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Dana Center Math Pathways Boosts Rates of Completion of Developmental Math and of College-Level Math Courses

(New York City, November 21, 2019) — Dana Center Mathematics Pathways, a reform of the developmental and college-level math courses students are required to take to complete a degree, helped students at four Texas colleges complete their developmental math sequence and increased their likelihood of taking and passing college-level math and earning math credits, according to a new random assignment evaluation. The study was released today at a national conference of the Center for the Analysis of Postsecondary Readiness (CAPR), a partnership led by MDRC and the Community College Research Center (CCRC), Teachers College, Columbia University.

After four semesters, the study also found a small positive impact on students' attainment of a certificate for a portion of the sample but no effects on overall credit accumulation or on receipt of an associate's degree or transfer to a four-year college — although such effects were unlikely to be seen in so short a time.

Too Many Students Get "Stuck" in Developmental Math

Up to 70 percent of students in two-year colleges — and 40 percent in four-year colleges ¬— enter college taking developmental classes, and around half of these students never complete their developmental math requirements. Given that developmental math can cost students and their families upward of $1 billion per year, the need to improve developmental math students' success is critical. Many practitioners and policymakers have focused on improving developmental math courses by shortening the course sequences that students are required to take or streamlining the content to get students into college-level courses more quickly. Nevertheless, to date, few reforms have focused on changing the type of math that students learn and how they learn it.

What Is the Dana Center Math Pathways?

The Charles A. Dana Center at the University of Texas at Austin developed the Dana Center Mathematics Pathways (DCMP), which diversifies the math course content that students take so it better aligns with their career interests and helps them complete a college-level math course within one year of entering college. The Dana Center also developed curricula for three math pathways (statistics, quantitative literacy, and a path to calculus) that revise the content and instruction in developmental and college-level math classes while also streamlining the typical two-semester developmental math series into one semester.

The DCMP curricula encourage more student-centered, active learning models that stress students' hands-on engagement with multistep math problems. Instructors encourage students to work closely with one another, developing their own solutions to problems that are contextualized in real-life settings. Whether figuring out which sales discount offers the best bang for the buck or deciding whether a friend's blood alcohol level is too high for safe driving, these DCMP courses help students see how math can apply to their everyday lives.

What Did the Study Find?

MDRC and CAPR researchers conducted a random assignment evaluation at four colleges in Texas (El Paso Community College, Trinity Valley Community College, and two colleges from the Dallas County Community College District — Brookhaven College and Eastfield College). The study also included implementation research and a cost analysis. The main findings are:

- **The DCMP courses qualitatively changed the ways in which students experienced and learned math.** They were actively problem-solving in small groups with other students and had a better understanding of how they would use math in their everyday lives. These experiences contrasted strongly with those of students in colleges' standard developmental course offerings and college-level algebra courses, which typically centered on lecture and individual student work.
- After three semesters, the DCMP students were 8 percentage points **more likely to pass a developmental math course** (59 percent vs. 51 percent) and almost 24 percentage points **more likely to complete the developmental math sequence and become college-ready** (57 percent vs. 33.5 percent) than students in the control group who took standard courses at the colleges.
- The DCMP students were 11 percentage points **more likely to pass a college-level math course** during their second semester (20 percent vs. 9 percent), and nearly 7 percentage points **more likely to have ever passed a college-level math class** by the end of their third semester (25.3 percent vs. 18.5 percent).
- The DCMP students earned 0.2 **more college-level math credits** on average than the standard group, and both groups had **similar overall credit accumulation** during the