrates basic skills and college-level occupational content so that they are delivered at the same time instead of in a linear approach where basic skills are a prerequisite to the occupational content. The model, developed by the Washington State Board for Community and Technical Colleges (SBCTC), uses a team teaching approach that pairs basic skills instructors with professional-technical instructors. Basic skills are contextualized to the occupational areas in which students are pursuing credentials (e.g., nursing and allied health, computer technology, and automotive technology).

Rigor of Evaluation

Quasi-experimental: Researchers at the Community College Research Center at Teachers College, Columbia University have conducted two quantitative studies on I-BEST (Jenkins, Zeidenberg, & Kienzl 2009; Zeidenberg, Cho, & Jenkins 2010). In the 2009 study, the researchers employed logistic regression analysis and propensity score matching research methodologies. In the 2010 study, researchers employed logistic regression analysis, propensity score matching, and causal (difference-in-differences) analyses to address selection bias. The study also reviewed labor market outcomes for I-BEST students. The findings of both of the studies are considered robust.

Brief Description of Evaluation Findings

The 2009 study found that I-BEST students performed moderately or substantially better than non-I-BEST students on the following measures:

- Any college credits earned
- Any career and technical education (CTE) credits earned
- Total number of college credits earned

- Total number of CTE credits earned
- Persistence year to year (for students who did not complete an award)
- Earned award
- Achieved point gains on the Comprehensive Adult Student Assessment System (CASAS)

In the 2010 study, researchers found results similar to those in the first study. In comparison to the baseline group, overall I-BEST students were:

- 56% more likely to earn college credit
- 54% more likely to earn CTE college credit
- 13% more likely to persist year to year
- 26% more likely to earn an award
- 19% more likely to achieve basic skills gains on the CASAS

Researchers did not find any relationship between I-BEST and increase in wages or hours worked after completion of the program. The researchers note that the lack of positive wage gains might be a result of the students in the research study graduating from the program at the beginning of the Great Recession.

Note: I-BEST students are more likely to enroll full-time and more likely to receive financial aid than traditional basic skills students. Researchers report that this is likely a result of recruiters who encourage I-BEST students to apply for financial aid. Traditional basic skills students are ineligible for financial aid if they are not taking college-level courses. The researchers acknowledge that it is possible that improved access to financial aid could be influencing outcome results (Zeidenberg, Cho, & Jenkins 2010).

Populations Covered by Evaluation

I-BEST Student Characteristics:

- Female: 63%
- Hispanic: 21%
- Black, Non-Hispanic: 12%
- Asian, Pacific Islander: 10%
- Single with dependent: 21%
- Percent of students in the lowest two quintiles of socioeconomic status: 62%

Populations Served, As Described by Program Leaders

I-BEST was originally designed to serve adult basic education students.

Cost Analysis Completed?

Program costs vary based on the occupational areas, number of students served, costs of instruction, and cost of student supports. Researchers found that I-BEST costs more on average than the average cost for regular programs ($6,157 versus $4,571) (Wachen et al. 2012). Researchers also performed a cost-benefit analysis and concluded that the benefits of I-BEST programs approximately equaled the additional cost of the program given the appreciably higher completion rates.

Where Implemented

In 2007–08, I-BEST was expanded to all 34 community colleges in Washington State. All of the community and technical colleges in Washington continue to implement the I-BEST model in one or more occupational areas, and the state has expanded the model to developmental education as well. In addition, a national initiative called Accelerating Opportunity, managed by Jobs for the Future, has scaled the model to 40 colleges in other states.

Originally, Statewide or College Implementation?

The Washington State Board for Community and Technical Colleges developed I-BEST in collaboration with the colleges. SBCTC provided technical assistance to the colleges to implement the model.

Year Initiated

I-BEST was piloted in the 2004–05 academic year.

Implementation Challenges

The cost of implementation is higher than for regular programs. The model is funded at 1.75 FTE, which funds the extra cost of having both a basic skills instructor and an occupational instructor in the classroom at the same time. There are also implications for planning and scheduling. I-BEST programs have also reported challenges with recruiting students into the program.

Sources

Jenkins, D., Zeidenberg, M., & Kienzl, G.S. 2009. *Educational Outcomes of I-BEST, Washington State Community and Technical College System's Integrated Basic Skills and Training Program: Findings from a Multivariate Analysis*. CCRC Working Paper No. 16. New York, NY: Community College Research Center, Teachers College, Columbia University.

Wachen, J., Jenkins, D., Belfield, C., & Van Noy, M. 2012. *Contextualized College Transition Strategies for Adult Basic Skills Students: Learning from Washington State's I-BEST Program Model*. New York, NY: Community College Research Center, Teachers College, Columbia University.

Zeidenberg, M., Cho, S.W., & Jenkins, D. 2010. *Washington State's Integrated Basic Education and Skills Training Program (I-BEST): New Evidence of Effectiveness*. CCRC Working Paper No. 20. New York, NY: Community College Research Center, Teachers College, Columbia University.

