Degreein3 Math Modeling

TOOL: Outcomes module-based "Math Modeling" course

GOAL: Increased student retention and completion through integration of remedial math modules into a credit-bearing course

BREAK THROUGH MODEL: Columbus State University, Georgia

Why was this tool developed?

Across the nation, too many students require remediation upon college entrance, which increases both the time-to-degree and cost of education. Nationally, postsecondary education data indicate that a larger proportion of students drop out in the first year than in any other year, and many educators suspect that frustration with and delay caused by remedial coursework could be contributing factors. To help mitigate these consequences of remediation, **Columbus State University's (CSU) new Degreein3 (DN3) Program integrates learning support modules into its basic math course; the 100% online degree program uses prior learning assessments to allow proficient students to pass the pre-college-level math modules, and provides other students the opportunity to practice pre-college-level coursework in preparation for the credit-earning portion of the course.** This course is required for all students in DN3's two programs that lead to a bachelor's degree in Criminal Justice or Communication in three years.

CSU educators hope that this will minimize the amount of time that students spend on pre-college-level math courses—and minimize students' risk of dropping out—while still providing a quality degree program.

How is it different?

DN3's basic math course, "Math Modeling," incorporates selected competencies from two traditional remedial math classes at CSU. The selected competencies comprise the first three instructional units (or modules) in the college-level course. Students must take a pre-test to assess prior learning for each of the first three modules; a student scoring above 70% on the pre-test demonstrates proficiency and can move on to the next module.

A pre-test score below 70% indicates that the student needs remediation—the student must complete the lessons, show evidence of mastery, and pass a post-test for each module. If the student scores 80% or higher on the post-test, the student passes the module and moves onto the next. This process repeats for modules 2 and 3. From module 4 through 7 (the college-level portion of the course), there is no option to pass the material based on prior learning. Students must complete the lessons, show evidence of mastery, and pass a post-test.

Whereas most courses in the DN3 program are traditional online classes that are completed in a seven-week session, students can take two sessions to complete Math Modeling, with the potential of a third session for students who show the promise of completing the course or those who have had, for whatever reason, been unable to fully engage themselves in the first two sessions. Although students are able to pass modules if they demonstrate competency, this course is labeled an "outcomes module-based course" rather than a "competency-based course" because students have to complete it within two sessions; a more traditional competency-based course would offer students more flexibility to pace themselves through the modules.

What is the advantage for students?

CSU educators believe that the main benefit is psychological for students who might otherwise get discouraged by having to enroll in remedial courses. DN3 students do not enroll in a remedial math class; this helps prevent student anxiety based on the stigma of remediation, and from the additional cost and time required of students for remedial courses.

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>
> **Barbara Hunt,** *Degreein3 Project Manager*

Another advantage of Math Modeling as an outcomes module-based course is that students have up to three times as long to complete it as other courses in the program. Therefore, students can engage in the learning support modules without the time constraints of a session, and without the financial consequences of repeating a course in a second session. CSU educators think that this will benefit students' math foundations in the long run because it gives them time and flexibility to absorb the concepts.

How does it improve learning?

The hope is that building pre-college-level math concepts into the regular course will provide a helpful foundational review for all students. Even for those students who would not have required an entire remedial course, the modules offer reminders on basic math concepts. For instance, a student might discover from the pre-test that factoring polynomials is difficult; a student could access lessons in the module to shore up his/her understanding on that concept.

In addition, keeping the pre-college and college-level math concepts together in one course enables continuity of curriculum, and helps prevent students from forgetting pre-college concepts over time until they enroll in the college-level course.

What is the advantage for instructors and administrators?

Student retention is the primary advantage for the institution. DN3 educators hope that integrating the learning support modules into the Math Modeling course will prevent the anxiety and cost students bear with remedial coursework, which could lead them to drop out. In addition, it enables students to complete a DN3 degree in three years.

"Every student we don't lose is a gain," said DN3 project manager Barbara Hunt. "CSU's six-year graduation rate for first-time students is about 33%. We think that the DN3 program—and our unique approach to integrating learning support modules in the Math Modeling course—can help improve the share of bachelor's degrees we award to students."

