

Getting Students Through Remedial Math Is a Constant Struggle, but This College Keeps Trying

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Walter Hunter, who teaches a remedial algebra class at Montgomery County Community College, brought scissors to class last month so his students could cut their textbooks in half.

The five-pound, 1,000-page tomes were unwieldy, Mr. Hunter explained, and the bulging pages made it difficult for students to write notes and solve equations in the book. With glee, students cut away, slicing off the second half of the book, which was not used much in the class anyway.

James Schneck, a second-year student who failed beginning algebra when he first took it last spring, appreciated the move, which has given him easy access to the section of the book that provides answers to practice questions.

"I didn't even know there were answers buried in there before," says Mr. Schneck, 19. "It's a big help to have the answers to check your work. These little things make a difference."

Indeed, says Mr. Hunter, it is these kinds of minor details — lightening the mood of the classroom with a book-cutting break or familiarizing students with their books and study guides — that go a long way in helping students succeed in remedial-math classes.

As at many two-year colleges around the country, the pass rate among Montgomery County Community College students who take remedial-math classes, which cover material students are typically expected to master in high school, is much lower than school officials would like. Of the roughly 1,350 new students at Montgomery County who took a remedial-math class in the fall of 2005, the latest year for which data are available, only about half passed. And over time, plenty of students will never pass: One student of every four who took beginning algebra at Montgomery County in the fall of 2000 had not earned a passing grade in the course four years later. Students were either still repeating the class, had dropped it, or had left the school altogether without passing the class or earning a degree.

To improve on those records, Montgomery County is experimenting with different course offerings, teaching methods, and academic-support services — all designed to move students more quickly and smoothly through remedial math.

"It is critically important to focus resources on the needs of students in that first term," says Kay M. McClenney, a senior lecturer at the College of Education at the University of Texas at Austin, who directs an annual survey of community-college students. "Studies show that students who

enroll in and successfully complete remedial courses in their first term are more likely to graduate or stay on track to graduate than any other population of students, including those who were never in remedial education."

Most colleges have two or three levels of remedial math, also known as precollege or developmental math, starting with arithmetic and ending with beginning or intermediate algebra. The courses are typically pass-fail and not for credit, and are a prerequisite for credit-bearing math courses and most degree-granting majors and programs.

Students are required to take such courses based on their scores in placement tests taken after admissions. Remedial math, along with other developmental-education programs in reading and writing, is considered a core offering at nearly every two-year college, meant to provide a bridge to college-level work for underprepared students.

But for many, remedial-math courses in particular are a hurdle they can't clear — and that means plenty of stalled or thwarted college plans.

Estimates vary, but many community-college educators and experts say that on average between 40 percent and 70 percent of new students entering two-year colleges around the country place into remedial math.

But what college officials and observers find so distressing is not so much the number of students who must take remedial-math classes, but the number of students who fail them.

"There are students taking these courses three, four, five times before they can pass them, and many who drop out, give up before they do," says Barbara S. Bonham, coordinator of the higher-education graduate program at Appalachian State University and a consultant to colleges on remedial education. "That's incredibly disturbing, and demonstrates that something is wrong — with the curriculum, with the teaching, with something or a combination of things that must be identified and addressed at every institution."

No national statistics exist to track pass rates, but among a group of 27 two-year colleges participating in a foundation-supported effort to improve graduation and transfer rates, called Achieving the Dream, the data are grim.

Fewer than one-quarter of the students at the 27 colleges who placed into a remedial-math course in academic 2002-3 had finished their precollege math requirements three years later. Many students at the institutions were already considered at risk for not being on track to graduate — because they came from low-income families, for example. However, low pass rates in remedial education appear to be a national phenomenon, not one limited to certain colleges or specific student profiles.

Montgomery County, in the suburbs of Philadelphia, has pockets of poverty, but it is mostly an affluent area. The main campus of the community college here is green and sprawling, occupying former farmland and converted barns. Among the 17,000 or so students taking courses for credit, one in five is a minority-group member, and more than one-third are first-generation college students. Some 13 percent of students graduate within three years of enrolling, while another 30 percent transfer to other colleges within that time. Of the roughly 3,500 new students each year, about 60 percent must take remedial math.

Largely spurred by its concerns about pass rates in remedial math, and seeking to lift its graduation rate as high as 23 percent by this spring, Montgomery County Community College signed on to the Achieving the Dream program earlier this year. It is now one of 83 two-year colleges working with grants from the Lumina Foundation for Education, the Heinz Endowments, and other groups to help more students succeed in school.