NEW MATHWAYS PROJECT

Brief Description

The New Mathways Project (NMP) is an initiative led by the Charles A. Dana Center at The University of Texas at Austin in partnership with the Texas Association of Community Colleges that aims to improve student success and completion by reforming developmental and gateway math. The project takes a systemic approach, working with both colleges and states to help them make changes at the classroom, institution, and cross-institutional levels in order to implement three distinct accelerated math pathways that connect to students' intended programs of study. Through the NMP model, students with developmental need begin their math pathways with a common one-semester developmental math course, Foundations of Mathematical Reasoning; colleges are also advised to pair this course with a college-level student success course that provides students with support. Once students successfully complete these courses, they move on to a college-level math course in one of the following three pathways, based on their career interests:

1. **Statistical Reasoning:** for students interested in social sciences fields
2. **Quantitative Reasoning:** for students interested in humanities and general liberal arts fields
3. **STEM-Prep:** for fields requiring strong algebraic skills (i.e., chemistry, computer science, and engineering) (Rutschow & Diamond 2015)

The work of the NMP focuses on revising the content, sequencing, and structure of developmental and gateway math courses and is grounded in four key principles:

1. Multiple pathways connected to specific fields of study
2. Acceleration that allows students to complete a college-level math course within their first year
3. Intentional use of strategies to help students develop skills as learners
4. Evidence-based curricular design and pedagogy (Getz 2015)

The NMP provides institutions with tools, materials, and services to help them implement these principles; at the classroom level, it provides course materials and faculty training. The project also works at the state and national levels to impact policy in support of accelerated math pathways (Rutschow & Diamond 2015; Getz 2015).

Rigor of Evaluation

Descriptive statistics: A 2015 MDRC study used descriptive statistics to summarize outcomes of students in NMP classes and students in the traditional developmental math sequences from fall 2010 to spring 2014. It looked at students' enrollment in developmental courses and college-level courses, persistence, and completion of NMP and non-NMP courses. MDRC also analyzed the implementation of the NMP at the nine co-development colleges over three semesters (spring 2013, fall 2013, and spring 2014) through site visits, classroom observations, focus groups, and interviews (Rutschow & Diamond 2015).

Brief Description of Evaluation Findings

Of the 233 students who enrolled in the NMP Foundations of Mathematical Reasoning course in fall 2013 (at the seven co-development colleges that offered it), 65 percent passed it and fulfilled their developmental math requirements. Following the same group through spring 2014, the study found that 46 percent had enrolled in Statistical Reasoning or some other college-level statistics course, and 30 percent (of the original 233) had passed the college-level statistics course. Five of the co-development colleges followed the NMP's guidance and encouraged students in the NMP Foundations course to enroll in Statistical Reasoning. Of the 136 students who enrolled in Foundations in fall 2013 at those colleges, 70 percent passed it and fulfilled their developmental math requirement by spring 2014, 64 percent enrolled in Statistical Reasoning or another college-level statistics course, and 49 percent passed the college-level statistics course.

By way of comparison, of the 16,160 students who enrolled in a traditional developmental math class (all placement levels) in fall 2013 at the 8 co-development colleges that provided this data, 25 percent had completed their developmental math requirements by spring 2014, 14 percent had enrolled in a college-level math class, and 8 percent had passed a college-level math class. Qualitative data showed that NMP courses were implemented with high fidelity to the NMP model design and that students in NMP courses were engaged in the math content and felt positively about their NMP courses (Rutschow & Diamond 2015).

Populations Covered by Evaluation

The nine colleges studied by MDRC varied in terms of the size of their student populations (ranging from 4,127 students at one college to 64,072 at another) and student demographics such as gender, race/ethnicity, and Pell grant status. MDRC notes that most NMP classes "were evenly split by gender, with a mix of Hispanic, African-American, and white students similar to each college's overall makeup" and "students ranged in age from just out of high school to much older" (Rutschow & Diamond 2015, p. 29). Although NMP targets students who are one or two levels below college-level, MDRC reports that some students at three and four levels below may have enrolled in NMP courses, as well as students who placed at college-level, based on differences in recruitment and enrollment across the colleges (Rutschow & Diamond 2015).

Populations Served, As Described by Program Leaders

The target population for the NMP is students who are in need of one or two developmental courses in math (Rutschow & Diamond 2015).

Cost Analysis Completed?

Not found

Where Implemented

Original: The New Mathways Project was first implemented at nine community colleges in Texas in 2013–14. This initial cohort serves as "co-development colleges" and advises the Dana Center on the continued development of NMP courses and materials. These colleges are Austin Community College, Brazosport College, El Paso Community College, Kilgore College, Lone Stare College-Kingwood, Midland College, Alamo Colleges District-Northwest Vista, South Texas College, and Temple College (Rutschow & Diamond 2015).

Expansion: The MDRC report notes that as of fall 2014, 20 Texas community college districts were offering at least one NMP course (Rutschow & Diamond 2015). As per a webinar presented by Amy Getz of the Charles A. Dana Center in May 2015, 48 of the 50 community college districts in Texas, as well as 21 Texas universities, are engaged in implementing NMP principles. In addition, NMP is working with other states: Colorado, Georgia, Indiana, Missouri, Montana, New Mexico, Ohio, and Oklahoma (Getz 2015).

Originally, Statewide or College Implementation?

Statewide: Launched by the Charles A. Dana Center at The University of Texas at Austin in collaboration with the Texas Association of Community Colleges.

