

Product Used **MathXL**
 Course Names **Introductory Algebra, Intermediate Algebra Sequence**
 Credit Hours **Five**



KEY TAKE-AWAY

The modular, five-day-a-week MSU Billings redesign requires both MathXL homework and content mastery before moving ahead. Results include increased student success and the ability to succeed faster, thereby increasing student confidence and saving students money.

Textbook in Use

Elementary and Intermediate Algebra, 3e, Tom Carson, Bill E. Jordan

Course Implementation

Course Design

In 2010, MSU piloted a five-day-a-week modular redesign of its Introductory and Intermediate Algebra sequence in a side-by-side comparison with its traditional Introductory Algebra and Intermediate Algebra courses. Although both course formats use MathXL for required homework and quizzes, the redesigned course sequence pairs that best practice with mastery learning. In addition, because students attend more classes per week in the redesigned format, they have the opportunity of taking the equivalent of two semesters in only one, thereby moving more quickly through the developmental sequence.

Assessments

Homework *Students are required to earn 100 percent on all MathXL homework in order to take the module exam. They are allowed three attempts per problem.*

Quizzes *Students must score at least 80 percent on all MathXL quizzes in order to take the module exam. They are allowed two attempts per quiz.*

Module exam *Students must score at least 80 percent on the paper-and-pencil module exam and at least 70 percent on the final exam to successfully complete the course.*

Students earn one credit for each module exam they pass. The module grade is a combination of 10 percent class participation and 90 percent exam grades.

Use of MathXL

MathXL is used for some in-class assignments, and all homework and quizzes. Homework assignments comprise questions from the program's bank of problems and from custom exercises. Students are encouraged to use the Help Me Solve This feature and are required to do personalized homework problems before retaking a quiz.

Instructors use the announcement and email features to communicate with students. Section coordinators create MathXL shells for other instructors and adjuncts.

Results and Data

"Students in the redesigned courses really know the material. They aren't just trying to get by," says Chairsty Stewart, assistant director. Data from the pilot backs her up. Figures 1–2, and Tables 1–3 indicate that redesign students benefit from learning gains across a variety of metrics.

- Students in the modular redesign score an average of 20 percent (15 percentage points) higher on the final exam than students in traditional courses.

- Redesigned Introductory Algebra classes have a 28 percent (14 percentage points) higher pass rate.
- More than 30 percent of students in the redesigned courses were able to complete the sequence in less time than they could have via the traditional course format.

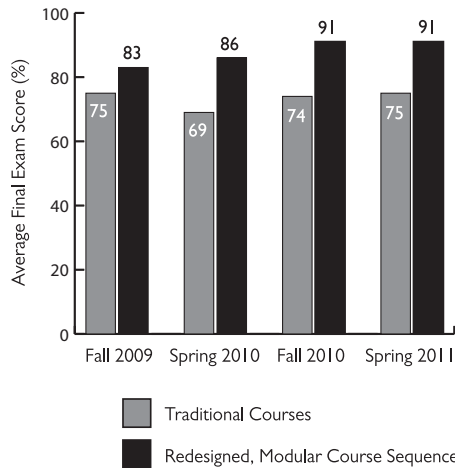


Figure 1. Comparison of Traditional Courses and Redesigned Course Sequence Final Exam Scores, Fall 2009–Spring 2011

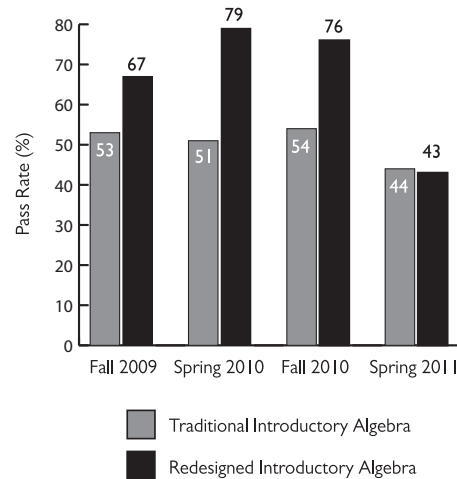


Figure 2. Comparison of Traditional and Redesigned Introductory Algebra Pass Rates, Fall 2009–Spring 2011

Traditional Courses	Redesigned Sequence
73%	88%

Table 1. Average Final Exam Scores, Fall 2009–Spring 2011

Traditional Courses	Redesigned Courses
50%	64%

Table 2. Average Introductory Algebra Pass Rates, Fall 2009–Spring 2011

Introductory Algebra (less than one year)	Intermediate Algebra (less than one semester)
35%	30%

Table 3. Average Early Completion Rates by Redesign Course Placement

The Student Experience

Students enjoy attending classes every day. “It not only keeps the academic momentum going,” says Stewart, “it also offers the opportunity of complete the sequence sooner. Similarly, those who must repeat courses report that they know they need the extra help and are grateful for the opportunity to master the material before moving ahead.”

The mastery learning requirement means that students are on the same level at the same time. “It means that students in our redesigned classes aren’t afraid to ask questions,” says Stewart. “They support each other.”

Student survey responses indicate that students especially appreciate MathXL.

- I absolutely love MathXL. Being able to see how a problem is done and then practice it made the course easier. I hope my future courses use MathXL.
- When I started the course I was worried about how I’d do homework, but MathXL was amazing!
- MathXL is extremely helpful. I like the Help Me Solve This feature—it shows me step-by-step how to do a problem and lets me do it until I get it right instead of just telling me it’s wrong.

Conclusions

Stewart couldn’t be more pleased with the redesigned sequence. “The majority of my class earns above 90 percent on every test,” she says. “I’m inspired by how well they are doing—it’s a real indication of the efficacy of our model.”

Stewart’s students learn more than mathematics, they learn what they need to know to succeed in a college-level course: how to study, how to pace, how to stay motivated, and how to persevere. And when they’ve completed the sequence, they’re confident—they know they’re ready to move on.

“Our primary goals were to better meet the needs of our students and to increase student success—without comprising our students or the quality of the course,” says Stewart. “I think we’ve met those goals.”

*Submitted by Chairsty Stewart, Assistant Director, Academic Support Center
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