This semester at Montgomery County, nearly 2,000 students are enrolled in fundamental arithmetic or beginning algebra, 17 of whom are taking Mr. Hunter's new course, which combines the two.

The course, which is being run as a pilot program, is a direct result of what college officials learned during focus groups with students and staff members last spring. Students expressed frustration with the pace of remedial courses: When classes moved too quickly, they risked falling behind; when classes moved too slowly, they felt bored and disengaged. Students also said it was discouraging to spend a semester or more in classes for which they earned no credit.

Mr. Hunter's new course addresses some of those concerns: It condenses two semesters of classes into one, and offers a medium-paced course that focuses on algebra but includes some review of arithmetic when needed.

"I wouldn't say I was totally ready for algebra, but I wouldn't have wanted to waste too much time — a whole semester in basic math — either," says Joshua DuBois, 19. He worked for a year after graduating from high school, then started at Montgomery County this fall. "When [Mr. Hunter] says things like reciprocal, or something, I am, like, oh yeah, I remember that, and then we move on."

To step up the pace for other students, Montgomery County for the first time offered two-week refresher courses in math this past summer. The courses were intended to give students taking arithmetic in the fall a leg up, and to allow others who had scored relatively high on the placement test to skip basic math and move right into beginning algebra.

Montgomery County has also expanded its academic-support services this year, to include a new peer-tutoring program intended to help students class by class. The institution's learning-assistance lab has long offered general tutoring sessions for students taking remedial math. The new program, in contrast, has tutors behave more like teaching assistants — attending classes and holding weekly help sessions designed around that specific course. The tutors are students or former students who have recently passed developmental-math courses, along with some higher-level math as well.

"I'm right there in the classroom so it makes seeking help much less frustrating and time-consuming," says Earl McCard, 25, a student tutor who took beginning algebra a few years ago and is scheduled to earn a liberal-studies degree in the spring. "I can connect with them, too. I had some of the same difficulties, and I know how to get past the initial problems and frustrations."

Mr. McCard, who is taking precalculus this semester, works in one of Mr. Hunter's basic-math classes. Mr. Hunter says that besides the practical help Mr. McCard provides with course work, the tutor helps create a more positive atmosphere in the classroom. And, the professor says, Mr. McCard is a valuable role model.

"Students see that it's all right to take more than two years to graduate," Mr. Hunter says. "That's critical because many of these students are also taking developmental courses in English and reading, and there's little chance they can do all that and finish in two years. We don't want to lose people just because they are discouraged."

That doesn't seem like a real worry for now in Mr. Hunter's new hybrid course. The 17 students are a spirited mix of older returning students and younger ones fresh out of high school. Some are there because they didn't learn enough math in earlier schooling; others say they have simply forgotten the material and need to get back up to speed.

Mr. Hunter peppers his classes with humor and helpful tips. After assuring his students during a class last month that when they have mastered algebra, they "will live happily ever after," he tossed out a mnemonic for the concept they were working on: order of operations.

"Please excuse my dear Aunt Sally," he wrote on the marker board, before putting up the equation: $(8)(-2)-6=$ __.

The phrase is meant to remind students that math equations are read not left to right, but according to a set of rules that explain which calculations to perform in what order — parentheses first, then exponents, then multiplication, division, addition, and, finally, subtraction.

Students seemed to follow along as Mr. Hunter eliminated the parentheses first, multiplying 8 and -2, then subtracting 6, to get the answer: -22. But things got a bit trickier when a later problem involved a fraction: $6(-3) + (5)(-2)/3 - 10 =$ __.

Mr. Hunter reminded the class that with fractions, problem solvers must first simplify the numerator and the denominator, using the order of operations in each case, and then take care of the division last. But the introduction of the fraction was making Audrey Nurse-Gregg, a fortysomething woman who's back in school to become a physician's assistant, a little anxious. After class, she explained that her anxiety about math has kept her from succeeding before. She took a beginning algebra class last spring, but dropped it midsemester.

Here, though, she is overcoming her phobia in large part, she says, because Mr. Hunter and her classmates seem sympathetic.

In the middle of working on the fraction equation in front of the class, the professor stopped, looked at her and said: "Audrey, is that all right? You look confused."

"Yes," Ms. Nurse-Gregg responded, smiling. "I am really unhappy with this problem at this moment."

Other students laughed quietly along with her, and the class continued working on the equation. More slowly this time.