Year Initiated

The New Mathways Project was launched in spring 2012 and first implemented at nine colleges in Texas in academic year 2013–14.

Implementation Challenges

- **Recruitment:**
  - Most colleges limited their recruitment efforts based on faculty and staff concerns that NMP courses would not be transferable at four-year colleges.
  - Two-thirds of the colleges created lengthy, complicated enrollment processes for NMP courses that contributed to low enrollment.
  - Advisors knew little about NMP and also had concerns about course transferability.
  - The recommendation that students co-enroll in the Foundations course and the Frameworks student success course posed issues—some students had already taken a college success course, some were hesitant to enroll in a course that was not mandatory, and since few sections of both courses were offered, some students had difficulty fitting both courses into their schedules in the same semester.
- **Concerns among faculty and staff:** Some faculty expressed concerns around the heavy workload involved with implementing NMP courses, a perceived lack of math or algebra content in NMP courses, and the applicability of NMP courses at four-year institutions (Rutschow & Diamond 2015).

Sources

Getz, A. 2015. "The Path Less Completed: Redesigning the Developmental Math Sequence to Help Students Get Through, Get a Job, and Get On with Their Lives." Webinar presentation by *Inside Higher Ed*, sponsored by Pearson, May 12.

Rutschow, E.Z. & Diamond, J. 2015. *Laying the Foundations: Early Findings from the New Mathways Project*. New York, NY: MDRC. Available at: http://www.mdrc.org/publication/laying-foundations

APPROACHES TO ACCELERATED DEVELOPMENTAL EDUCATION: **CO-REQUISITE**

ACCELERATED LEARNING PROGRAM, COMMUNITY COLLEGE OF BALTIMORE COUNTY

Brief Description

Students who place into the Community College of Baltimore County's upper-level developmental writing course can choose to enroll in the Accelerated Learning Program, which mainstreams academically underprepared students into college-level writing. ALP students take English 101, the introductory college-level course, alongside students who place directly into the class. The college recommends that at least half of the students in each English 101 class be college-level writers, and that the ALP group be no more than 12

students. Each cohort of up to 12 ALP students also enrolls in a companion class that meets directly after their English 101 class and is taught by the same professor. In each English 101 class, the non-ALP students serve as role models for their ALP peers, and all students use the same college-level materials. The companion course provides ALP students with additional support and addresses non-cognitive factors. It is designed to reduce the stigma associated with developmental education and to ensure that ALP students complete English 101. ALP students earn three credits for both courses together (and pay tuition for six).

Rigor of Evaluation

Quasi-experimental: A 2012 CCRC study used a quasi-experimental design to follow students who initially enrolled between fall 2007 and fall 2010, with follow-up through fall 2011. It used a "descriptive analysis to compare outcomes of ALP and non-ALP students and a regression analysis to determine association between ALP participation and student outcomes while controlling for observable characteristics" (Cho et al. 2012). It also used a propensity score matching analysis to compare a sample of similar students. A 2015 follow-up study used a quasi-experimental design to analyze one- and three-year outcomes for samples of ALP students (initially enrolled through fall 2011) and students in the traditional developmental writing sequence.

Brief Description of Evaluation Findings

The 2012 CCRC results suggest that ALP students have better outcomes regarding completion of English 101 and 102 and with persisting to the next year compared to non-ALP students (Cho et al. 2012). Seventy-five percent of students who took ALP between fall 2007 and fall 2010 completed English 101 by fall 2011, compared to 39 percent of non-ALP students. Regarding English 102, 38 percent of ALP students completed the course by fall 2011, compared to 17 percent of non-ALP students. And 64 percent of ALP students persisted to the next year, compared to 48 percent of non-ALP students. ALP students also went on to complete more college courses and credits than non-ALP students. On average, ALP students completed 4.33 courses by fall 2011, compared to 3.31 courses completed by non-ALP students; and ALP students earned 12.91 credits, compared to 9.79 credits earned by non-ALP students (Cho et al. 2012). The CCRC's 2015 study corroborated the 2012 analysis. Compared to students in the traditional developmental writing sequence, ALP students were 28 percentage points more likely to complete college-level English within three years and 44 percentage points more likely to enroll in gatekeeper English. The ALP students also earned (5.7) more overall college-level credits within three years (Jaggars et al. 2014; Jaggars et al. 2015).

Populations Covered by Evaluation

In CCRC's 2012 study, 60 percent of ALP students were female; 50 percent were African American, 2 percent were Hispanic, and 53 percent were white. Compared to non-ALP students, ALP students were more likely to receive financial aid and to be enrolled full time during their first semester at the Community College of Baltimore County. ALP students also scored higher on the placement tests for English, reading, and math. Researchers found that "findings remained consistent between early and later cohorts of ALP students, and were also fairly consistent across race and income groups, although ALP appeared to be more effective for white and high-income students on some outcomes" (Cho et al. 2012). In CCRC's 2015 study, 90 percent of the ALP sample started out in the highest level of developmental writing. Sixty percent of ALP students were female; 50 percent were African American, 2 percent were Hispanic, and 40 percent were white (Jaggars et al. 2015).

