

Using Data to Transform Student Success

SYSTEM AND STATE CONTEXT

In Tennessee, Governor Haslam's "Drive to 55 initiative," the Tennessee Higher Education Commission's strategic plan, and the Complete College Tennessee Act have all articulated the relationship between economic growth and the legitimate aspirations of the state's public higher education systems. This means the Tennessee Board of Regents (TBR) system office focuses on empowering their staff and institutions to engage in activities that promote the ongoing success of more students. The TBR system office aims to create an environment that enables students to effectively find an educational direction that leads into their career and to equip that direction with a clear pathway of study that plots out students' coursework to graduation with as few barriers as possible. The system's interest has become less about regulating and more about helping each institution create processes and frameworks for continuing evaluation, identify best practices that might improve the outcomes of any given student success strategy, and scale those practices across the system and beyond.

By combining predictive analytics and data-mining technology, coupled with research findings from fields such as behavioral economics and cognitive psychology, the TBR system has been able to better understand how students succeed and fail. These strategic insights have been used to inform changes to system policy, as well as the implementation of broad-scale TBR system initiatives.

USING DATA TO IMPROVE STUDENT OUTCOMES

TBR system's work focused on a unified approach, knitting together the credit-bearing and remediation experience. Inspired by Austin Peay State University's successful *co-requisite model* for remediation, the TBR system studied the system-wide approach to developmental education in community college with the marker of success being students' completion of a credit-bearing math, writing, or reading-intensive class within an academic year. To understand more clearly how the preparedness of students would affect their potential success in these course completions, the team chose to disaggregate the data by ACT sub-score. Like nationwide statistics, more than 60 percent of TBR students begin college needing remediation in math, reading, and/or writing. Overall, only 12.3 percent of the students who began in a remediation course completed a credit-bearing mathematics class in an academic year, and only 30.9 percent completed a credit-bearing writing class.

When disaggregated by ACT sub-score, the success rates of these students did vary. But only one in four or five students on the cusp of having college-ready scores successfully completed a credit-bearing math class in an academic year. These rates were even lower for minority and low-income students, with 6.7 percent of minority students who began in remediation completing a credit-bearing math class in an academic year and 18.6 percent completing a writing class.

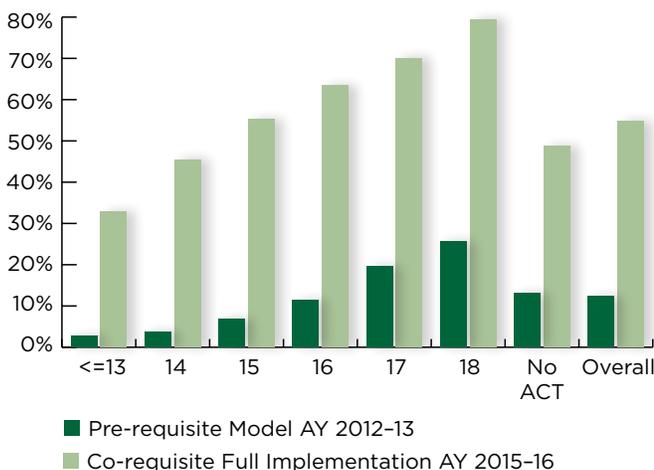
In fall 2014 and spring 2015, the TBR piloted a co-requisite model of instruction in the community college setting, involving more than 2000 students in math and writing classes across a dozen community colleges. The number and diversity of participating students and campuses helped to ensure that the results of the pilot could identify any settings or subpopulations of students for whom the new approach might be less effective. This format also allowed many faculty to participate in implementing the model, which would enable a smoother transition to full scale with positive results.

In the pilot, students who would otherwise have been enrolled in a developmental math class were enrolled directly into an Introductory Statistics class and were required to also attend a supplementary instruction experience. Similarly, students who would have begun in developmental English were enrolled into a credit-bearing first-year writing class with required co-requisite support.

RESULTS

The results of the pilot were encouraging and consistent between the two semesters. In math, more than 63.3 percent of the students received a passing grade in the class (compared to 12.3 percent under the old model). These successes were not limited to math. In the writing pilot, 66.9 percent received a passing grade, a significant increase over the historical success rate of 30.9 percent.

Figure 1. Results of TBR Full Implementation of Co-requisite Mathematics in Community Colleges



Encouraged by the results of the large-scale prototype work carried out in 2014-15, all TBR system universities and community colleges began implementing the co-requisite math, reading, and writing models for all students beginning in fall 2015.

Overall, for those community college students who took a co-requisite mathematics class, 55 percent received a passing grade in their credit bearing mathematics class, with 52 percent passing in their first semester (see Figure 1 above). This is a more than four-fold increase over the original pre-requisite model, in which only 12.3 percent of those students achieved that same passing grade in an entire academic year. Notably, there were substantial increases for students at every ACT level, with a more than tenfold increase in success rates for students with math ACT scores of 14 or below.

Similarly, the pass rate for those students who took a co-requisite writing class doubled over the 30.9 percent within an academic year to 61.8 percent. Again, the increases in success rates were not limited to those students close to the upper ends of the ACT band. While most students did not attempt additional math in the spring, this was not true for writing. Of those students who continued to English Composition II in the spring semester, 67 percent earned a passing grade.

For minority students, the success rate in mathematics rose more than sevenfold to 47.3 percent, with 42.6 percent passing in the first semester. In writing, the achievement gap was all but eliminated with a success rate increase from 18.6 percent to 57.6 percent in 2015-16.

The co-requisite model demonstrated parallel successes at TBR system universities. For details, visit <https://www.tbr.edu/academics/initiatives-academic>. More broadly, the introduction of the co-requisite model increased fall-to-fall retention in the community colleges by 16 percentage points.

LESSONS LEARNED

The TBR system office gathered valuable lessons during their implementation of their data-driven remedial program changes, which in turn may be helpful for other systems and institutions.

► **Consider the potential for positive outcomes beyond the original target group.**

While one might have reasonably expected that TBR system students close to the developmental-credit bearing threshold would fare well in the co-requisite model, students from all across the preparation spectrum achieve strikingly higher success rates in mathematics and writing classes using the new pedagogy structure, including traditionally underserved populations.

► **Look at all the costs.**

In the TBR system's new model, every student is enrolled in both a credit bearing class and a co-requisite support class, which consequently increases the costs of instruction. However, research from the Center for Community College Research has established that the cost per success is halved by employing the co-requisite model.

► **Allow for institutional flexibility.**

The TBR system office created a basic design structure for the implementation of the co-requisite model, which allowed individual campuses to adapt to their specific context. All have seen varying levels of success. The system launched a series of Co-requisite Academies to enable faculty to share both lessons learned and common implementation challenges. Through careful ongoing data-analysis, they have started to identify the most effective pedagogical tools and structures for encouraging student success.

► **Explore ways to improve the model.**

In the TBR system, students who were unable to earn a passing grade in either co-requisite section on average earned credit for only 20 percent of the hours that they attempted. More than two-thirds of these students failed every class that they attempted that year. This behavior does not appear to correlate to preparation level, so the TBR system is exploring other potential causes and connections to help this portion of the population achieve success in the coming semesters.

