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Mathematics
PATHWAYS



The University of Texas at Austin
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Scaling Co-Requisite Supports at Tulsa Community College: Perspective from a Two-Year Higher Education Institution

This summary is part of the Charles A. Dana Center's "Notes from the Field" series, which highlights examples of innovative practices from colleges, universities, and systems.

Studies indicate that long developmental mathematics sequences are barriers to student success, which are complicated by several exit points such as students not enrolling, not passing, and/or not persisting to their college-level mathematics course.¹ In response to the detrimental impact of long developmental course sequences, institutions have begun offering mathematics pathways to-and-through gateway mathematics courses in one year or less.

Emerging evidence shows that this approach best serves a majority of underprepared students who can succeed in gateway mathematics courses with appropriate support.

TAKEAWAYS

- *Combining initiatives—Guided Pathways, Dana Center Mathematics Pathways (DCMP), Complete College America, and Achieving the Dream—led to rapid scaling of mathematics pathways across the institution.*
- *On-time support puts a student on a path toward college-level course completion a semester, or even a year, ahead of models that require long developmental course sequences.*
- *A four-week, intensive co-requisite support for students with low test scores created an opportunity for students to enroll in a higher level course in their first semester, moving them more quickly toward a college-level corequisite offering.*
- *All faculty, support staff, and advisors were trained on the newly developed mathematics pathways and co-requisite model supports to ensure students were given accurate information about their placement and choices.*

Across the nation, institutions are implementing one-semester co-requisite models, which refer to the practice of placing students directly into college-level courses, regardless of preparation, and providing them with supports for just-in-time instruction.² A two-year institution in Oklahoma combined its institutional initiatives in order to quickly and effectively implement and scale co-requisite supports across its campuses to support underprepared students in completing their first college-level coursework.

Background

Tulsa Community College (TCC) is the third largest institution of higher education in Oklahoma. Across four main campuses in Tulsa and multiple community campuses in surrounding areas, TCC serves approximately 27,000 students annually. As a nationally ranked, elite community college, TCC is an innovative leader in both statewide and institutional initiatives. Since 2007, the college has been a member of Achieving the Dream and has participated in systemic change activities, investigating and analyzing data on student persistence. In 2011, Oklahoma joined Complete College America's Alliance of states, with TCC serving as a network member. Oklahoma's membership in the Alliance was driven by then-Governor Mary Fallin's commitment to legislative reform that called for significant educational pipeline improvements across all of the state's higher education institutions through "restructuring remedial and developmental education and development of accelerated degree completion options."³ Furthermore, in 2015, TCC began its work with the American Association of Community College's Guided Pathways Project⁴ while Oklahoma committed to the institutional implementation of the DCOMP model through the Mathematics Pathways to Completion (MPC) project.⁵

The data gathered from TCC's multiple initiatives highlighted the challenges that most community college students face in higher education, including lack of academic preparation, financial struggles, and difficulty adjusting to college life. To help address these barriers, the college created "Completing the Dream,"⁶ an institution-wide effort that combined the missions of multiple initiatives in order to streamline a planning, implementing and monitoring process and to more tightly integrate course offerings to degree and certificate completion. Coinciding with this effort, Tulsa was selected to participate in the nationwide Community Partnership for Attainment (CPA), funded by Lumina Foundation beginning in 2015. The CPA's mission is to "expand access and success in education beyond high school, particularly among adults, first-generation college students, low-income students, and students of color."⁷

Challenges

As a public community college, TCC has an open admissions policy in which students of all ability levels can enroll. The challenge for the institution was how to support their underprepared students, as 71% of first-time degree- or certificate-seeking students were placed into developmental mathematics.⁸ Since the early 2000s, TCC has been working to improve student persistence and academic preparation for underprepared students entering college-level coursework. Initial efforts focused on long developmental sequences with as many as four levels of academic support. Although these long sequences may have been effective at remediating students' mathematics skills with a non-credit bearing course, they were not moving students closer to earning their required math credit since most dropped out after the first semester or first year.

In 2015, Oklahoma launched its Complete College America (CCA) initiative to transform developmental education for underprepared students across its higher education institutions. The developmental education reform effort called for "redesigned college-level courses that address student deficiencies without the need for a remedial course, and redesigned developmental education that allows more students to become proficient in a shorter amount of time."⁹ Oklahoma's "Scaling Corequisite Initiative" called for 90% of the state's two- and four-year institutions to offer corequisite remediation with 75% of those students enrolling in co-requisite remediation support by Fall 2017.¹⁰ This emphasis of accelerating students to complete their first college-level mathematics

course aligned with TCC’s involvement with the MPC project. Specifically, principle 2 of the Dana Center Mathematics Pathways model highlights: “Students complete their first college–level mathematics requirement in their first year of college.”¹¹ Tulsa Community College was committed to supporting these statewide outcomes as well as tackling its own institutional challenges to adequately support underprepared students, helping them stay enrolled and progress toward a degree or certificate.