Populations Served, As Described by Program Leaders

ALP serves Community College of Baltimore County students who place into the upper-level developmental writing course (English 052), based on their ACCUPLACER results. According to the CCBC website, roughly 90 percent of students who place into developmental English/writing are placed in English 052.

Cost Analysis Completed?

A 2010 CCRC study found that ALP is "substantially more cost-effective" than the traditional developmental English sequence in providing students with a pathway through the two English courses required for an Associate's degree, based on the cost per successful student ($2,680 versus $3,122). A cost-benefit analysis found that the benefits of ALP are more than double the costs (Jenkins et al. 2010).

Where Implemented

Original: Community College of Baltimore County, Baltimore, MD

Replications: More than 150 institutions across the U.S. now offer ALPs, in at least 35 different states. Ten of those states have five or more programs in place at colleges across the state, and large-scale ALP projects are under way in Arkansas, Colorado, Connecticut, Indiana, Michigan, New York, and Virginia.

Originally, Statewide or College Implementation?

College

Year Initiated

2007

Implementation Challenges

- **Cost:** Based on the small class sizes and the number of sections needed, the program may pose funding challenges. CCBC addressed this by having faculty teach the companion course for two credits of load instead of three.
- **Staffing:** The small class size may pose challenges related to staffing; this may be addressed with the "triangle model," in which developmental students from two sections of the college-level English course meet in one developmental section. Also, adjuncts may not have the credentials necessary to teach the college-level course.
- **Logistics:** Scheduling and registration (including technology issues) may be challenging, as well as facilities, if there are not enough classrooms to accommodate smaller ALP sections.
- **Faculty training:** The need for faculty development and training is even more so if the program is implemented at scale.
- **Buy-in:** Gaining buy-in from leadership, faculty, and students is a potential challenge; at some institutions, a successful pilot can serve to gain buy-in rather than full-scale implementation.
- **Enrollment:** Getting students to enroll when the program is optional may be difficult and requires advisors to market the program and assure students they can handle both classes when the program is not optional.

Sources

Adams, P., Gerhart, S., Miller, R., & Roberts, A. 2009. "The Accelerated Learning Program: Throwing Open the Gates." *Journal of Basic Writing*. Vol. 28, No. 2.

Cho, S., Kopko, E., Jenkins, D., & Jaggars, S.S. 2012. *New Evidence of Success for Community College Remedial English Students: Tracking the Outcomes of Students in the Accelerated Learning Program (ALP)*. CCRC Working Paper No. 53. New York, NY: Community College Research Center, Teachers College, Columbia University.

Coleman, D. 2015. *Replicating the Accelerated Learning Program: Updated Findings*. Charlotte, NC: Center for Applied Research. Available at: http://alp-deved.org/wp-content/uploads/2015/02/ALP-Replication-Study-2015-Final.pdf

Coleman, D. 2014. *Replicating the Accelerated Learning Program: Preliminary but Promising Findings*. Charlotte, NC: Center for Applied Research. Available at: http://alp-deved.org/wp-content/uploads/2014/02/CFAR-Replicating-the-Accelerated-Learning-Program-FINAL.pdf

Edgecombe, N. 2011. *Accelerating the Academic Achievement of Students Referred to Developmental Education*. CCRC Working Paper No. 30, Assessment of Evidence Series. New York, NY: Community College Research Center, Teachers College, Columbia University.

Hanover Research. 2013. *Models of Accelerated Developmental Education*. Washington, DC. Available at: http://www.tccd.edu/documents/About%20TCC/Institutional%20Research/TCCD_Models_of_Accelerated_Developmental_Education_Oct2013.pdf

Jaggars, S.S., Edgecombe, N., & Stacey, G.W. 2014. *What We Know About Accelerated Developmental Education*. New York, NY: Community College Research Center, Teachers College, Columbia University.

Jaggars, S.S., Hodara, M., Cho, S.W., & Xu, D. 2015. "Three Accelerated Developmental Education Programs: Features, Student Outcomes, and Implications." *Community College Review*. Vol. 43.

Jenkins, D., Speroni, C., Belfield, C., Jaggars, S.S., & Edgecombe, N. 2010. *A Model for Accelerating Academic Success of Community College Remedial English Students: Is the Accelerated Learning Program (ALP) Effective and Affordable?* CCRC Working Paper No. 21. New York, NY: Community College Research Center, Teachers College, Columbia University.

Powell, D.S. & Lass, L. 2014. *Adopting and Adapting Compression Strategies: A Practitioner Brief. Right from the Start: An Institutional Perspective on Developmental Education Reform*. Silver Spring, MD: Achieving the Dream.