What are the challenges?

It was difficult for math educators to select a subset of concepts from the curriculum in two semester-long traditional remediation courses. Since the motivation behind the initiative was to improve college completion, Hunt said, "We asked ourselves, 'what do our students absolutely have to know to be successful in this class?'" DN3 educators chose the competencies they identified as most essential for student success and fit them into the first three modules of Math Modeling.

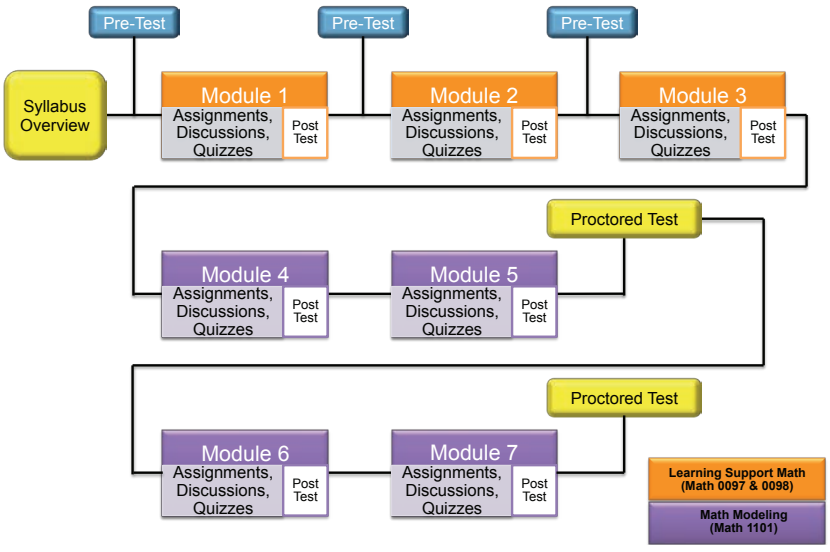
Another challenge was that, because DN3 students are eligible for federal financial aid, administrators needed to match Math Modeling to the government's definition of a qualifying course—akin to putting a square peg in a round hole. Federal standards usually fund student aid for courses with definite end points; this presents a relatively common challenge for providers of competency-based education because students typically take as long as they need to complete a course. Although Math Modeling cuts across DN3's traditional session end points, administrators were able to resolve the issue by demarking a specific end point for the course.

What's next?

Because math is typically the greatest remedial need for students, DN3 educators focused first on integrating math learning supports into Math Modeling. The next objective is to develop creative ways to incorporate remedial coursework into credit-bearing English courses.

DN3 faculty members currently incorporate remedial coursework into their credit-bearing English courses informally (students do not enroll in separate remedial English courses). English faculty members analyze assessment data to determine which students need additional help (a benefit of the low student-to-faculty ratio in the DN3 program). Faculty members refer select students to online open educational resources and assessments as an additional course requirement.

MATH 1101 with Learning Support Modules



ARTIFACT:

First year course sequence for Degreein3

COLUMBUS STATE UNIVERSITY | CSU DEGREE IN3

First Year, Degreein3 Program

Session 1	Session 2	Session 3	Session 4	Session 5	Session 6
English Composition I Introduction to Information Technology	Interpersonal Communication Introduction to Sociology	English Composition 2 Introduction to Mass Communication	Group Communication U.S. History Before 1865	Environmental Studies American Government	Make-up and Catch-up
Math Modeling with Math Learning Support Modules (MATH 0097/0098/1101)		**Allow extension if needed**			
		Public Speaking/ Life & Career Planning/ Leadership Development class (COMM1110/ ITDS 2735/ ITDS 2796)		**Allow extension if needed**	

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- CSU Degreein3 Website
- The Four Innovations of Degreein3 Presentation

FOR MORE INFORMATION:

Contact: Ramesh Rao
rao_ramesh@columbusstate.edu

By Jodi Lewis, Institute for Higher Education Leadership & Policy