Solutions

To help achieve these goals, then-Governor Fallin and the Oklahoma State Regents for Higher Education (OSRHE) created a Co-Requisite Task Force that required a delegate from each of the 27 public institutions of higher education. Lance Phillips, associate professor of mathematics, represented TCC on the task force. Key to motivating faculty to move forward with the statewide co-requisite initiative was TCC’s president, Dr. Leigh Goodson, who spearheaded an institutional assessment process that required every department to examine its mathematics requirements. Phillips visited with each department to determine the math skills needed for each of its programs, thus identifying the appropriate mathematics course students should take within the program. “It really worked well because [TCC departments] were having to take a critical look at their degree programs . . . so they were a lot more willing and responsive in talking to us about what an appropriate math class was,” said Phillips.

This collaborative process gave the mathematics department an opportunity to implement two mathematics pathways, Quantitative Reasoning and Precalculus, for degree-seeking students and an accompanying co-requisite support course for students deemed underprepared for college-level mathematics. This mandate propelled TCC in fulfilling CCA’s target outcome of doubling the number of underprepared students completing college-level math in their freshman year by the 2017–18 academic year.



In Fall 2016, TCC piloted a co-requisite model that placed underprepared students into a college-level course—either Quantitative Reasoning or Precalculus I—and a corequisite support class. These students were co-mingled with their peers who tested at college-ready levels and the support class was scheduled on the same day. At the end of the semester, Phillips noted that the co-requisite course should be scheduled either just before or just after the credit-bearing course, and be in a different location due to interest by all students—not just by those placed in the corequisite cohort—for the additional support.

Alongside the piloted co-requisite support, TCC began offering a two-week intensive “summer boot camp” for incoming students whose test scores placed them well below college level. The two-week course included a one-hour computer class each day, a personalized study plan, and one-on-one tutoring assistance. Students were then given a second placement test after completing the two-week course. Initial data indicated that more than 50% of those participants in Fall 2016 placed at least one level higher than their original test score placement. The efficacy of this approach led the college to add a “boot camp” into the first four weeks of the lowest developmental course, Foundations I. After the intensive four-week remediation, students were retested and those who placed higher could enter Foundations II, which had a delayed start date so that students who placed into it were not immediately behind on their coursework.

Although students did not receive credit for the co-requisite support course, their grades in the college-level course were tied to the completion of both classes. The college-level and co-requisite support courses shared a common syllabus and textbook, and instructors had to embed common assessment questions to comply with the Oklahoma State Regents of Higher Education (OSRHE) efforts to evaluate the efficacy of the co-requisite model.

Results

In Fall 2017, TCC scaled its co-requisite remediation efforts to all TCC campuses. Phillips credits the institution's ability to quickly scale co-requisite remediation to the required trainings for all mathematics faculty, including adjunct faculty, across the institution and to extensive advisor support and training. Further, TCC significantly increased its investment in advising staff, working to greatly reduce the former ratio of 1,000 students to each advisor to around 300:1. Students are required to meet with their advisor before the start of each semester until they complete their first college-level course to ensure they are on track to begin fulfilling degree requirements as soon as possible. TCC's rapid and successful implementation of guided pathways, mathematics pathways, and co-requisite courses demonstrates the effectiveness of combined, collaborative efforts across an institution.

With full-scale implementation beginning in Fall 2017, at the time of this publication, data have not been fully analyzed. The pilot cohort from 2016 passed the college-level course at about a 10% lower rate than their college-ready peers. While there is no way to compare how they would have fared prior to the co-requisite model, the results are better than students taking a long sequence of developmental courses prior to a credit-bearing course. An indirect but encouraging result is that the 2016 pilot cohort who participated in the co-requisite model passed their Fall 2017 mathematics course at a 17% higher rate. The preliminary Fall data are also showing promising completion improvements.

Phillips says the co-requisite model holds great promise. "We haven't seen the stigma that [other] colleges have toward lower level students," he said. "We just treat them like other students and they are succeeding now like other students."



Contact information

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Endnotes

- ¹ <https://dcmathpathways.org/sites/default/files/resources/2016-11/The%20Case%20for%20Mathematics%20Pathways.pdf>
- ² <https://dcmathpathways.org/sites/default/files/resources/2018-02/Co-req%20supports.pdf>
- ³ <https://www.okhouse.gov/Documents/InterimStudies/2011/11-093%20presentation%20b.PDF>
- ⁴ <http://tulsacc.edu/bellwether>
- ⁵ <http://dcmathpathways.org/where-we-work/mathematics-pathways-completion-mpc>
- ⁶ <http://ira.tulsacc.edu/content/completing-dream-ctd>
- ⁷ <https://www.luminafoundation.org/files/resources/community-partnership-info.pdf>
- ⁸ <http://ira.tulsacc.edu/sites/default/files/u2/Annual%20Student%20Assessment%20Report%202013-2014.pdf>
- ⁹ <https://www.okhighered.org/complete-college-america/initiatives.shtml>
- ¹⁰ <https://www.okhighered.org/complete-college-america/corequisite-at-scale-docs/corequisite-at-scale-guidance.pdf>
- ¹¹ <https://dcmathpathways.org/dcmp>

Credits

All images courtesy of Tulsa Community College.

About the Dana Center

The Dana Center develops and scales math and science education innovations to support educators, administrators, and policy makers in creating seamless transitions throughout the K–16 system for all students, especially those who have historically been underserved. We focus in particular on strategies for improving student engagement, motivation, persistence, and achievement.

The Center was founded in 1991 at The University of Texas at Austin. Our staff members have expertise in leadership, literacy, research, program evaluation, mathematics and science education, policy and systemic reform, and services to high-need populations.

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