APPROACHES TO ACCELERATED DEVELOPMENTAL EDUCATION: **MODULAR**

DEVELOPMENTAL MATH MODULES, VIRGINIA COMMUNITY COLLEGE SYSTEM

Brief Description

In spring 2012, the Virginia Community College System implemented a redesign of its developmental math program across all 23 colleges as part of a system-wide reform of developmental education. The VCCS math redesign team restructured developmental math content from a sequence of full-semester courses into nine different modules that are each delivered as a one-credit course typically taught over four weeks. Students only take the modules they need as determined by their results on a new diagnostic math placement test that was launched in fall 2011 (the Virginia Placement Test-Math) as well as the requirements associated with their intended programs of study. For example, students interested in liberal arts majors must complete or test out of modules one to five, and students interested in STEM majors must complete or test out of all nine modules. Modules are sequential and cover concepts like operations with fractions, percents and decimals, and linear equations and inequalities. VCCS also created "shell courses," which allow students to register for several modules together under one umbrella course that is typically offered over 12 or 16 weeks. Shell courses enable colleges to group students at different levels and with module requirements in one course section. Students must demonstrate mastery (via assignments and assessments) before advancing to the next module or college-level course. Instructional delivery methods vary, but many modules use instructional technology for homework, or in the case of shell courses, computer-mediated instruction in the classroom (Kalamkarian, Raufman, & Edgecombe 2015; VCCS 2014).

VCCS is also in the process of redesigning English developmental education. All 23 colleges implemented the English redesign, which includes the integration of reading and writing into tiered developmental English courses, in spring 2013. CCRC is also evaluating the English redesign as part of its Analysis of Statewide Developmental Education Reform project.

Rigor of Evaluation

Descriptive statistics: CCRC is studying the redesign of developmental education in Virginia and North Carolina as part of its three-year Analysis of Statewide Developmental Education Reform

(ASDER) project, launched in 2012 (Kalamkarian, Raufman, & Edgecombe 2015). A 2014 CCRC study reports on a descriptive analysis of early outcomes for two groups of first-time-in-college students—those who took a math placement test and enrolled in a VCCS college in fall 2010 before the redesign (19,799 students) and those who took a placement test and enrolled in fall 2012 after the redesign (20,457 students). For both groups, the study tracked students' enrollment and performance outcomes in the college-level math courses required for liberal arts and STEM majors over one year (Rodríguez 2014).

VCCS conducted an internal evaluation to assess the initial impact of developmental math redesign. They used descriptive statistics to compare outcomes of first-time-in-college, program-placed students in fall 2012 to outcomes of similar students in earlier cohorts from before the redesign (VCCS 2014).

Brief Description of Evaluation Findings

The 2014 CCRC study found that more VCCS students placed into and enrolled in college-level math after the redesign. Forty-three percent of the fall 2012 cohort placed into entry-level math, compared to 19 percent of the fall 2010 (pre-redesign) cohort. In addition, the proportion of students who placed into and enrolled in college-level math grew from 11 percent in fall 2010 to 29 percent in fall 2012. The proportion of students who placed into and successfully completed introductory college-level math increased after the redesign as well—from 8 percent in fall 2010 to 18 percent in fall 2012. The study also found that the pass rates among students who placed into and enrolled in college-level math declined, from 69 percent in fall 2010 to 62 percent in fall 2012 (Rodríguez 2014). In a 2015 report, CCRC shared additional findings from the ASDER analysis: the proportion of students enrolling in a VCCS college for the first time who were placed into developmental math declined from 81 percent in fall 2010 to 57 percent in fall 2012 (Kalamkarian, Raufman, & Edgecombe 2015).

The 2015 report highlights findings from a forthcoming study by Bickerstaff, Fay, and Trimble. Preliminary descriptive analyses of VCCS data suggest that the modules provide students with opportunities to take less math: Of the fall 2012 cohort taking the diagnostic tests for the first five modules, 47 percent placed into three or fewer modules. However, "the average pass rate across all standalone MTE [module] courses in fall 2012 was 65 percent, meaning students finished 2.6 modules on average per semester, or at a pace of roughly five completed modules over the course of an academic year" (Kalamkarian, Raufman, & Edgecombe 2015, p.17). In addition, 44 percent of students who placed into and enrolled in the first module and who needed additional modules never enrolled in subsequent modules that year. Looking at shell courses, they found that among students enrolled in the MTT 4 shell course (who were required to complete four modules to pass), 17 percent passed it in one semester, while 41 percent completed no modules and needed at least one more semester to complete their developmental math requirements (Kalamkarian, Raufman, & Edgecombe 2015).

The preliminary results from VCCS's internal evaluation showed that the number of students enrolling in developmental math appeared to decrease after the redesign—with an 18 percent decrease in developmental math headcount enrollments and a 45 percent decrease in the FTE enrollments generated by developmental math. The number of students completing their developmental math requirements within one year increased, from approximately 35 percent to 40 percent. And the number of students enrolling in and successfully completing gatekeeper math courses increased—by more than 6,600 students annually from 2010–11 to 2013–14 (approximately an 18 percent increase). VCCS found that the numbers of students persisting, graduating, or transferring did not appear to change after the redesign. However, the number of students making timely progress towards a degree increased (VCCS 2014).

Populations Covered by Evaluation

The 2014 CCRC study reports on early outcomes for two groups of first-time-in-college students in Virginia—those who took a math placement test

and enrolled in a VCCS college in fall 2010 (19,799 students) and those who took a placement test and enrolled in fall 2012 (20,457 students). According to a 2015 presentation of ASDER findings by CCRC: the fall 2012/post-redesign cohort was 59 percent white, 27 percent black, 6 percent Asian, and 7 percent Latino; 53 percent were female, and the average age for the cohort was 21 (Rodríguez & Raufman 2015). There were no significant differences between the fall 2010 cohort and the fall 2012 cohort in terms of gender, race/ethnicity, and full-time/part-time enrollment status (Rodríguez 2014).

Populations Served, As Described by Program Leaders

VCCS's redesign of developmental education is intended to serve all developmental education students (at all placement levels) in the Virginia Community College System.

Cost Analysis Completed?

Not found

Where Implemented

The redesign of developmental math was implemented across all 23 community colleges in Virginia.

Originally, Statewide or College Implementation?

Statewide

Year Initiated

The redesign of developmental math into modules was implemented in 2012. The state initiated the redesign process in 2008 with the formation of the Developmental Education Task Force, and the math redesign team recommended modularized math in 2010. The new diagnostic placement test (Virginia Placement Test-Math) was implemented in 2011.

Implementation Challenges

- **Changing roles of faculty and students:** Students must be more self-directed in computer-mediated developmental math courses and faculty must shift their instructional style and role in these settings.
- **Implementation variations:** Implementation varies considerably across institutions, in part based on the drastic difference between the reforms and existing practice. For example: colleges that were already using computer-mediated instruction to deliver math content had less difficulty with implementation.
- **Registration issues:** The "add-drop-swap" process for students who needed schedule changes for various modules (if, for example, they didn't successfully complete the first module they registered for) was labor intensive for staff (Kalamkarian, Raufman, & Edgecombe 2015).

Sources

Kalamkarian, H.S., Raufman, J., & Edgecombe, N. 2015. *Statewide Developmental Education Reform: Early Implementation in Virginia and North Carolina*. New York, NY: Community College Research Center, Teachers College, Columbia University.

Rodríguez, O. & Raufman, J. 2015. "Year Two Findings from the Analysis of Statewide Developmental Education Reform (ASDER)." Featured presentation at the Virginia Community Colleges New Horizons Conference, Roanoke, VA. Available at: http://ccrc.tc.columbia.edu/media/k2/attachments/vccs-2015-year-two-findings-asder.pdf

Rodríguez, O. 2014. *Increasing Access to College-level Math: Early Outcomes Using the Virginia Placement Test*. CCRC Brief No. 58. New York, NY: Community College Research Center, Teachers College, Columbia University.

Virginia Community College System. 2010. *The Critical Point: Redesigning Developmental Mathematics Education in Virginia's Community Colleges*. Richmond, VA.

Virginia Community College System. 2014. *Initial Review of the Impact of the Developmental Education Redesign at Virginia's Community Colleges*. Richmond, VA.

SMART MATH, JACKSON STATE COMMUNITY COLLEGE

Brief Description

In 2007, Jackson State Community College initiated the redesign of its developmental math program as part of the Tennessee Board of Regents' Developmental Studies Redesign Initiative. The college created SMART (Survive, Master, Achieve, Review, and Transfer) Math, which replaced its 3 traditional developmental math courses with 12 separate modules. The program was designed to accommodate students' diverse learning styles and levels of preparation, reduce math anxieties, and prepare students for their academic and career goals. It focuses on mastery of content aligned to students' courses of study, and allows students to progress through the modules they need at their own pace, with multiple opportunities for success. Students are required to meet with their instructor in the college's SMART Math Center for three hours a week, and receive immediate feedback and on-demand individualized assistance through online tools. Instructors and tutors at the center also provide students with additional support as needed (Bassett & Frost 2010; Fulton et al. 2014).

The program's 12 modules are grouped into three "shell courses":

1. Modules 1–3 for basic math, titled DSPM I
2. Modules 4–7 for elementary algebra, titled DSPM II
3. Modules 8–12 for intermediate algebra, titled DSPM III

Depending on the requirements of their programs of study, students must complete at least three to four modules. Their starting point is determined by pre-tests; students who demonstrate 80 percent mastery on a particular module's pre-test move on to the next one. A student's overall performance in each module is based on: online homework—completed using MyMathLabsPlus software (worth 15 percent), guided study notebook (10 percent), attendance (5 percent), and a post-test (70 percent). Upon completion of coursework, students take a post-test and have to demonstrate mastery at 75 percent or higher in order to advance to the next module (Bassett & Frost 2010).

In 2010, SMART Math won the Community College Futures Bellwether Award for excellence in community college instructional programs and services.

Rigor of Evaluation

Descriptive statistics: Jackson State Community College conducted an internal evaluation of the SMART Math program in 2010. The study utilizes descriptive statistics to compare outcomes for students who took the traditional developmental math course in spring 2008 (used as a baseline) and students in the redesigned math courses from spring 2008 (pilot I) through fall 2009 (pilot III/full implementation). It examines student success rates and retention rates for students in developmental math courses, as well as gains in student knowledge, determined by students' post-test scores (Bassett & Frost 2010).

Brief Description of Evaluation Findings

Jackson State's internal evaluation found that overall, SMART Math students increased their average post-test scores in all courses by 15 points. It also showed that SMART Math increased success rates for students in developmental math.

- In spring 2008, 41% of students in the traditional developmental math course passed, compared to 54% of students in the redesigned course who passed.
- Among SMART Math students, 57% passed in fall 2008, 59% passed in spring 2009, and 60% passed in fall 2009.
- In total, the percentage of Jackson State students passing developmental math courses increased by 45% from spring 2008 to fall 2009.

Retention, measured by students' enrollment in the course until the end, also increased.

- During the spring 2008 pilot, 74% of students in the traditional course were retained, and 72% of redesign students were retained.

- The retention rate for SMART Math students was 75% in fall 2008, and rose to 83% in fall 2009—representing an overall increase in retention of 12% (Bassett & Frost 2010).

Populations Covered by Evaluation

Jackson State's evaluation looked at students enrolled in the traditional developmental education course in spring 2008 (number not given), and an increasing number of students who enrolled in the redesigned math course during three pilot phases from spring 2008 through fall 2009: there were 356 redesign students in spring 2008, 711 students in fall 2008, 670 students in spring 2009, and 1324 students in fall 2009 (Bassett & Frost 2010).

Populations Served, As Described by Program Leaders

According to Jackson State Community College's website, SMART Math is an "enhanced learning support program" geared toward students of all educational goals, "whether they involve beginning a program of study in a field that requires advanced mathematics, completing a general education mathematics course, or applying for admission to JSCC nursing or allied health programs. Students' varying levels of preparation, math anxieties, and diverse learning styles are accommodated" (http://www.jscc.edu).

Cost Analysis Completed?

The internal evaluation touches briefly on a cost analysis, reporting that SMART Math reduced Jackson State's cost-per-student by 20 percent. The details of the analysis are not provided, but the researchers mention several factors, including a decrease in the total number of sections and the number of sections taught by full-time faculty, an increase in maximum class size, and increased retention and enrollment rates (Bassett & Frost 2010).

Where Implemented

Jackson State Community College, Jackson, TN

Originally, Statewide or College Implementation?

College

Year Initiated

SMART Math was piloted in three phases: pilot I in spring 2008, pilot II in fall 2008, and pilot III—with full implementation—in spring 2009.

Implementation Challenges

- In a presentation about SMART Math available on Jackson State's website, delivered at the Bellwether Awards ceremony in 2010, the college mentions program challenges it was addressing at that time:
  - Record keeping/registration issues with shell courses
  - Tracking students module completion and changes in major
  - Changes in role of faculty to facilitators, counselors, and tutors
  - Recruitment of tutors—both online and at the Center
- In 2010, Tennessee adopted the Complete College Tennessee Act, which took effect in 2012. Under this act, four-year colleges will no longer offer remedial education and students must co-enroll in community colleges until they complete remedial instruction. This act has the potential of increasing enrollment in SMART Math programming, which will require Jackson State Community College to scale up the program to support the incoming student population (Boatman 2012).

Sources

Bassett, M.J. & Frost, B. 2010. "SMART Math: Removing Roadblocks to College Success." *Community College Journal of Research and Practice*. Vol. 34, No. 11.

Boatman, A. 2012. *Evaluating Institutional Efforts to Streamline Postsecondary Remediation: The Causal Effects of the Tennessee Developmental Course*

Redesign Initiative on Early Student Academic Success. New York, NY: National Center for Postsecondary Research.

Fulton, M., Gianneschi, M., Blanco, C., & DeMaria, P. 2014. *Developmental Strategies for College Readiness and Success*. Denver, CO: Education Commission of the States.

Jackson State Community College. 2010. "SMART Math: Removing Roadblocks to College Success." PowerPoint presentation given at the Bellwether Awards ceremony. Available at: http://www.jscc.edu/academics/programs/learning-support-program/smart-math

Jackson State Community College. "SMART Math." Available at: http://www.jscc.edu/academics/programs/learning-support-program/smart-math

APPROACHES TO ACCELERATED DEVELOPMENTAL EDUCATION: **INTEGRATED**

ACCELERATED STUDY IN ASSOCIATE PROGRAMS, CITY UNIVERSITY OF NEW YORK

Brief Description

CUNY's Accelerated Study in Associate Programs (ASAP) is a comprehensive program designed to help students in need of developmental education earn an Associate's degree within three years. The program requires students to attend college full time and pursue an ASAP-approved major, and provides them with a range of financial, academic, and personal supports designed to address multiple barriers to student success. Participating students receive comprehensive, personalized guidance from a dedicated advisor as well as career counseling and tutoring services. The program also provides tuition waivers to fill any gaps between students' financial aid and college tuition and fees, free MetroCards for public transportation, and vouchers to reduce or eliminate the cost of textbooks. In addition, ASAP offers seminars focused on college success and special scheduling options that allow students to take classes in blocks of time that fit their schedules and to attend classes with other ASAP students. Participating students are expected to complete any necessary developmental courses within the first year and to maintain good academic standing throughout the program (Scrivener et al. 2015; www.cuny.edu/asap).

Rigor of Evaluation

Experimental: MDRC conducted a random assignment study of ASAP at three CUNY community colleges (Borough of Manhattan, Kingsborough, and LaGuardia) to evaluate the program's impact on student outcomes. One-year findings were released in 2012, two-year findings in 2013, and three-year findings in 2015. A sample of 896 low-income students in need of one or two developmental courses were assigned to the ASAP program group or to the control group. The study also evaluated the cost of the program and its implementation (Scrivener et al. 2015).

Brief Description of Evaluation Findings

Student outcomes: The graduation rates for ASAP students after three years were almost double those of the control group; 40 percent of ASAP students earned an Associate's degree from any college, compared to 22 percent of non-ASAP students. The MDRC notes that these are the largest effects it has found in any large-scale experimental study of a higher education program, and points out that most students had to complete developmental education courses within this timeframe. ASAP students also earned more credits; on average, ASAP students earned 48 credits over the three-year period, compared to 39 credits earned by control group students. In addition, 74 percent of ASAP students completed their developmental education requirements after three years, compared to 55 percent of students in the control group. The study also found an increase in the proportion of ASAP students who transferred to a four-year

college: 25 percent of ASAP students were enrolled at a four-year college after three years, compared to 17 percent of students in the control group. In addition, ASAP boosted college enrollment rates, especially during winter and summer intersession periods. For example, during the first year of the study period, 54 percent of ASAP students enrolled in the summer intersession (after the main session of second semester), compared to 29 percent of students in the control group (Scrivener et al. 2015).

Implementation: The evaluation found that ASAP was "well implemented" at all three colleges throughout the three-year period (Scrivener et al. 2015). MDRC found that ASAP staff effectively communicated program requirements around full-time enrollment and messages encouraging students to take developmental courses early and graduate within three years. In addition, there was a substantial difference between the student services offered in ASAP and the usual services offered to other students. For example, the ratio of students to advisors in ASAP was between 60 to 1 and 80 to 1, compared to ratios between 600 to 1 and 1500 to 1 for non-ASAP students. Ninety-five percent of ASAP students met with an advisor in their first year of the program, meeting on average 38 times; whereas 80 percent of non-ASAP students met with an advisor on average six times per year. Eighty percent of ASAP students met with career services during their first year, meeting an average of nine times, compared to 29 percent of non-ASAP students who met with career services on average twice during that time. Finally, 74 percent of ASAP students received tutoring in their first year, meeting with a tutor 24 times on average, compared to 39 percent of non-ASAP student who met with a tutor on average seven times (Scrivener et al. 2015).

Populations Covered by Evaluation

The evaluation sample included 896 students from the three CUNY colleges: 451 in the program group, and 445 in the control group. Sixty-two percent of students in the sample were women, and the average age was 21.5 (with 23 percent at least 23 years old). As far as race and ethnicity: 44 percent were Hispanic, 34 percent were African American, 10 percent were white, and 8 percent were Asian or Pacific Islander. Eighty-eight percent of sample members received Pell Grants. Sixty percent of the sample needed remediation in one subject, and 27 percent needed remediation in two subjects. (The target population for the evaluation was students with one or two developmental needs; however, about 2 percent of the evaluation sample were college ready.) The evaluation found that ASAP had positive effects across all subgroups analyzed—by gender, receipt of high school diploma, and number of developmental courses needed (Scrivener et al. 2015).

Populations Served, As Described by Program Leaders

According to the ASAP website, since 2009, cohorts of ASAP students have been comprised mainly of students who need one to two developmental courses based on their scores on the CUNY Assessment Tests (www.cuny.edu/asap).

Cost Analysis Completed?

The MDRC evaluation found that ASAP was cost-effective over the three-year period. The total cost of ASAP was about $16,300, or 63 percent, more per student than the usual college services offered ($14,000 in direct operating costs + $2,300 in costs associated with ASAP students attempting more college courses). However, the cost per degree was lower for ASAP students than for the control group. The analysis shows that the "additional investment in each ASAP program group student resulted in an estimated 83.9 percent increase in the likelihood of earning a degree . . . this estimated effect actually lowered the cost per degree earned for ASAP students by 11.4 percent compared with students who receive the usual college services" (Scrivener et al. 2015). This cost analysis corroborates the cost-benefit analysis done in 2013 by Dr. Levin of the Center for Benefit-Cost Studies in Education at Teachers College Columbia University.

Where Implemented

ASAP was launched in 2007 at all six CUNY community colleges at that time. It has since been expanded to serve nine CUNY colleges, with plans to

expand to more students and colleges in the CUNY system, including Bachelor's candidates at four-year colleges. The program will also be replicated in three community colleges in Ohio, beginning in fall 2015.

Originally, Statewide or College Implementation?

College

Year Initiated

2007

Implementation Challenges

No implementation challenges were reported in the MDRC evaluation; however, this model may pose substantial needs in terms of program cost and staffing.

Sources

Levin, H.M. & Garcia, E. 2012. *Cost-Effectiveness of Accelerated Study in Associate Programs (ASAP) of the City University of New York (CUNY)*. New York, NY: Center for Benefit-Cost Studies in Education, Teachers College, Columbia University.

Scrivener, S., Weiss, M.J., Ratledge, A., Rudd, T., Sommo, C., & Fresques, H. 2015. *Doubling Graduation Rates: Three-Year Effects of CUNY's Accelerated Study in Associate Programs (ASAP) for Developmental Education Students*. New York, NY: MDRC.

Scrivener, S., Weiss, M.J., & Sommo, C. 2012. *What Can a Multifaceted Program Do for Community College Students? Early Results from an Evaluation of Accelerated Study in Associate Programs (ASAP) for Developmental Education Students*. New York, NY: MDRC.

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